

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

100 CALIFORNIA STREET
SAN FRANCISCO, CALIFORNIA 94111

File PEA 4-4-9

LA 76-5

Paktank Pacific Company
500 E. Carson Plaza Drive, Suite 221
Carson CA 90746

Attention: Melvin B. Yates
General Manager

Dear Mr. Yates:

Enclosed is the Ambient Air Quality Impact Report for Paktank Pacific Company's proposed construction of an 8.62 million barrel petroleum and petroleum product storage terminal and related facilities on Terminal Island, Los Angeles Harbor, Los Angeles, California.]

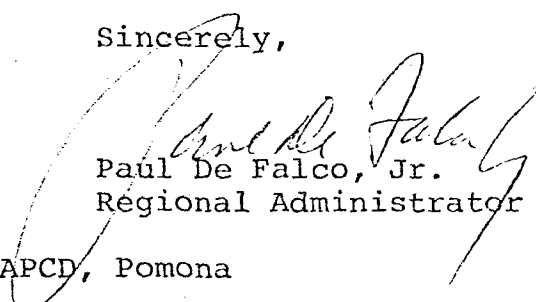
On the basis of information submitted by Paktank Pacific Company and the current air quality in the Metropolitan Los Angeles Air Quality Control Region, EPA has tentatively determined that the proposed project is a significant source of hydrocarbon (HC) emissions and will result in an interference with the attainment of the National Ambient Air Quality Standard for photochemical oxidants in the Metropolitan Los Angeles Air Quality Control Region. EPA, therefore, intends to deny approval for this project as proposed.

A copy of the Impact Report is available for public inspection at the EPA Regional Office, 100 California Street, San Francisco; EPA Region IX Contact Office, 300 North Los Angeles Street, Room 2032, Los Angeles; and the Southern California APCD, 350 West Mission Boulevard, Pomona.

A public notice in the local newspapers will announce this project, EPA's proposed action, and the above mentioned locations where the Ambient Air Quality Impact Report is available. Comments on this proposed action may be submitted to the EPA San Francisco Regional Office, ATTN: Air Programs Branch, for a period of thirty (30) days following the date of this public notice. Unless substantive new information is forthcoming, a final decision on the proposed action will be made within 30 days from the close of the public comment period. Should we find a significant degree of public controversy with respect to the proposed action, EPA may hold a public hearing.

Should you have any questions concerning this matter, please contact Mr. Frank Covington, Director of the Air & Hazardous Materials Division at (415)556-0217.

Sincerely,



Paul De Falco, Jr.
Regional Administrator

cc: Southern California APCD, Pomona
Attn: Jeb Stuart
California Air Resources Board, Sacramento
Attn: William Lewis
EPA Region IX Contact Office, Los Angeles
South Coast Regional Commission, CZC, Long Beach

AMBIENT AIR QUALITY IMPACT REPORT

I. Applicant

Paktank Pacific Company
500 E. Carson Plaza Drive, Suite 221
Carson, California 90746

II. Project Location

This project is proposed to be located on Terminal Island, Los Angeles Harbor, Los Angeles, California. The proposed site has an area of 80 acres and is currently part of Reeves Field, an abandoned Naval Air Station.

III. Project Description

Paktank Pacific Company is proposing to construct a bulk storage terminal for petroleum and petroleum products. The project consists of 49 storage tanks with a total capacity of 8.62 million barrels, associated equipment (including two boilers) on the storage facility site, modifications to a berthing facility, and new pipelines from the berthing facility to the tankage area. The storage tanks can be further described as indicated in Table I.

TABLE I
PROPOSED STORAGE TANKS

Product Stored	Type of Tank	Number of Tanks	Tank Dimensions Diameter(ft) Height(ft)		Tank Volume (BBLs)	Total Volume(BBLs)
Gasoline	Floating Roof	6	106	64	100,000	600,000
"	"	2	168	64	250,000	500,000
<u>Subtotal</u>		<u>8</u>				<u>1,100,000</u>
Crude Oil	Floating Roof	4	206	64	380,000	1,520,000
"	"	4	246	64	500,000	2,000,000
<u>Subtotal</u>		<u>8</u>				<u>3,520,000</u>
No. 6 Fuel Oil	Cone Roof	6	168	64	250,000	1,500,000
"	"	4	184	64	300,000	1,200,000
<u>Subtotal</u>		<u>10</u>				<u>2,700,000</u>
No. 2 Fuel Oil	Cone Roof	2	142	64	180,000	360,000
"	"	4	95	64	80,000	320,000
"	"	8	67	64	40,000	320,000
<u>Subtotal</u>		<u>14</u>				<u>1,000,000</u>
Turbine Fuel	Cone Roof	1	106	64	100,000	100,000
<u>Chemicals</u>	Cone Roof	<u>8</u>	60	48	25,000	<u>200,000</u>
TOTAL		49				8,620,000

IV. Expected Emissions from the Project

A. Hydrocarbons (HC)

The principal air contaminants from the proposed facility are evaporative losses of hydrocarbons from the storage tanks. Based on information submitted by Paktank Pacific Company (via their application, the project draft EIR and air quality assessment, and supplemental information requested by EPA) emissions of HC from the storage tanks at the facility (as proposed) have been computed. Table II below summarizes those calculations.

TABLE II

COMPUTED TOTAL HYDROCARBON EMISSIONS FROM THE STORAGE TANKS

Product Stored	Number of Tanks	Total Computed Emissions (tons/yr)
Gasoline	8	164.2
Crude Oil	8	115.3
No. 6 Fuel Oil	10	3.6
No. 2 Fuel Oil and Turbine Fuel	15	22.0
Chemicals	8	negligible
TOTAL	49	305.1

These emissions were estimated utilizing EPA Document No. AP-421 and the data submitted by Paktank Pacific. The equations in AP-42 are quite sensitive to the vapor pressure values used. For this project, this sensitivity is of particular importance in the emission calculations for the No. 2 and No. 6 fuel oil storage tanks. No actual data was available for the types of fuel oil and storage temperatures expected for the proposed facility. Estimates of the vapor pressure parameters were made using the API Technical Data Book based upon the average characteristics of similar materials. Thus, the emissions could be somewhat greater or lesser depending on the actual properties of the material stored.

B. Other Emissions

Under the New Source Review regulations (40 CFR 52.233), EPA must review proposed construction and modification projects for their effect on the attainment or maintenance of the National Ambient Air Quality Standards (see Section VI-A following). For the Paktank Pacific project, emissions of criteria pollutants from sources other than the storage tanks result from two boilers to be used to heat the high viscosity fuel oils. These boilers will be fired by No. 2 fuel oil (or natural gas if available). Design load emissions and operating emissions (approximately 60% of design emissions) are summarized in Table III below:

TABLE III
CALCULATED EMISSIONS
FROM THE PROPOSED BOILERS (TON/YEAR)

	NO _x	SO ₂	Particulates	Total HC	CO
Design load emissions	48.7	38.2	14.0	1.8	2.4
Operating emissions	29.2	22.9	8.4	1.1	1.4

V. Meteorology

The Metropolitan Los Angeles Air Quality Control Region has a "mediterranean" climate, with long, hot, dry summers and short, cool, mild winters. The coastal sections of the AQCR have generally more moderate temperatures than the inland portions due to the direct influences of the maritime climate (particularly the ocean onshore breezes).

Among those meteorological factors which influence air quality are the following: wind speed and direction, amount of sunlight available, and thermal stability. Wind speeds in the Los Angeles area are generally low (1974 annual average of 5.4 mph) with little seasonal variability. The typical daily wind pattern is a morning sea breeze and a night-time land breeze. The annual percentage of possible sunshine is usually over 70% (72% in 1974).

In addition, the Los Angeles area is subject to almost daily thermal inversions. These occur in the morning hours approximately 90% of the time. The overall average of surface inversions is eleven (11) days per month; higher inversions, but less than 2500 feet above sea level, occur on the average of 22 days per month. These inversions, combined with low wind speeds and the geographical features surrounding the Los Angeles area, limit the vertical and horizontal dispersion of air pollutants and make the AQCR particularly prone to high level air pollutant concentrations.

VI. Current Air Quality Considerations

A. Ambient Air Quality

In 1971 the Environmental Protection Agency (EPA) established the National Ambient Air Quality Standards (NAAQS)² to safeguard the health and welfare of the people of the United States. Two levels of standards were developed: a) primary ambient air quality standards are those which, based on air quality criteria and allowing an adequate margin of safety, are requisite to protect the public health, and b) secondary standards are those which, based on air quality criteria, are requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of air pollutants in the ambient air. The National Ambient Air Quality Standards are listed in Table IV.

TABLE IV

NATIONAL AMBIENT AIR QUALITY STANDARDS²

<u>Contaminant</u>	<u>Primary</u>	<u>Secondary</u>
Sulfur Oxides (SO _x):	80 ug/m ³ (0.03 ppm) annual arithmetic mean; and 365 ug/m ³ (0.14 ppm) 24 hr concentration*	1,300 ug/m ³ (0.5 ppm) 3 hr concentration*
Particulate Matter:	75 ug/m ³ annual geo- metric mean; and 260 ug/m ³ 24 hr concentration*	60 ug/m ³ annual geo- metric mean; and 150 ug/m ³ 24 hr concentration*
Carbon Monoxide (CO):	10 mg/m ³ (9 ppm) max 8 hr concentration*; and 40 mg/m ³ (35 ppm) max 1 hr concentration*	Same Same
Oxidants (Ox):	160 ug/m ³ (0.08 ppm) max 1 hr concentration*	Same
Hydrocarbons (HC): (Non-Methane)	160 ug/m ³ (0.24 ppm) max 3 hr (6 to 9 AM) concentration*	Same
Nitrogen Dioxide (NO ₂):	100 ug/m ³ (0.05 ppm) annual arithmetic mean	Same

*Maximum value not to be exceeded more than once per year

Note: The hydrocarbons standard is for use as a guide in developing implementation plans to achieve oxidant standards.

As indicated in the 1974 Annual Report³ of the Los Angeles County Air Pollution Control District (currently the Southern California APCD, Los Angeles Zone) and supported by California Air Resources Board data, Los Angeles County is not currently meeting the NAAQS for any pollutant except sulfur oxides (SO_x). As summarized in Table V, the number of days each year on which the NAAQS for oxidants and hydrocarbons were exceeded remained relatively constant over the last three years.

TABLE V

DAYS ON WHICH THE NAAQS FOR OXIDANT AND HYDROCARBONS WERE EXCEEDED (BY YEAR) IN LOS ANGELES COUNTY

<u>Pollutant</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
Oxidant	226	196	237
Non-Methane Hydrocarbons*	364	362	355

*The hydrocarbons standard is for use as a guide in developing an SIP to achieve the oxidant standard.

For the criteria pollutants carbon monoxide (CO), nitrogen dioxide (NO_2), and particulate matter, similar but less extensive patterns exist for days exceeding the NAAQS in Los Angeles County.

In summary, then, Los Angeles County can be characterized as having extreme difficulty in attaining the NAAQS for the criteria pollutants mentioned above. Of particular concern is the oxidant standard because, as will be discussed further in Section VII, HC and NO_x emissions are precursors to the formation of photochemical oxidants.

B. Current Emissions in Los Angeles County

The Southern California APCD, Los Angeles Zone, in their 1974 Annual Report³ summarized emissions of air pollutants in Los Angeles County. In order to demonstrate the magnitude of the current emissions and air quality problems, the data is further summarized in Table VI below (also included is a summary of emissions from the proposed Paktank Pacific project).

TABLE VI

1974 EMISSIONS IN LOS ANGELES COUNTY (TON/YR)

Source Category	Total HC	NO _x	Particulates	SO ₂	CO
Petroleum Related Industry	71,200	10,900	1,800	29,200	*
Other Stationary Sources	135,000	84,000	18,200	54,800	1,800
Total Stationary Sources	206,200	94,900	20,000	84,000	1,800
Gasoline Powered Vehicles	290,000	248,100	12,800	10,900	2,258,000
Other Transportation Sources	12,800	21,800	9,100	5,500	73,000
Total Transportation Sources	302,800	269,900	21,900	16,400	2,331,000
Total	509,000	364,800	41,900	100,400	2,332,800

*No value given in report referenced.

Paktank Pacific Project					
Storage Tanks	305.1	--	--	--	--
Boilers	<u>1.8</u>	<u>48.7</u>	<u>14.0</u>	<u>38.2</u>	<u>2.4</u>
Total	306.9	48.7	14.0	38.2	2.4

Although the projected emissions from the Paktank Pacific project seem relatively small compared to the total emissions in Los Angeles County, it must be remembered that ambient air concentrations of these pollutants (as well as photochemical oxidants) greatly exceed the NAAQS. The Paktank Pacific project, as proposed, is a major stationary source of criteria pollutants (particularly hydrocarbon emissions) and would be expected to have adverse local and region-wide ambient air quality effects.

C. Allowable Emissions of Non-Methane Hydrocarbons and Nitrogen Oxides

Based on information obtained from the California Air Resources Board⁴ regarding emissions inventories and ambient air quality measurements for 1973 in the Metropolitan Los Angeles AQCR and Los Angeles County and using a simple roll-back model, allowable emissions of non-methane hydrocarbons and nitrogen oxides have been estimated for these two geographical areas. This information has been developed (and summarized below) in order to demonstrate the magnitude of the current problem and the difficulty of obtaining the NAAQS for these pollutants.

Emissions (ton/year)

	Total Hydrocarbons	Non-Methane Hydrocarbons	Nitrogen Oxides
Metropolitan Los Angeles AQCR			
1973 Emission Inventory	662,800	626,700	525,600
Allowable Emissions	---	100,400	355,100
Los Angeles County			
(Portion in Met LA AQCR)			
1973 Emissions Inventory	475,600	455,900	361,300
Allowable Emissions	---	73,000	244,200

Therefore, it is apparent that, in order to attain the NAAQS for the respective criteria pollutants above, extensive reductions in pollutant emissions must be made. These desired emissions levels can only be obtained by both reducing emissions from existing sources and limiting new emissions.

VII. Impact of the Project on Ambient Air Quality

As is well known and documented, reactive hydrocarbons and nitrogen oxides emitted to the atmosphere, in the presence of sunlight, undergo a chemical reaction to form photochemical oxidants. This end product is the result of a very complex series of reactions and is generally referred to as "smog." Based on the information summarized in the preceding sections of this report, EPA concludes that increases in hydrocarbon emissions in the Los Angeles area (particularly of the magnitude proposed by Paktank Pacific Company) will have a direct adverse impact on the attainment of the National Ambient Air Quality Standard for oxidant in the Metropolitan Los Angeles AQCR.

Also of concern to EPA is the cumulative impact on air quality of all new proposed petroleum industry related development in the Los Angeles Harbor/Long Beach Harbor area. This development is expected to include at least eleven large projects (primarily petroleum product storage facilities) in addition to the Paktank Pacific project. This review included considerations of the air quality impacts of the total expected development. In addition, it should be noted that each of the projects individually is subject to the New Source Review regulations and cumulative impacts on air quality, both locally and regionally, will be considered in future analyses.

VIII. Alternatives Considered

During the evaluation of the Paktank Pacific project for this report, several alternative actions were considered for their effect on ambient air quality and/or on reducing emissions from the project. The following is a summary of the alternatives which were considered:

A. The "No Project" Alternative.

The primary advantage of this alternative is the prevention of a significant stationary source of hydrocarbon emissions in the Los Angeles Harbor area and the resultant negative effects on the ambient air quality in the Metropolitan Los Angeles AQCR. The probable resultant of the "No Project" alternative would be either: a) the future construction of a similar large scale facility in some other area (see Section VIII - B below) or b) the possible construction of smaller storage facilities in a more dispersed pattern, probably at sites where the product being stored would be used as fuel. Because large storage tanks are generally more efficient than smaller tanks in terms of controlling evaporative hydrocarbon emissions, centralized storage may be a preferred alternative over dispersed smaller tank storage.

In the case of the Paktank Pacific project, as proposed, if it is assumed that the entire 8.62 million barrels of storage capacity would be needed in the Metropolitan Los Angeles AQCR and (in the absence of the Paktank Pacific project) would be made up entirely of smaller tanks than those proposed by Paktank Pacific, hydrocarbon emissions would probably be greater with the smaller tanks assuming current state-of-the-art control technology. EPA questions both these assumptions for the following reasons: a) only 3.7 million of the proposed 8.62 million barrels of storage are proposed for fuel oil storage (the most likely product requiring on site storage), b) on site storage at the larger customers might be of a similar tank size to that proposed by Paktank Pacific, and c) hydrocarbon emissions from fuel oil storage are much less than those for crude oil and gasoline storage.

In any event, any new construction of petroleum and petroleum product storage facilities would also come under the New Source Review program and would undergo a review similar to EPA's analysis of the proposed Paktank Pacific project.

B. Alternative Sites.

This alternative, from an air quality point of view, can be divided into two categories: 1) alternate sites within the Metropolitan Los Angeles AQCR and 2) alternate sites outside of the AQCR. In the first case, it seems likely that our conclusions regarding the effect on ambient air quality would be the same due to the likely input of similar factors for size of source, emissions from the source, and existing ambient air quality. In the second, an entirely new review would be required in order to make a determination regarding the effects of the proposed project using existing air quality in the new site AQCR as an input.

The preceding discussion of alternative sites has not dealt with other factors such as need for the project, economic considerations, transportation availability, nearness to sources of product, etc.

C. Alternative Emission Control Technology

As indicated in Table I, the Paktank Pacific project is a mix of fixed roof and floating roof tanks. The possibility of requiring alternative storage technology was reviewed. Specific considerations were: 1) requiring floating roof technology for all storage tanks and 2) requiring the use of a facility-wide vapor recovery system. The computed emissions from the project as proposed by Paktank Pacific and estimated emissions (using AP-42 and data submitted by Paktank Pacific) resulting from the two alternative schemes are compared in Table VII below:

TABLE VII

ESTIMATED TOTAL HC EMISSIONS FROM ALTERNATIVE STORAGE TANK TECHNOLOGIES (TON/YEAR)*

Product Stored	Number of Tanks	Paktank Pacific Co. Project as Proposed	Utilizing Floating Roofs on all Tanks	Utilizing Vapor Recovery Exclusively (95% efficiency assumed)
Gasoline	8	164.2	164.2	118.5
Crude Oil	8	115.3	115.3	91.2
No. 6 Fuel Oil	10	3.6	0.3	0.2
No. 2 Fuel Oil and Turbine Fuel	15	22.0	1.9	1.1
Chemicals	<u>8</u>	<u>--</u>	<u>--</u>	<u>--</u>
Total	49	305.1	281.7	211.0

*These estimates do not include emissions from the proposed on-site boilers

The disadvantages of using floating roof storage tanks for the fuel oil tanks include added cost and operating problems involved with using a floating roof tank for a high viscosity material which will be stored at an elevated temperature in an insulated tank. Vapor recovery systems have the following disadvantages: high first cost plus much greater operating costs, natural gas blanketing requires material with limited availability, potential fire hazards, and equipment operation problems.

However, the crucial item is that even with the best case above, the hydrocarbon emissions are still in excess of 200 tons/year and the facility would still be a significant source of HC emissions. In addition, modifying the storage technology does not reduce emissions of the other criteria pollutants from the facility boilers.

IX. Conclusions and Proposed Action

Based on the information submitted by Paktank Pacific Company and that developed by EPA (as discussed above), EPA concludes that construction of the Paktank Pacific Company storage terminal as proposed would result in significant emissions of criteria pollutants (particularly hydrocarbons) and would interfere in the attainment of the National Ambient Air Quality Standard for oxidants in the Metropolitan Los Angeles AQCR. Therefore, the Environmental Protection Agency intends to deny the application of Paktank Pacific Company for an Authority to Construct under EPA's authority as promulgated in 40 CFR 52.233(g).

References

1. Compilation of Air Pollutant Emission Factors, AP-42, Second Edition, U.S. Environmental Protection Agency, April, 1973.
2. Federal Register, Vol. 36, Number 84, April 30, 1971 (40 CFR 50).
3. Air Quality and Meteorology, 1974 Annual Report, County of Los Angeles Air Pollution Control District, 1974.
4. California Air Resources Board, personal communications with California ARB staff members, on 11/18/75 and 11/19/75.
5. Draft Environmental Impact Report, Paktank Pacific Company, Oil Storage Terminal Island, Los Angeles Harbor.