

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE ADMINISTRATOR

In the Matter of

Atlantic Richfield Company
NPDES Permit No. AK-002648-4
(Monti Bay Terminal)

78 SEP 21 4 8: 44
Docket No. X-WP-77-9

Initial Decision

This is a proceeding under Section 402 of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq.), now commonly referred to as the Clean Water Act (P. L. 95-217, December 27, 1977). The genesis of the proceeding was an application for a permit, dated January 23, 1976, filed by Mobil Oil Corporation on behalf of Shell Oil Company, Atlantic Richfield Company (ARCO), and Mobil Oil Corporation, sometimes referred to as the SAM Group. The permit was to cover discharges from Monti Bay Terminal, Yakutat, Alaska, which terminal had been established to support offshore drilling activities in the Gulf of Alaska. Because a change in Department of Interior regulations governing oil and gas leases had the effect of prohibiting joint ownership of leases, ARCO assumed operation of Monti Bay Terminal and the application was amended to reflect that ARCO was the applicant.

Monti Bay Terminal is at the south end of Monti Bay, a relatively small bay to the south and east of Yakutat Bay, which in turn is located in the eastern portion of the Gulf of Alaska. Monti Bay Terminal is very close to the City of Yakutat, Alaska.

The permit was issued on May 10, 1977. ARCO objected to certain provisions of the permit by letter, dated May 27, 1977, alleging, inter alia, that it would be unable to consistently meet the effluent limitations objected to by application of best practicable control technology currently available (BPCTCA) and requested an adjudicatory hearing. ARCO's request for an adjudicatory hearing was granted by the Regional Administrator under date of June 14, 1977. The adjudicatory hearing was held in Anchorage, Alaska, June 29 and 30, 1978. At their request, the parties were allowed 30 days from receipt of the transcript in which to submit proposed findings and conclusions. Proposed findings and conclusions of EPA were received on August 25 and proposed findings and conclusions of ARCO were received on August 30, 1978.

By memorandum, dated June 9, 1978, the Regional Administrator appointed the undersigned to prepare and issue an initial decision in this matter.

Findings of Fact

Based upon the entire record, including proposed findings and conclusions submitted by the parties,^{1/} I find the following facts are established:

1. Monti Bay Terminal consists of a pier, an office trailer, two corrugated metal buildings and about one-half acre of staging area (Goldman, Exh. A, p. 2 and Attach.1). ARCO owns approximately four

^{1/} Proposed findings and conclusions of the parties not adopted herein are either rejected or considered unnecessary to the decision.

acres at the site and leases an additional 70 acres (Tr. 37). Building "A" contains cement, barite and bentonite handling equipment, while Building "B" houses power generation facilities, a sewage treatment plant and an oil/water separation system or facility.

2. The sewage treatment plant at Monti Bay Terminal consists of a Met-Pro Series 12000 Model 12010 Independent Physical Chemical Plant (IPC) manufactured by MET-PRO Water Treatment Corporation of Lansdale, Pennsylvania. Design capacity of the system is 10,000 gallons per day, which is approximately seven gallons a minute for 24 hours of continuous operation. An IPC system is the best treatment approach when large variations in flow and sewage strength occur regularly (Clark, Exh. B, p. 3). The basic system may be described as flow equalization in the form of large volume storage, chemical coagulation, flocculation, sedimentation, neutralization, carbon absorption, pressure sand filtration, chlorination and ocean discharge (Exh. A, Attach. 2; Exh. B, p. 3). Sludge produced in the unit is thickened and incinerated.
3. Although the system mentioned in the preceding finding was designed to treat raw sewage from workboats servicing offshore drilling rigs, this capability has never been used and sewage processed to date of the hearing has been that generated at Monti Bay Terminal. The system has been operational since September 4, 1976 and discharged an average of 683.3 gallons of effluent

per day in June of 1977--the month of greatest average monthly volume. The largest discharge in a single day was 3,600 gallons in June of 1977 (Exh. A, p. 6 and Attach. 4).

4. Average Biochemical Oxygen Demand (5-day) (BOD) influent loadings at Monti Bay Terminal during the 17-month period November 15, 1976 through May 17, 1977 in milligrams per liter (mg/l) were 388 (Exh. B, Attach. 1). Average effluent concentrations during this period were 19 mg/l for BOD, a removal rate of approximately 92.5%.
5. The permit (Exh. 10) calls for effluent concentrations not exceeding a monthly average of 30 mg/l and not exceeding a weekly average of 45 mg/l for BOD. ARCO has requested that the permit as to BOD be modified to the permit limit or 85% removal at ARCO's option. There are no effluent limitation guidelines applicable to the Monti Bay Terminal and these limitations are derived from Secondary Treatment Information (40 CFR Part 133) applicable to Publicly Owned Treatment Works (POTW). This information is based upon an 85% removal rate for domestic wastes having average BOD and suspended solids (SS) concentrations of 200 mg/l (Clark, Exh. B, p. 8). The 200 mg/l is apparently the average for combined municipal wastewater, which is that resulting from a combination of sanitary and storm sewer wastes. Although the Monti Bay facility has never operated at a rate approaching design capacity, it would have been in violation of the permit on two occasions for discharges of BOD and SS in

excess of the 45 mg/l weekly average (Exh. B, p. 11 and Attach. 1). Utilizing the table referred to previously (finding 4), the potential for violation, including coliforms, is 18 out of 100 or 18%. The odds of violation will increase if the plant is operated at design capacity or the waste concentrations increase.

6. BOD and SS influent loadings of wastewaters generated at remote construction and oil development support facilities are far in excess of the average upon which the Secondary Treatment Information referred to in the preceding finding was based. A table supporting this finding appears on page 10 of Exhibit B and excluding the ARCO facility here in issue, shows average influent BOD concentrations ranging from 456 mg/l for Alyeska Pipeline Service Company Construction Camps to 1283 mg/l for the Marathon Oil Company Cook Inlet Platform. Similarly, the table shows average SS concentrations ranging from 491 mg/l for 20 Alyeska Pipeline Construction Camps to 2136 mg/l for Marathon's Cook Inlet Platform. Data showing the derivation of these averages are contained in Exh. B, Attach. 1. Average BOD and SS influent loadings at ARCO's Monti Bay Terminal are 388 and 389 mg/l, respectively, or almost twice the 200 mg/l utilized in calculating Secondary Treatment Information. Wastes from workboats can be expected to have a higher strength due primarily to lower use of water (Murphy, Exh. 3, p. 13; Clark, Exh. B, p. 9). In addition, BOD and SS may vary greatly, the wastes will vary in salinity, will typically be very septic and may be effected by deodorizing or disinfecting chemicals.

7. Although in direct testimony Dr. R. Sage Murphy, an expert witness for EPA, asserted that wastes generated at the Monti Bay facility should be approximately the same as those generated at the Alyeska Pipeline Service Company Construction Camps and that he would expect wastes from workboats to be of higher strength (Exh. 3, p. 13), in rebuttal testimony he stated that he did not consider Alyeska construction camps and other facilities such as ARCO's Prudhoe Bay Operations Center to be comparable to Monti Bay (Exh. 4, p. 4-6). It appears that the latter testimony is based upon operations at Monti Bay to date rather than as the facility would operate when processing wastes, including those from workboats, at design capacity. Mr. Bill Lamoreaux, an EPA sanitary engineer who drafted the permit, testified that his conclusion the secondary treatment requirements for POTW could be achieved was based upon experience of facilities along the Alyeska pipeline and at Prudhoe Bay (Exh. 1, pp. 2-3). However, under cross-examination he conceded that his information as to results obtained by these facilities was largely obtained from discussions with office colleagues rather than a personal review of discharge monitoring reports (DMRs) (Tr. 141). He also conceded that these facilities would not have been in compliance with ARCO permit limitations at all times (Tr. 143). He was unfamiliar with the percentage of time the Alyeska and Prudhoe Bay facilities

would have met the limitations in the permit at issue and alluded to the fact that Alyeska had withdrawn requests for adjudicatory hearings at several of its camps for which NPDES permits had been issued (Tr. 143-44). Withdrawal of requests for adjudicatory hearings could as well be attributable to completion of the pipeline as to the fact that compliance with NPDES permit limits was regularly achieved.

8. As indicated (finding 6), influent loadings for 20 Alyeska camps averaged 456 mg/l for BOD and 491 mg/l for SS. These averages are based on 17 months of weekly 24-hour composite data. A table showing monthly average BOD removal during 1975 for 21 Alyeska construction camps and nine pump stations (ARCO Exh. I) indicates that a removal rate of 85% or above was attained an average of 67% of the time, a removal rate of 80% or above was attained an average of 85% of the time and that a removal rate of 75% or above was attained an average of 92% of the time. Influent data for BOD are not contained on this exhibit. However, utilizing a figure of approximately 500 mg/l, which Dr. Murphy testified would be expected in a camp situation (Tr. 437), requires a BOD removal rate of 94% in order to comply with permit requirements (Tr. 438). It is clear that there are a great number of months when this removal rate was not met at the listed camps and pump stations (ARCO Exh. I).

9. The record contains a listing of BOD, COD and SS influent data and BOD and COD effluent data for 21 Alyeska construction camps and nine pump stations for the period January 1976 through May 1977 (EPA Exh. 13). These data show that six of the camps and five of the pump stations have average BOD effluent readings above the 30 mg/l monthly average allowed by the permit. However, these figures are not monthly averages, but are merely an average of all samples taken during the 17-month period (Tr. 383). Accordingly, this exhibit does not show the percentage of time the listed plants and pump stations would or would not comply with permit limitations.
10. Data (monthly monitoring reports submitted to the Alaska Department of Environmental Conservation) for Alyeska Pipeline Service Company's Prospect Camp, which utilizes a physical/chemical plant, for the months of July, August and September 1976 are in the record (EPA Exhs. 14, 15 and 16). These exhibits show BOD influent averages of 560 mg/l for July, 514 for August and 602.5 for September and removal rates (monthly averages) of approximately 96% for July, 98% for August and 97.75% for September. It should be emphasized that this is limited data applicable to one plant and is insufficient to be considered average exemplary performance of BPCTCA. Moreover, Prospect Camp would not have met the 94% BOD removal rate necessary for

compliance with permit requirements (finding 7) seven out of ten reporting months in 1975 (ARCO Exh. I). This supports the testimony of Mr. Charles Eggener, an expert witness for ARCO, that data for Alyeska pipeline facilities show BOD near 30 mg/l only after extensive operator training, only after numerous modifications and only after a shakedown period of nearly a year (Exh. F, p. 7). Dr. R. Sage Murphy, identified in finding 7, conceded that another shakedown period would be necessary when the facility commenced treating workboat wastes (Tr. 444).

11. Efficacy of treatment by an IPC plant of the type installed at Monti Bay (this is probably true of any type of treatment plant) is at least in part a function of detention time of the wastes (Murphy, Exh. 3, p. 7). Because of the low level of activity at Monti Bay, operating procedure has been to allow wastes to accumulate until the equalization tank is full (indicated to be of 4,500 gal. capacity) and then process the tankful (Goldman, Exh. A, p. 7 and Attach. 2). This procedure allows a longer detention time and a higher removal rate. Messrs. Clark and Eggener, expert witnesses for ARCO, attributed excellent treatment being achieved at Monti Bay to the fact that the system has not operated at design capacity (Exh. B, p. 9, Exh. F, p. 2). Mr. Eggener testified that the equalization or initial receiving tank was of

adequate size in relation to design capacity of the unit and the type of wastes expected to be treated (Tr. 349). He estimated that at design flow there would be a minimum of five or six hours retention time in the equalization tank. He admitted that he did not know the rate of discharge from the workboat tanks or the capacity of those tanks. Maximum daily quantity of effluent discharged from the wastewater facility as set by the permit is 10,000 gallons a day. It is concluded that detention time of wastes at the Monti Bay facility will be adequate at design flow.

12. Mr. Sidney E. Clark and Dr. A. T. Knecht, expert witnesses for ARCO, testified that the Met-Pro Treatment Plant at Monti Bay represents BPCTCA, which is secondary treatment (Exh. B, p. 3; Exh. D, p. 8). While in a prehearing colloquy counsel for EPA asserted that it was EPA's position that the Monti Bay facility did not represent BPCTCA (Tr. 21), no witness for EPA so testified and there is no evidence in the record disputing the testimony of Messrs. Clark and Knecht in this regard.
13. There is no acceptable procedure for determining accuracy for the BOD test (Dr. Knecht, Exh. D, p. 13). This testimony is supported by the fact that in 1971 a committee of the ASTM withdrew without replacement the ASTM method of test for BOD of Industrial

Water and Industrial Waste Water (Exh. D, Attach. 5). While a test for BOD does appear in the List of EPA Approved Test Procedures (Table I, 40 CFR Part 136), data presented by Dr. Knecht show standard deviations of ± 0.7 ($\pm 33\%$) and ± 26 mg/l ($\pm 15\%$) at mean values of 2.1 and 175 mg/l, respectively. Similar and even greater deviations are shown in an EPA study of raw waste (influent) and final effluent data (Exh. D, Attach 7 & 8). Problems associated with the BOD test are intrinsic to essentially all testing employing living organisms and result from an inability to control all factors such as population of organisms used, type of organism, concentration of nutrients, temperature, pH, concentration of interfering substances, ionic strength of test solution and mixing (Exh. D, pp. 13-15).

14. Mr. Eggener was of the opinion that the differential impact on the receiving waters of the BOD limit he considered reasonable and appropriate (85% removal of 500 mg/l or 75 mg/l monthly average) and the 30 mg/l contained in the permit could not be measured with existing analytical techniques (Exh. E, p. 8). Dr. Gordon Robilliard, an expert witness for ARCO who performed a survey and analysis of the expected impacts of the ARCO discharges on Monti Bay, testified that it was likely that no difference would be detectable between the limits in the permit and those proposed by ARCO (Exh. E, p.8).
15. Fecal Coliform limits in the permit are not to exceed 200 per 100 milliliters (ml) monthly average and not to exceed 400 per 100 ml

weekly average, which requires disinfection. This limitation is allegedly based on Alaska Water Quality Standards (18 AAC 70.010, 70.020, Register 47, October 1973) Class C, applicable to water contact recreation (Lamoreaux, Exh. 1, p. 4; Tr. 264-71). Alaska Water Quality Standards (18 AAC 70.020) limit total coliforms in Class C, Water Contact Recreation, as follows: "Mean of 5 or more samples in any month may not exceed 1000 per 100 ml, and not more than 20% of samples during one month may exceed 2400 per 100 ml, except ground water shall contain zero per 100 ml."

While Mr. Lamoreaux testified that he considered the coliform limitations in the permit to be mandated by the quoted Alaska Water Quality Standards and the classification (18 AAC 70.050(3)) of all other marine and estuarine waters as Classes C, D, E & G, he, nevertheless, called the Alaska Department of Environmental Conservation to ascertain if they knew of any other uses for the waters in question, receiving a negative answer (Tr. 273). Information that the waters in question were utilized for water contact recreation was obtained from the Clerk of the City of Yakutat (Tr. 264-65, 273). Although aware of the fact that fecal coliform limits for POTW were no longer mandatory (41 F.R., No. 144, pp. 30786-30789, July 26, 1976), he asserted that the exemption was only applicable where there was no impact on existing water quality standards (Tr. 264-65). There is no evidence in the record and no contention has been made that the permit limitation is required by a certification from the State of Alaska pursuant to Sec. 401 of the Act. EPA is proposing

to delete effluent limitations and monitoring requirements for fecal coliform and residual chlorine for the cities of Skagway and Petersburg even though the discharges in question are to waters classified by the State of Alaska as C, D, E and G (ARCO Exhs. H & G).

16. Oil and grease limitations in the permit are 15 mg/l daily maximum. ARCO has requested that the permit be modified to 85 mg/l daily average and 140 mg/l daily maximum. The primary effluent is bilge water from workboats. Guidelines for bilge water have not been established by EPA. The permit limit is apparently based on permits for primarily bilge water issued to the U. S. Coast Guard in July 1974 which allegedly call for oil and grease levels of 10 mg/l daily maximum and experience with ballast water by Standard Oil Company of California (SOCAL) at Valdez, Alaska, which apparently indicates compliance with permit limits for oil and grease of 8 mg/l daily average and 10 mg/l daily maximum (Lamoreaux, Exh. 1, pp. 4-8). Although he testified that the Coast Guard was satisfied with permits issued, Mr. Lamoreaux did not personally receive or review the OMR (Tr. 194-95). Significantly, neither the permits nor the DMR have been produced.
17. A Navy study entitled "Use Of The Fram/Akers Model OWS 113-Oil/Water Separator As A Bilge Discharge Clean-up System," Report No. 28-770, November 1973, is in evidence (Exh. 1, Attach. 1). Mr. Lamoreaux testified that he was familiar with

that report and indicated that his conclusion the permit limit was appropriate was based in part on the report (Tr. 200-06). However, the tests described in the report were limited to two types of oil, Navy distillate fuel oil (NDFO) and turbine lubricating oil (TEP), the tests were based on "dirt-free" influents, water quality of the initial 100,000 gallon throughput using heavier TEP averaged 36 ppm (parts per million), a pump supplied with the unit was not used during the test, cumulative results were that samples were at or below 15 ppm 88% of the time and the methods used in determining oil and grease content of the samples (solvent extraction, silica-gel adsorption, followed by infrared analysis) differed from the EPA approved test (40 CFR Part 136). Mr. Lamoreaux conceded that there were differences between NDFO and TEP and oil that might be expected in bilge water and that differences in test methods for measuring oil and grease often produced differing results (Tr. 203, 205). He asserted that he had reviewed effluent data from the SOCAL facility at Valdez, Alaska and found it far below permit requirements (Tr. 206). He conceded that there would be variations in concentrations of oil and solids between bilge water and ballast water, the latter being the primary effluent at Valdez (Tr. 207).

18. The bilge water treatment system installed at Monti Bay consists of a surge and equalization tank followed by a General Electric Model OPL-25 parallel plate oil-water separator (Goldman,

Exh. A, p. 8 and Attach. 7; Ellis, Exh. C, p. 17). The treatment unit is located on top of the equalization tank (Tr. 35). This system became operational approximately January 1, 1978.

However, as of March 1, 1978, there had been only two discharges from the system, which represent an accumulation of numerous small volumes over a period of time and do not necessarily represent capability of the system (Exh. A, p. 10). There is no evidence in the record of the oil and grease content of these discharges.

19. The system described in the preceding finding conforms to the EPA definition of BPCTCA for treatment of both produced water and deck drains (Exh. C, p. 17 and Attach. 6, 40 F.R. No. 179, September 15, 1975 at 42543 et seq.). Limitations for oil and grease for the Offshore Segment of the Oil and Gas Extraction Point Source Category have been established at not to exceed 48 mg/l 30-day average and not to exceed 72 mg/l for any one day (40 CFR Part 435). Mr. Max Ellis, an expert witness for ARCO, testified that treatability of concentrated and diluted forms of bilge water are not comparable to ballast water and that in his opinion bilge water most closely resembles deck drain effluent (from offshore drilling rigs) than any of the other subcategories identified to date (Exh. C, p. 15). He asserted that both bilge water and deck drains are relatively small volume, highly variable in composition and treatability, may contain fuels and lubricants and may contain miscellaneous "slops" and solids from housecleaning operations.

20. A parallel plate gravity separator manufactured by General Electric Company (by the same manufacturer and similar to the unit installed at Monti Bay) has been tested by the U.S. Navy Naval Ship Research and Development Center, Annapolis, Maryland (Navy Development of Suitable Shipboard Bilge Oil/Water Separators, Exh. 5, Attach. 2). - The unit reportedly produced an effluent that contained 15 ppm oil and grease or less 94% of the time and was always below 35 ppm. The report of these tests is undated, contains references to publications or reports dated 1977 and apparently was not published until the 1977 Oil Spill Conference in March of 1977 (Exh. D, p. 7). According to Mr. Smookler, an engineer, an employee of the U. S. Navy and an expert witness for EPA, this separator constitutes best practicable technology currently available for this application. Use of detergents for cleaning shipboard machinery and deck plates had to be controlled because the separator could not effectively break resulting chemical emulsions. Mr. Smookler, who was in charge of the cited test and a co-author of the report of the tests (Exh. 5, Attach. 2), asserted that the shipboard tests were developed to process actual wastes and disputed (Exh. 6, p. 6) Dr. Knecht's characterization of these tests as being performed by research personnel under controlled conditions (Exh. D, p. 7). However, Mr. Smookler's rebuttal testimony indicates that the waste stream consisted of fresh and salt-water contaminated with NDFO and TEP. These are

the same oils utilized in initial phases of the tests (finding 17) and it seems unlikely that oil in bilge water would necessarily be so limited. This would be especially true of diesel powered vessels because only steam powered ships would be likely to have TEP in bilge water. Bilge water contaminants described by Dr. Knecht include crankcase lubricants, solvents from tank cleaning, machinery sludge, fuel oil and lube oil residues, grit, scale and rust (Exh. D, p. 4).

21. The No. 1 pump on the oil/water separator system at Monti Bay is of the centrifugal type and is located ahead of the equalization tank (Tr. 40, 41; Exh. A, Attach. 7). This pump is not of the low shear type (Tr. 41). In general, oil is lighter in density or weight than water and the rate of rise of oil in water is dependent in part on the size of the droplets (Exh. C, pp. 2-8). The smaller the droplet or particle, the slower will be the rate of rise and vice versa. Much of the difficulty in separating oil from water is caused by emulsions (Exh. C, p. 4), and a high shear pump can cause tight mechanical emulsions and may reduce particulates (oily solids which are heavier than water) to a size which will reduce their rate of fall in water (Russell, Exh. 8, p. 3). Mr. Ellis conceded that in most instances the effectiveness of the system at Monti Bay would be improved if the oily waste was allowed to flow by gravity from the

equalization tank into the system rather than being pumped (Tr. 52). Mr. Smookler, identified in the preceding finding, testified that centrifugal pumps have generally been found to be unsatisfactory for use before a gravity separator and that the adverse effects of locating the pump before the separator can be substantially reduced by proper pump selection and reduction of flow through the system (Exh. 2, p. 6). He asserted that the most suitable pumps were positive displacement low-shear types such as diaphragm, progressive cavity screw type or rotary vane. See also Russell (Tr. 331).

22. Mr. Edward C. Russell, an employee of the U.S. Army Mobility Equipment Research and Development Command, Ft. Belvoir, Virginia, an engineer and expert witness for EPA, described the results of programs for the installation of oil/water separators on U. S. Coast Guard and on Army vessels (Exh. 7, pp. 1-3). Eleven oil/water separators manufactured by eight separate firms were evaluated. It was concluded that a three-stage system utilizing a filtration/coalescence process was the most appropriate and such equipment has been installed on over 200 Coast Guard and 13 Army vessels of seven different classes. Although the requirement they followed was simply no visible sheen in the wastewater, some tests were made and Mr. Russell estimated 15 ppm oil and grease in the effluent was achieved 98% of the time (Tr. 319). He stated that although equipment

suppliers were furnished results of the tests, reports of these tests were not published in scientific journals (Tr. 320). In later testimony, he indicated that the Coast Guard project officer wrote some papers based on the Army/Coast Guard tests which were published in late 1973 or early 1974 (Tr. 331). Filtration coalescence utilizes gravity separation and as the name implies, filtration to separate oil from water (Exh. C, p. 10; Exh. 1, Attach. 1). The filters are usually of the disposable, cartridge type. Filter coalescers are generally short life units that are very expensive in terms of filter replacement and required manpower. Used filters are not completely combustible and the necessity for their suitable disposal is an added cost (Tr. 340; Exh. C, p. 10). Filter coalescence systems failed shipboard technical evaluation by the U. S. Navy because oil removal and element set life requirements were not met (Exh. 5, Attach. 2).

23. Mr. Russell, identified in finding 22, described what he referred to as a "sludge barge," which was utilized to process and collect oily bilge water from assorted watercraft at Fort Eustace, Virginia (Exh. 7, p. 2). This barge was placed in operation in September 1975. The barge consisted essentially of four pontoons or tanks (each of 10,200 gallon capacity) mounted on a common deck, three of the tanks being interconnected with six-inch pipe so as to have a common liquid level. The fourth tank is independent of the other three and is used to store separated oil. A pilot model 100-GPM oil/water separator (three stages-one

prefilter, two coalescers) filter-coalescer type system with a two-inch, double diaphragm, air-operated supply pump was installed on the barge (Exh. 7, p. 3). The supply pump is connected about one-foot above the bottom of one of the three interconnected pontoons or tanks. Separated oil that accumulates at the top of the three sections is pumped to the oil storage tank. A small skimmer was placed in each of the receiving sections to remove free oil that separates by gravity. Mr. Russell asserted that a similar system was installed at the Army Reserve Activity, Curtis Bay, Maryland and that problems were essentially operational, i.e. attributable to necessity of training personnel and the use of detergent type cleaners in machinery spaces of the vessels (Tr. 324-27; Exh. 7, pp. 3-4). There is no evidence in the record that this experience was available to or relied upon by Mr. Lamoreaux at the time the permit was drafted.

24. No really good method exists for the determination of oil and grease because there is no universally agreed upon definition of oil and grease (Ellis, Exh. C, p. 20). Consequently, oil and grease is defined by the test method. The EPA approved test is liquid-liquid extraction with trichloro-trifluoroethane-[freon] gravimetric (Exh. D, p. 10; List of Approved Test Procedures, 40 CFR Part 136). This method lacks adequate precision because it requires accurate weighing to the fourth decimal place in distillation flasks weighing from 60 to 100 grams and weighing variations averaging ± 1.5 mg have been recorded (Exh. D,

Attach. 3). In addition, basic problems exist with the purity of freon and contamination during handling of extracts. An average freon blank can have a residue of 1.0 mg/100 ml. Studies of intralaboratory and interlaboratory test results of the freon extraction method shows an average deviation of 11.1 mg/l oil and grease with a standard deviation of 1.7 mg/l or $\pm 15\%$ (Exh. D, p. 11 and Attach. 4).

25. Mr. Russell pointed out deficiencies in the liquid/liquid extraction gravimetric test approved by EPA due to volatility of hydrocarbons (the test calls for evaporation or heating of a specified solvent, the residue being reported as oil and grease), an extraction efficiency well below 100% and sensitivity to operator technique. While he was of the opinion that the bias of the technique would favor ARCO because it would rather consistently measure less oil and grease than was actually present in the sample, he, nevertheless, stated that an effluent limit of 15 ppm ± 5 ppm would be fair because of testing variations (Exh. 7, p. 5; Tr. 397-98). Mr. Smookler testified that effluent oil concentrations are probabilistic in nature varying from zero to 100% and that additional variance is introduced by sampling, handling and analytical techniques (Exh. 5, p. 5). He asserted that an effluent sample in excess of 15 ppm was not proof of improper operation.
26. Oil and grease monitoring requirements in the permit require that a sample be taken and analyzed weekly unless poor weather

conditions caused cancellation of commercial air transportation to Anchorage. Most emulsions cannot be transported to the laboratory with any assurance that the sample has not changed in transit and results of analysis and treatment predictions based on shipped emulsion samples are usually questionable and often completely misleading (Ellis, Exh. C, p. 6).

27. EPA's refusal to place an upset provision and an expanded or liberalized bypass provision in the permit as requested by ARCO is due primarily to the belief that an equalization or holding tank was necessary for the treatment of sanitary wastes (repairs and maintenance could allegedly be accomplished while wastes were held in the tank), and that the bilge water treatment facility would only operate intermittently (Lamoreaux, Exh. 1, p. 8). As to sanitary wastes, Dr. Murphy testified that it was his practice to design a basin or holding tank which would accommodate approximately five days total flow (in this instance 50,000 gallons) so that if repair or maintenance was necessary, the waste could be processed when the facility was again operational (Exh. 3, p. 16). He asserted that such a pond would have to be lined with an impervious liner. Mr. Eggener admitted that Alyeska initially constructed lined holding ponds at nearly all of its facilities as part of a negotiated agreement with environmental monitoring agencies (Exh. F, p. 9). However, he stated that tears developed in the liners and they had to be repaired or replaced at least once over the three-year

duration of the project. He also stated that there were no similar sized municipal plants in Alaska where lined emergency holding ponds had been installed and that in his opinion such ponds were not part of BPCTCA.

28. A system, such as the Met-Pro plant for treating sanitary wastes, made up of a number of vessels, pumps, blowers, valves, mixers, and gear cases will inevitably fail either totally or partially (Clark, Exh. B, p. 14). The Met-Pro packing list (Exh. B, Attach. 2) indicates that the system contains ten pumps, seven mixers, three blowers, one clarifier drive assembly, one pH controller, 14 valves and one control panel which are susceptible to breakdowns (Exh. B, p. 14). Excerpts from operating records of the system, chiefly covering the period March through August 1977, are attached to Mr. Clark's testimony (Attach. 3). These excerpts show numerous operational difficulties, breakdowns and malfunctions. ARCO stocks extensive spare parts, however, there were 17 instances over a four-month period when breakdowns would have caused bypass if the equalization or surge tank capacity had been exceeded (Clark, Exh. B, pp. 14, 16). While he agreed that IPC plants required more operator attention than biological treatment systems, Dr. Murphy did not regard the time the plant was out of operation as unusual and stated it was a typical shakedown period which would be expected with any mechanical plant (Exh. 4, p. 9).

29. Uncontrollable changes in composition of bilge waters received will create treating problems with any treatment system. The more complex a system becomes or the more precise the operating conditions required to be maintained, the more likely that upsets or malfunctions will occur. The probability of such occurrences is increased by sub-Arctic climatic conditions, remote locations, limited personnel and lack of direct control by the terminal operator over the workboats and their discharges (Ellis, Exh. C, p. 18). Mr. Smookler was of the opinion that it was unrealistic to expect that the 15 ppm limit for oil and grease would be achieved 100% of the time and that an appropriate upset clause should be included in the permit (Tr. 309, Exh. 5, p. 6).

Conclusions

1. As long as processing of sanitary wastes at Monti Bay Terminal is limited to wastes generated at Monti Bay and does not include wastes from workboats, the permit limits for BOD are unchanged. Acceptance of ARCO's request for the BOD permit limit or 85% removal at ARCO's option would allow a substantial increase over effluent results being achieved to date and would require continuous monitoring of the influent. A BOD effluent limitation for wastes including those from workboats of

85% removal of an anticipated influent loading of 500 mg/l or 75 mg/l monthly average is reasonable and the permit is modified to reflect such a limit.

2. Fecal coliform limitation and monitoring requirements in the permit are deleted.
3. Oil and grease limitations in the permit are established as not to exceed 48 mg/l 30-day average and not to exceed 72 mg/l for any one day.
4. The monitoring requirement for oil and grease in the permit (weekly) is unchanged. However, the exemption or proviso to the effect that samples must be taken and analyzed unless poor weather conditions cancel commercial air transportation to Anchorage is changed by the addition of the words "or other" between weather and conditions.
5. There is a lack of precision or reproducibility in EPA approved tests, i.e., significant variations in inter- and intra-laboratory results on identical samples, for BOD and oil and grease.
6. The permit is modified to include an upset clause providing as follows:

(m)(1) An upset is an exceptional incident in which there is temporary noncompliance with permit effluent limitations because of factors beyond the reasonable control of the permittee. Noncompliance shall not constitute an upset to the extent caused by improperly designed or inadequate treatment facilities, poor maintenance, or careless or improper operation.

(2) An upset may constitute an affirmative defense to an action brought for noncompliance

with permit effluent limitations if the permittee demonstrates through properly signed, contemporaneous operating logs, or other relevant evidence:

(i) That an upset occurred and the specific cause(s) of the upset;

(ii) That the permittee facility was at the time being operated in a prudent and workmanlike manner and in compliance with applicable operation and maintenance procedures;

(iii) That the permittee submitted information in accordance with Par. A.2, page 6, of the permit; and

(iv) That any remedial measures required under Par. A.2, page 6, of the permit have been complied with.

(3) In any enforcement proceeding the permittee seeking to establish the occurrence of an upset shall have the burden of proof.

7. Paragraph A.5 entitled "Bypassing" on page 5 of the permit is modified to include a third proviso as follows "(iii) where there are no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime."
8. All other terms and conditions of the permit are unchanged.

Discussion

In accordance with Sec. 402(a)(1) of the Clean Water Act (33 U.S.C. 1342) permits, in the absence of Section 304 guidelines, are to contain "such conditions as the Administrator determines are

necessary to carry out the provisions of this Act." This has been interpreted as requiring "professional" judgment (Decision of the Administrator, Marathon Oil Company, et al., NPDES Appeal No. 75-1 (September 25, 1975)), sometimes referred to as "best engineering" judgment.

Under the rules of practice governing this proceeding, the burden of proof and the burden of going forward with the evidence is on ARCO as the requestor (40 CFR 125.36(i)(1)). As indicated in the findings and conclusions, ARCO has met its burden in several respects and fallen short in others.

The basic issues in this case present a classic battle of the experts with the qualifications of the experts on both sides being impressive and not seriously questioned. However, in the case of sanitary wastes my reasons for not fully crediting the testimony of EPA's expert witness are set forth in the findings or explained below and in the case of oil and grease, the results attested by EPA witnesses are not directly comparable for reasons stated in the findings. A thread running through EPA's case, including its proposed findings and conclusions, is that neither the sanitary nor the bilge water treatment facility has been operated at capacity to date and ARCO has not shown that capacity operations are imminent. This concern has been addressed by leaving the BOD effluent limitation in the permit unchanged as long as the sanitary waste facility does

not process wastes from workboats.^{2/} The Administrator made it clear in Marathon Oil Company, supra, that the mere fact that permittees in that case were not presently discharging produced water offshore was not a proper basis for declining to establish permit limitations for such discharges. The same rationale applies here and the fact that the Monti Bay facility is not or was not at the date of the hearing operating at capacity is not a basis for either failing to set applicable permit limitations or for attempting to impose unrealistically low limitations.

Dr. Murphy's experience and educational qualifications in the field of sanitary wastewater treatment are such as to make his qualification as an expert in that field beyond question. However, having left Alaska in January of 1975, he appears to have exaggerated the extent of his involvement in wastewater treatment for Alyeska Pipeline Service Company as pointed out by Mr. Eggener who was formerly employed by Alyeska.^{3/} Moreover, Dr. Murphy's testimony as to results achieved by Alyeska camp facilities is based in part on a paper presented by Mr. Eggener at the 50th Annual Conference of the

^{2/} See, e.g., United States Steel Corp. v. Train, 556 F.2d 882, 10 ERC 1001 (7th Cir., 1977) (guideline limits not appropriate where facility has in fact consistently achieved lower limits).

^{3/} Although he was not employed by Alyeska until July of 1975, Mr. Eggener administered the Dames & Moore contract with Alyeska referred by Dr. Murphy (Dr. Murphy was employed by or associated with Dames & Moore at the time) and is therefore considered to be familiar with the extent of Dames & Moore's and Dr. Murphy's involvement in the Alyeska wastewater treatment program.

Water Pollution Control Federation in Philadelphia in October of 1977. A summary of what appears to be the same or similar data is in the record (Exh. 13). It is unlikely that Dr. Murphy is more familiar with this data than Mr. Eggener who testified that because data were statistically distributed there were many months when the average for all plants and the monthly average for individual plants exceeded 30 mg/l (see finding 9). Mr. Eggener asserted that such averages should be used with great caution because, inter alia, they represent mathematical treatment of highly variable results based on imprecise analytical techniques and procedures (see finding 13).

More fundamentally, however, Dr. Murphy's testimony as to anticipated influent loadings at Monti Bay is contradictory and not entirely credible as related to wastes from workboats. As indicated (finding 6), he recognized in direct testimony that wastes from workboats would have a higher strength than those generated to date at Monti Bay. Nevertheless, in rebuttal testimony he asserted that wastes generated at Monti Bay were in the high range of expected values, comparing Monti Bay Terminal to an office building because it did not appear that the Terminal contained live-in facilities. He maintained that the concentrations from workboats would not significantly change this even though he admitted that the concentration might change based on facilities on individual boats and whether disinfecting chemicals were added to the wastes. He conceded that such chemicals could contribute to high BOD and/or COD (chemical oxygen demand) values.

The record is sparse as to the size of the boats and the facilities on workboats, the number of personnel on board, etc. This is probably because such activities were not in progress at the date of the hearing. It does appear that such boats contain live-in facilities and under such circumstances the BOD influent loading of 500 mg/l applicable to a camp situation, which Mr. Eggener also regarded as reasonable for the Monti Bay facility, has been accepted.

Counsel for EPA relies on data from Alyeska Pipeline Service Company's Prospect Camp (finding 10) as representing average exemplary performance of BPCTCA. As pointed out in the findings, this data is simply too limited to be considered representative.

Counsel for EPA argues that because a POTW must meet the secondary treatment requirements, and 85% removal irrespective of its size and irrespective of the strength of the influent there is no unfairness in requiring ARCO to meet the same requirement. This argument ignores the fact that secondary treatment requirements are merely guidance that may be considered along with other information in determining permit limitations for private wastewater treatment facilities in the absence of effluent limitation guidelines. Moreover, the Secondary Treatment Information recognizes that there, may be cases, i.e., combined flows, in which the percentage removal requirement may not be met due to wet weather (40 CFR 133.103(a)) and that there may be instances of industrial discharges into a POTW when upward adjustments in BOD and SS effluent limitations may be appropriate (40 CFR 133.103(b)). One

of the conditions for this adjustment to be applicable is that BPCTCA be met as if the industrial discharge was directly to navigable waters. See also the less stringent SS limitations (40 CFR 133.103(c), 42 F.R. No. 195 at 54664-666, October 7, 1977) applicable to wastewater treatment ponds where total flows are two million gallons a day or less.

Fecal coliform limits in the permit were apparently imposed based on the understanding that such limits were required by Alaska Water Quality Standards applicable to water contact recreation. Although there is no evidence or allegation of a Sec. 401 certification from the State of Alaska, it has been held that EPA has an independent obligation pursuant to Sec. 301(b)(1)(C) of the Act to incorporate into permits limitations necessary to meet standards established pursuant to state law or regulation (Decisions of General Counsel Nos. 44 and 59, June 22, 1976 and April 7, 1977). The question of what limits are necessary to meet the state standards is a factual issue appropriate for resolution in an adjudicatory hearing (General Counsel Decision No. 65, October 4, 1977). The only evidence of water contact recreation in the record is the hearsay testimony of Mr. Lamoreaux that he was so informed by the Clerk of the City of Yakutat and the statement of Mr. Ted Valley, ARCO's plant operator at Monti Bay who had been a resident of Yakutat for 35 years, that he had observed people swimming or playing in or near Monti Bay 15 or 20 years ago (Tr. 106, 115-16). He estimated the water temperature at 40° to 42°, which closely corresponds with the temperature of 40°F

summer and winter stated in the permit application for untreated intake water (Exh. 9). Such temperatures make it unlikely that even occasional water contact recreation would take place. In view thereof and in view of the fact that EPA has proposed deleting at their request fecal coliform limits in permits for the Cities of Petersburg and Skagway, whose waters have identical Alaska water quality classifications as Monti Bay, it is concluded that the fecal coliform limitation in the instant permit should be deleted.

Although the chlorine residual monitoring requirement in the permit would seem to be closely related to fecal coliform limits, ARCO has not specifically requested the deletion of that requirement. Accordingly, the permit in this respect is unchanged.

As indicated (finding 16), permit limits for oil and grease are apparently based on permits issued to the Coast Guard for primarily bilge water discharges and SOCAL's experience with ballast water treatment and discharges at Valdez, Alaska. Under cross-examination, Mr. Lamoreaux merely assumed the Coast Guard permits were issued (Tr. 194) and it is considered significant that neither the Coast Guard permits nor DMR(s) showing compliance were produced.^{4/} Although, unlike the matters of Alyeska camp facilities and the Coast Guard permits, he personally reviewed DMR(s) from SOCAL's Valdez facility, Mr. Lamoreaux conceded that there would be variations in oil and solids concentrations between bilge and ballast water (finding 17). See also the testimony of ARCO's expert witness, Mr. Ellis, referred to in finding 19.

^{4/} EPA counsel's attention to detail was obvious at the hearing and it seems unlikely these documents would not have been produced had they clearly supported the permit limits.

Although Mr. Smookler and Mr. Russell were of the opinion that the permit limits for oil and grease were attainable, the tests reported by Mr. Smookler were limited to two types of oil (NDFO and TEP) and use of detergents was controlled. Bilge water contaminants are not normally so limited (finding 17 and 20). It appears that effluent limits for oil and grease reported by Mr. Russell are based more on estimates (finding 22) than on results of identical tests (he indicated varying test methods were used, Tr. 323) and consistently tabulated. Oil and grease is determined by the test method (finding 24).

ARCO's bilge water treatment system installed at Monti Bay conforms to BPCTCA for treatment of produced water and deck drains (finding 19). Permit limits for oil and grease have been established at the limits for deck drains applicable to the Offshore Segment of the Oil and Gas Extraction Point Source Category (40 CFR Part 435) based on Mr. Ellis' testimony that treatability of bilge water most closely resembles deck drain effluent. While it is true that size and weight restraints are not normally inhibiting factors on shoreside installations to the extent they would be on vessels or offshore drilling rigs, the explanatory document accompanying the interim final guidelines for the cited category (40 F.R. No. 779, September 15, 1975, 42543 et seq.) states at 42548 that a statistical comparison was made between a total of 27 facilities (including onshore and offshore) and that eight of the 10 best facilities were offshore.

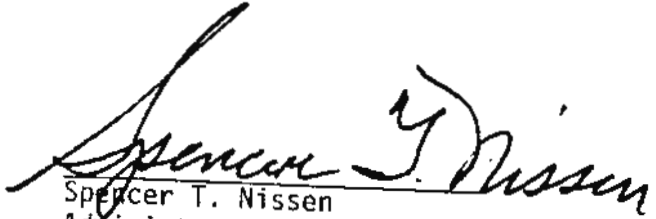
Because oil and grease limits in the permit have been established at not to exceed 48 mg/l 30-day average and not to exceed 72 mg/l for any one day, it is considered reasonable to leave the oil and grease monitoring requirement as weekly as stated in the permit. In any event, ARCO has not presented any persuasive or substantial evidence that the permit monitoring requirement is unreasonable.

The remaining issues concern upset and bypass. The record indicates the sanitary and bilge water treatment systems at Monti Bay are mechanical and that either partial or total failures have been experienced and may be expected. The holding basin described by Dr. Murphy (finding 27) for sanitary wastes fails to consider odor and aesthetic problems. Uncontrollable and unexpected changes in bilge water may occur (finding 29). EPA's own witness, Mr. Smookler, indicated that it was unrealistic to expect permit limits for oil and grease to be met 100% of the time and that an appropriate upset clause should be included. In view of this state of the record and EPA's acquiescence in Marathon Oil Company v. EPA, 564 F.2d 1253 (9th Cir., 1977), upset and bypass provisions in the proposed revisions to the NPDES regulations (43 F.R. No. 162, August 21, 1978 at 37078 et seq.) are included in the permit.

Conclusion

In accordance with 40 CFR 125.36(1)(4), this initial decision shall become the final decision of EPA unless appealed to or reviewed by the Administrator on his motion within the 10-day period therein provided.

Dated this 20th day of September 1978.


Spencer T. Nissen
Administrative Law Judge

CERTIFICATION

I certify that the original plus two copies were mailed, regular mail, to the Region X Hearing Clerk, and a copy was mailed certified to William J. Bonner and John Y. Hohn, and also a copy was hand delivered to the Judicial Officer at EPA Headquarters on September 20, 1978.

Helen F. Handon
Helen F. Handon
Secretary