United States General Accounting Office

GAO

Report to the Chairman, Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, House of Representatives

May 1990

WATER POLLUTION

Alyeska's Efforts to Comply With Reissued Ballast Water Treatment Permit

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GAO

United States
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Washington, D.C. 20548

Resources, Community, and
Economic Development Division

B-239048

May 8, 1990

The Honorable John D. Dingell
Chairman, Subcommittee on Oversight
and Investigations
Committee on Energy and Commerce
House of Representatives

Dear Mr. Chairman:

This report responds to your request that we review the Environmental Protection Agency's (EPA) recently reissued National Pollutant Discharge Elimination System (NPDES) permit for the Alyeska Pipeline Service Company's treatment of ballast water at Port Valdez, Alaska. In reviewing the permit, we (1) compared the effluent limits and other requirements under the reissued permit with those of the old permit, (2) determined the reasons for changes in the reissued permit, and (3) examined Alyeska's initial efforts to comply with the reissued permit's effluent limits and reporting requirements.

Results in Brief

We found that the reissued permit generally has more stringent limits for discharged treated ballast water, reporting, testing, and environmental monitoring requirements. The reissued permit has more rigorous limits for aromatic hydrocarbons (BETX),[1] pH, and discharge flow rate; and there are new limits for total suspended solids, total organic carbon, and naphthalene.[2] In addition, there are new reporting, toxicity testing, and environmental monitoring requirements, which strengthen the reissued permit. Metal monitoring is decreased under the reissued permit.

Several factors influenced the permit changes, including (1) Alyeska operating data indicating that lower effluent limits were achievable and that less metal monitoring was needed, (2) EPA's use of more stringent technology standards for the type of pollutants being discharged by Alyeska, (3) Alaska's decision to require stricter permit limits in certain instances, and (4) input from citizen groups and the public during the comment period on the draft permit.

[1]BETX, a subset of individual aromatic hydrocarbons, are toxic or hazardous pollutants consisting of benzene, ethylbenzene, toluene, and xylene.

[2]Naphthalene is a toxic aromatic hydrocarbon.

and to resolve environmental allegations raised by a private citizen about the facility. On May 8, 1989, EPA reissued the NPDES permit to Alyeska; the permit became effective on June 7, 1989.

Permit Changes Strengthen Effluent Limits and Reporting Requirements

The reissued permit has more stringent limits for all effluent parameters that were continued from the previous permit. (See app. I for a comparison of the parameters limited and/or monitored under the two permits.) The previous permit established effluent limits for oil and grease, BETX, the discharge flow rate, and pH. The 1989 permit added new effluent limits for naphthalene, total suspended solids, and total organic carbon, and eliminated the oil and grease effluent limit by incorporating it in the BETX and total organic carbon limits. In addition, effluent limits for BETX—the dominant toxic or hazardous pollutants regulated in the reissued permit—were made more stringent by including separate limits for the summer and winter months. In contrast, metal monitoring under the 1989 permit was decreased.

Several reporting requirements were added to the reissued permit to further protect the environment. These requirements include (1) reporting on test results to determine the effect of pollutants discharged from the treatment facility on sediment contamination and on marine life in the receiving body of water and (2) developing operating procedures—known as a best management practices plan[5] —to minimize the release of pollutants from the treatment facility. The reissued permit also establishes a technical advisory group to assist EPA and the Alaska Department of Environmental Conservation (ADEC) in evaluating the environmental monitoring reports required by the permit.

Many Factors Influence Permit Changes

According to the EPA officials, a number of factors influenced the changes to Alyeska's permit:

- Alyeska operating data under the old permit indicated that lower effluent limits were in fact achievable. EPA was subsequently able to include these lower values as effluent limits for the reissued permit. For example, EPA cited Alyeska's voluntary construction and use of biological treatment ponds since 1986 as the major reason for the lower summer BETX effluent limits in the reissued permit. Using Alyeska's operating

[5]Best management practices plans establish guidelines and procedures for the efficient operation and maintenance of a facility. The objective of Alyeska's best management practices plan is to prevent or minimize the potential for the release of pollutants from the facility to the surrounding bodies of water, and to achieve the maximum removal of pollutants through the treatment process.

Several new reporting requirements under the reissued permit are being deferred or changed due to settlement negotiations arising out of Alyeska's appeal of some of the reissued permit's requirements. The requirements being deferred or changed as part of the settlement negotiations among representatives of EPA, Alyeska, and Alaska include the specific sampling location for environmental monitoring tests, the timing of certain studies, and several requirements concerning the best management practices plan.[7] According to EPA officials, the three parties are currently near a final settlement on the specifics of each requirement. The agreements will be reflected in a modified permit expected to be released for public comment by June 1990.

These officials note that Alyeska will not be able to comply with all the requirements of the reissued permit until its expanded treatment facilities are constructed and the reporting requirement negotiations between EPA, Alyeska, and Alaska are concluded and incorporated into the permit. On the basis of the available information and time schedules, as of January 1990, EPA officials believe these issues will be resolved by the fall of 1991.

Objectives, Scope, and Methodology

Our objectives in reviewing the reissued permit were to compare the effluent limits and other requirements under the reissued permit with those of the old permit, determine the reasons for changes in the reissued permit, and examine Alyeska's initial efforts to comply with the reissued permit's effluent limits and reporting requirements. To accomplish this, we interviewed officials from EPA headquarters, EPA's Seattle Regional Office, and Alyeska's offices in Seattle, Washington, and Washington, D.C. We also reviewed the two permits, Alyeska's self-monitoring reports for the first 5 months under the reissued permit, and other pertinent documents in EPA's files.

We discussed the information in this report with EPA and Alyeska officials, and they generally agreed with the facts presented. We have incorporated their comments where appropriate. However, as requested, we did not obtain official agency comments on this report. We conducted our audit work during December 1989 and January 1990 in accordance with generally accepted government auditing standards.

[7]Deferring reporting requirements during the first year of a new permit is not uncommon, according to EPA officials. For example, a requirement for Alyeska to conduct studies during the spring and fall of the first year of the permit was deferred until the second year. EPA officials felt it was unrealistic to fulfill this requirement during the first year, since the permit became effective in early June.

Table I.2: Monitoring Requirements (No Effluent Limit Established)

Parameter	1980 permit	1989 permit
Total organic carbon	yes	[a]
Total suspended solids	yes	[a]
Biological oxygen demand	yes	no
Phenols	yes	yes
Temperature	yes	yes
Density	yes	yes
Dissolved inorganic phosphorous	no	yes
Ammonia	no	yes
Total hydrocarbons	no	yes
Dissolved oxygen	no	yes
Individual aromatic hydrocarbons	yes[b]	yes[c]
Aromatic oil & grease	yes	no
Chromium	yes	no
Nickel	yes	no
Selenium	yes	no
Cadmium	yes	no
Copper	yes	no
Lead	yes	no
Zinc	yes	yes
Methylene chloride	yes	yes
Trichloroethene	yes	yes
Phenanthrene/ anthracene	yes	yes

[a]Effluent limit established (see table I.1)

[b]These include benzene, toluene, xylene, trimethlybenzene, naphthalene, methylnaphthalene, dimethylnaphthalene, phenanthrene, and anthracene

[c]Includes all the individual aromatic hydrocarbon compounds in the 1980 permit as well as many others.

Major Contributors to This Report

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Other New Requirements for Alyeska's 1989 Permit

A number of new requirements were added to Alyeska's 1989 permit:

- Environmental monitoring was expanded.
- A mixing zone compliance study was added.
- Effluent toxicity testing was added (both sublethal and acute tests).
- A best management practices plan was included.
- Waste streams entering the treatment plant were limited to those identified in the best management practices plan.
- Alyeska determines whether incoming ballast water is contaminated with pollutants other than crude oil.
- A technical advisory group was formed to assist ADEC and EPA in evaluating environmental monitoring of the discharge.
- EPA and ADEC will be notified in advance of changes in treatment chemicals.

Major Differences Between Alyeska's 1980 and 1989 Permits for Effluent Limitations and Monitoring Requirements

Table I.I: Effluent Limitations

	1980 permit		1989 permit	
Parameter	**Maximum daily**	**Monthly average**	**Maximum daily**	**Monthly average**
BETX (mg/1)	9.0	6.0	1 3[a]	0 7[a]
			1 3[b]	[c]
Naphthalene	[d]	[d]	[e]	[e]
Total suspended solids (mg/1)	[d]	[d]	45 0	30 0
Total organic carbon (mg/1)	[d]	[d]	25 0	15 0
Discharge flow rate (mgd)	33.6	27 0	30 0	21 0
Oil & grease (mg/1)	10 0	8 0	[f]	[f]
pH	[c]	6.0[g]	[c]	6 0[g]
	[c]	9.0[h]	[c]	8 5[h]

Legend
mg/l = milligrams per liter
mgd = million gallons per day

[a]Limit for the summer months (June 1-September 30)

[b]Limit for the winter months (October 1-May 31).

[c]Not applicable

[d]Monitoring requirement only, no effluent limit established

[e]Below quantitation limit (2 micrograms per liter)

[f]Permit incorporates oil and grease effluent limits into the BETX and total organic carbon limits

[g]Minimum value for monthly reading

[h]Maximum value for monthly reading.

Contents

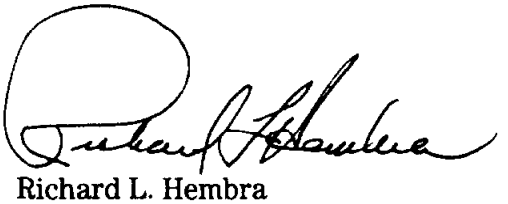
Abbreviations

ADEC	Alaska Department of Environmental Conservation
BETX	benzene, ethylbenzene, toluene, xylene
EPA	Environmental Protection Agency
GAO	General Accounting Office
NPDES	National Pollutant Discharge Elimination System
RCED	Resources, Community, and Economic Development Division

Unless you publicly release its contents earlier, we will not make this report available for distribution until 30 days after the date of this letter. At that time, copies will be sent to the appropriate congressional committees; the Administrator, EPA; and other interested parties.

If you have any questions about this report, please contact me on (202) 275-6111. Major contributors to this report are listed in appendix III.

Sincerely yours,



Richard L. Hembra
Director, Environmental Protection
Issues

data, EPA was able to change the summer BETX effluent limits from 9 milligrams per liter (maximum daily) and 6 milligrams per liter (monthly average) to 1.3 and 0.7 respectively. The consistently low measurements for chromium, nickel, and copper under the 1980 permit led to less metal monitoring under the reissued permit.

- EPA was required to apply more stringent technology standards for the type of pollutants discharged by Alyeska. These standards, along with Alyeska's operating data, were used in developing the effluent limits for BETX, pH, total suspended solids, and total organic carbon.
- In reviewing the draft permit, Alaska stipulated stricter permit requirements for the winter BETX limit and for naphthalene, required the establishment of a technical advisory group, and changed some sections of the best management practices plan.[6]
- Citizens alleged that incoming tankers shipped ballast water contaminated with materials other than crude oil for discharge into the ballast water treatment facility. This led to a requirement that Alyeska determine whether incoming ballast water is contaminated with such materials. Other citizen allegations, as well as public comments on the draft permit, resulted in changes to the best management practices plan.

Alyeska's Initial Efforts to Comply With New Permit

According to our review of the monitoring reports submitted by Alyeska to EPA for the first 5 months under the reissued permit, Alyeska's treatment plant has met effluent limits for all pollutants except BETX. The maximum daily BETX summer effluent limit was exceeded by 7 percent for 1 day in June 1989 and by 8 percent for 1 day in August 1989. (These samples are collected and analyzed daily.) According to EPA officials, exceeding the permit's limit by such a small amount could be due to testing error.

Of greater consequence, however, is that Alyeska will need to construct additional treatment facilities by the fall of 1991 to meet the permit's winter BETX effluent limit. Because construction of additional treatment facilities is necessary, the permit allows a 29-month schedule to construct the facilities in order to comply with the permit's winter BETX limit. The additional facilities are expected to bring the plant into compliance by the fall of 1991 with its winter BETX limit, as well as resolve the minor instances where the summer BETX limit was exceeded.

[6]Under section 401 of the Clean Water Act, a state may request more stringent requirements on a permit issued by EPA. Alaska requested the stricter limits for the facility in order to meet state water quality standards and state law.

Alyeska's treatment plant has met the limits for all pollutants specified in the reissued permit except BETX. Alyeska's operating data indicate several instances where the permit's BETX summer limits were exceeded by a small amount. Of greater consequence, Alyeska will need to construct expanded treatment facilities by the fall of 1991 in order to meet the reissued permit's BETX winter limit, which must be met no later than 29 months after the permit's effective date. The expanded treatment facilities will address the minor instances where the summer limit was exceeded. Furthermore, several reporting requirements have been deferred or changed. According to EPA officials, representatives of Alyeska, Alaska, and EPA are currently near a settlement on the specifics of each requirement, and the agreements will be reflected in a modified permit expected to be released for public comment by June 1990.

Background

Alyeska operates a water treatment plant at its oil pipeline terminal at Port Valdez, Alaska, to treat ballast water (sea water that is carried in oil tankers to provide stability, which can be contaminated with oil) before it is discharged into surface waters. The plant is the largest discharger of effluents into Port Valdez.[3]

The Clean Water Act of 1972 requires plants like Alyeska's to obtain a NPDES permit, regulating the types and amounts of pollutants that can be discharged. EPA issued Alyeska's first ballast water treatment permit in 1974. The permit was reissued in 1980. The permit expired in 1983 before EPA reissued the permit. As a result, the permit was administratively continued and the facility operated under an extension of the 1980 permit.

In 1987, we reported on EPA's controls over pollutants discharged into Port Valdez by Alyeska at its terminal.[4] The review focused on (1) why EPA had not reissued a NPDES permit with updated pollution controls for Alyeska's ballast water treatment plant and (2) whether EPA had effectively monitored and enforced the conditions of Alyeska's existing permit. Our report found that EPA did not reissue the permit on time in 1983 because of higher priority work, staffing limitations, and the absence of funds to hire technical expertise. The report noted that EPA had taken a series of enforcement and other actions to ensure the plant's compliance with the permit's requirements, particularly for the BETX effluent limit,

[3]An effluent is wastewater that has been treated and discharged.

[4]Water Pollution: EPA Controls Over Ballast Water at Trans-Alaska Pipeline Marine Terminal (GAO/RCED-87-118, June 18, 1987).