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STATE OF FLORIDA

## DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTHEAST FLORIDA  
DISTRICT3301 GUN CLUB ROAD  
P.O. BOX 3858  
WEST PALM BEACH, FLORIDA 33402

0110059

Dept. of Environmental Reg.  
West Palm BeachBOB GRAHAM  
GOVERNORVICTORIA J. TSCHINKEL  
SECRETARYROY DUKE  
DISTRICT MANAGER

## APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Six (6) petroleum storage tanks ☒ New<sup>1</sup> ☐ Existing<sup>1</sup>APPLICATION TYPE: ☒ Construction ☐ Operation ☐ ModificationCOMPANY NAME: Mobil Oil Corporation COUNTY: BrowardIdentify the specific emission point source(s) addressed in this application (i.e. Lime  
Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) See Table 1SOURCE LOCATION: Street Spangler Boulevard City Port EvergladesZone 17 UTM: East 588.2 km North 2885.5 kmLatitude 26 ° 05 ' 12 "N Longitude 80 ° 07 ' 52 "WAPPLICANT NAME AND TITLE: Mobil Oil CorporationAPPLICANT ADDRESS: P. O. Box 839, Valley Forge, PA 19482

## SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

## A. APPLICANT

I am the undersigned owner or authorized representative\* of Mobil Oil Corporation

I certify that the statements made in this application for a construction permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

\*Attach letter of authorization

Signed: E.J. Stump

E.J. Stump, Manager, Light Product Operations

Name and Title (Please Type)

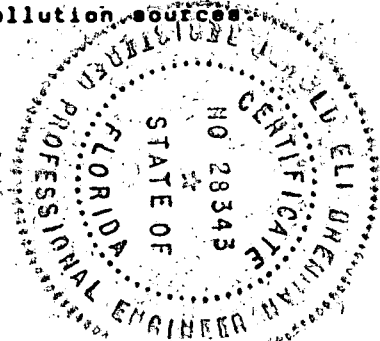
Date: 12/6/85 Telephone No. (215) 293-4220

## B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

<sup>1</sup> See Florida Administrative Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.



Signed \_\_\_\_\_  
J. E. Brenman, P.E.  
\_\_\_\_\_  
Name (Please Type)  
Enviropact Engineering Co., Inc.  
\_\_\_\_\_  
Company Name (Please Type)  
4790 N.W. 157 Street, Hialeah, FL 33014  
\_\_\_\_\_  
Mailing Address (Please Type)

Florida Registration No. PE 0028343 Date: \_\_\_\_\_ Telephone No. (305) 620-1700

## SECTION II: GENERAL PROJECT INFORMATION

- A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Jet kerosene distillate loading rack and six (6) new petroleum storage tanks.

See Table 1.

- B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction \_\_\_\_\_ Completion of Construction \_\_\_\_\_

- C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

- D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Loading rack, storage tanks and vapor recovery unit permit number A0-06-105591, expiration date November 15, 1986. Permit for facility located on Spangler Boulevard, Port Everglades, Florida. New facility to load unleaded gasoline through facility on Spangler Boulevard and

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;  
if power plant, hrs/yr --- ; if seasonal, describe: N/A

F. If this is a new source or major modification, answer the following questions.  
(Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? Yes (ozone)
  - a. If yes, has "offset" been applied? N/A
  - b. If yes, has "Lowest Achievable Emission Rate" been applied? N/A
  - c. If yes, list non-attainment pollutants. Ozone
2. Does best available control technology (BACT) apply to this source? N/A  
If yes, see Section VI.
3. Does the State "Prevention of Significant Deterioration" (PSD) requirement apply to this source? If yes, see Sections VI and VII. N/A
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? N/A
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? N/A
- H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? N/A
  - a. If yes, for what pollutants? N/A
  - b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

### SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable: N/A

| Description | Contaminants |      | Utilization<br>Rate - lbs/hr | Relate to Flow Diagram |
|-------------|--------------|------|------------------------------|------------------------|
|             | Type         | % Wt |                              |                        |
|             |              |      |                              |                        |
|             |              |      |                              |                        |
|             |              |      |                              |                        |
|             |              |      |                              |                        |
|             |              |      |                              |                        |

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): N/A

2. Product Weight (lbs/hr): N/A

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

| Name of<br>Contaminant | Emission <sup>1</sup> |                  | Allowed <sup>2</sup><br>Emission<br>Rate per<br>Rule<br>17-2 | Allowable <sup>3</sup><br>Emission<br>lbs/hr | Potential <sup>4</sup><br>Emission |      | Relate<br>to Flow<br>Diagram |
|------------------------|-----------------------|------------------|--|--|------------------------------------|------|------------------------------|
|                        | Maximum<br>lbs/yr     | Actual<br>lbs/hr |  |  | lbs/yr                             | T/yr |                              |
| VOC                    | 6248                  | 0.71             | --   | --   | ----                               |      |                              |
|                        |                       |                  |  |  |                                    |      |                              |
|                        |                       |                  |  |  |                                    |      |                              |
|                        |                       |                  |  |  |                                    |      |                              |
|                        |                       |                  |  |  |                                    |      |                              |

<sup>1</sup>See Section V, Item 2.

<sup>2</sup>Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

<sup>3</sup>Calculated from operating rate and applicable standard.

<sup>4</sup>Emission, if source operated without control (See Section V, Item 3).

D. Control Devices: (See Section V, Item 4)

None required - loading of gasoline through existing permitted loading rack and vapor recovery unit.

| Name and Type<br>(Model & Serial No.) | Contaminant | Efficiency | Range of Particles<br>Size Collected<br>(in microns)<br>(If applicable) | Basis for<br>Efficiency<br>(Section V<br>Item 5) |
|---------------------------------------|-------------|------------|---|--|
|                                       |             |            |   |  |
|                                       |             |            |   |  |
|                                       |             |            |   |  |
|                                       |             |            |   |  |
|                                       |             |            |   |  |
|                                       |             |            |   |  |

E. Fuels N/A

| Type (Be Specific) | Consumption* |         | Maximum Heat Input<br>(MMBTU/hr) |
|--------------------|--------------|---------|----------------------------------|
|                    | avg/hr       | max./hr |                                  |
|                    |              |         |                                  |
|                    |              |         |                                  |
|                    |              |         |                                  |
|                    |              |         |                                  |

\*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur: \_\_\_\_\_ Percent Ash: \_\_\_\_\_

Density: \_\_\_\_\_ lbs/gal Typical Percent Nitrogen: \_\_\_\_\_

Heat Capacity: \_\_\_\_\_ BTU/lb \_\_\_\_\_ BTU/gal

Other Fuel Contaminants (which may cause air pollution): \_\_\_\_\_

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average \_\_\_\_\_ Maximum \_\_\_\_\_

G. Indicate liquid or solid wastes generated and method of disposal.

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H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: \_\_\_\_\_ ft. Stack Diameter: \_\_\_\_\_ ft.  
 Gas Flow Rate: \_\_\_\_\_ ACFM \_\_\_\_\_ DSCFM Gas Exit Temperature: \_\_\_\_\_ °F.  
 Water Vapor Content: \_\_\_\_\_ % Velocity: \_\_\_\_\_ FPS.

SECTION IV: INCINERATOR INFORMATION

N/A

| Type of Waste            | Type 0<br>(Plastics) | Type I<br>(Rubbish) | Type II<br>(Refuse) | Type III<br>(Garbage) | Type IV<br>(Pathological) | Type V<br>(Liq. & Gas By-prod.) | Type VI<br>(Solid By-prod.) |
|--------------------------|----------------------|---------------------|---------------------|-----------------------|---------------------------|---------------------------------|-----------------------------|
| Actual lb/hr Incinerated |                      |                     |                     |                       |                           |                                 |                             |
| Uncontrolled (lbs/hr)    |                      |                     |                     |                       |                           |                                 |                             |

Description of Waste \_\_\_\_\_

Total Weight Incinerated (lbs/hr) \_\_\_\_\_ Design Capacity (lbs/hr) \_\_\_\_\_

Approximate Number of Hours of Operation per day \_\_\_\_\_ day/wk \_\_\_\_\_ wks/yr. \_\_\_\_\_

Manufacturer \_\_\_\_\_

Date Constructed \_\_\_\_\_ Model No. \_\_\_\_\_

|                   | Volume<br>(ft) <sup>3</sup> | Heat Release<br>(BTU/hr) | Fuel |        | Temperature<br>(°F) |
|-------------------|-----------------------------|--------------------------|------|--------|---------------------|
|                   |                             |                          | Type | BTU/hr |                     |
| Primary Chamber   |                             |                          |      |        |                     |
| Secondary Chamber |                             |                          |      |        |                     |

Stack Height: \_\_\_\_\_ ft. Stack Diameter: \_\_\_\_\_ Stack Temp. \_\_\_\_\_

Gas Flow Rate: \_\_\_\_\_ ACFM \_\_\_\_\_ DSCFM\* Velocity: \_\_\_\_\_ FPS

\*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: ☐ Cyclone ☐ Wet Scrubber ☐ Afterburner  
☐ Other (specify) \_\_\_\_\_

Brief description of operating characteristics of control devices: \_\_\_\_\_

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.): \_\_\_\_\_

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

#### SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).
6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.
7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).
8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.
10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

**SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY**

N/A

- A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

☐ Yes ☐ No

Contaminant

Rate or Concentration

|  |  |
|--|--|
|  |  |
|  |  |
|  |  |
|  |  |

- B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

☐ Yes ☐ No

Contaminant

Rate or Concentration

|  |  |
|--|--|
|  |  |
|  |  |
|  |  |
|  |  |

- C. What emission levels do you propose as best available control technology?

Contaminant

Rate or Concentration

|  |  |
|--|--|
|  |  |
|  |  |
|  |  |
|  |  |

- D. Describe the existing control and treatment technology (if any).

1. Control Device/System:

2. Operating Principles:

3. Efficiency:\*

4. Capital Costs:

\*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant

Rate or Concentration

10. Stack Parameters

|               |      |                 |     |
|---------------|------|-----------------|-----|
| a. Height:    | ft.  | b. Diameter:    | ft. |
| c. Flow Rate: | ACFM | d. Temperature: | °F. |
| e. Velocity:  | FPS  |                 |     |

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

|  |                          |
|--|--------------------------|
| a. Control Device:   | b. Operating Principles: |
| c. Efficiency: <sup>1</sup>  | d. Capital Cost:         |
| e. Useful Life:  | f. Operating Cost:       |
| g. Energy: <sup>2</sup>  | h. Maintenance Cost:     |
| i. Availability of construction materials and process chemicals:   |                          |
| j. Applicability to manufacturing processes:   |                          |
| k. Ability to construct with control device, install in available space, and operate within proposed levels: |                          |

2.

|  |                          |
|--|--------------------------|
| a. Control Device:   | b. Operating Principles: |
| c. Efficiency: <sup>1</sup>                                      | d. Capital Cost:         |
| e. Useful Life:  | f. Operating Cost:       |
| g. Energy: <sup>2</sup>  | h. Maintenance Cost:     |
| i. Availability of construction materials and process chemicals: |                          |

<sup>1</sup>Explain method of determining efficiency.

<sup>2</sup>Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:<sup>1</sup>

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2</sup>

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:<sup>1</sup>

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2</sup>

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device:

2. Efficiency:<sup>1</sup>

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:<sup>2</sup>

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

<sup>1</sup>Explain method of determining efficiency.

<sup>2</sup>Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:<sup>1</sup>

Contaminant

Rate or Concentration

(8) Process Rate:<sup>1</sup>

b. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:<sup>1</sup>

Contaminant

Rate or Concentration

(8) Process Rate:<sup>1</sup>

10. Reason for selection and description of systems:

<sup>1</sup>Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

#### SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data

N/A

1. \_\_\_\_\_ no. sites \_\_\_\_\_ TSP \_\_\_\_\_ ( ) SO<sub>2</sub>\* \_\_\_\_\_ Wind spd/dir

Period of Monitoring \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ to \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
month day year month day year

Other data recorded \_\_\_\_\_

Attach all data or statistical summaries to this application.

\*Specify bubbler (B) or continuous (C).

## 2. Instrumentation, Field and Laboratory

- a. Was instrumentation EPA referenced or its equivalent? ☐ Yes ☐ No
- b. Was instrumentation calibrated in accordance with Department procedures?  
☐ Yes ☐ No ☐ Unknown

## 8.5 Meteorological Data Used for Air Quality Modeling

1. \_\_\_\_\_ Year(s) of data from \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ to \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
month day year month day year
2. Surface data obtained from (location) \_\_\_\_\_
3. Upper air (mixing height) data obtained from (location) \_\_\_\_\_
4. Stability wind rose (STAR) data obtained from (location) \_\_\_\_\_

### Computer Models Used

- |    |       |           |                             |
|----|-------|-----------|-----------------------------|
| 1. | _____ | Modified? | If yes, attach description. |
| 2. | _____ | Modified? | If yes, attach description. |
| 3. | _____ | Modified? | If yes, attach description. |
| 4. | _____ | Modified? | If yes, attach description. |

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

### D. Applicants Maximum Allowable Emission Data

| Pollutant       | Emission Rate |
|-----------------|---------------|
| TSP             | grams/sec     |
| SO <sub>2</sub> | grams/sec     |

## 5. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

- 1. Attach all other information supportive to the PSD review.
- 2. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.
- 3. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

TABLE 1

MOBIL OIL CORP.  
PETROLEUM STORAGE TANKS

DATA SUMMARY  
 -----

| TANK<br>DESIGNATION | PRODUCT                  | VOLUME<br>BARRELS/GALLONS<br>(1000) | DIMENSIONS<br>FEET | TYPE ROOF         | EXTERIOR<br>COLOR | THRUPUT VOLUME            |                            |
|---------------------|--------------------------|-------------------------------------|--------------------|-------------------|-------------------|---------------------------|----------------------------|
|                     |                          |                                     |                    |                   |                   | GAL/YR<br>10 <sup>6</sup> | GAL/DAY<br>10 <sup>4</sup> |
| 6                   | Unleaded Gasoline        | 81/3400                             | 110'Ø x 48' hg     | Internal floating | White             | 155                       | 1.0                        |
| 7                   | Unleaded Gasoline        | 81/3400                             | 110'Ø x 48' hg     | Internal floating | White             | 155                       | 1.0                        |
| 8                   | Unleaded Gasoline        | 67/2800                             | 100'Ø x 48' hg     | Internal floating | White             | 33                        | 2.2                        |
| 9                   | Jet Kerosene             | 67/2800                             | 100'Ø x 48' hg     | Internal floating | White             | 60                        | 4.0                        |
| 10                  | Jet Day Tank<br>Kerosene | 16/670                              | 50'Ø x 48' hg      | Internal floating | White             | 30                        | 2.0                        |
| 11                  | Jet Day Tank<br>Kerosene | 16/670                              | 50'Ø x 48' hg      | Internal floating | White             | 30                        | 2.0                        |

## NOTES:

- (1) Site to include loading rack for jet fuel only.
- (2) Product from tanks 6, 7, and 8 to be transferred via pipeline to Spangler Boulevard Terminal for loading to distribution trucks.
- (3) Tank 9 to accept product from ships.
- (4) Tanks 10 and 11 to serve as day tanks, product to originate from tank 9.

# EMISSIONS FROM INTERNAL FLOATING ROOF TANKS<sup>(1)</sup>

$$L_s = K_s \times V^n \times P^* \times M_v \times K_c \times E_f \times D$$

$L_s$  = Standing storage tank loss (pounds/year)

$K_s$  = Constant for tank type = 0.7

$N$  = Constant for tank type = 0.4

$V$  = Local wind velocity<sup>(3)</sup> = 8.8 mph

$P_g^*$  = Vapor pressure function<sup>(4)</sup> gasoline =  $1.73 \times 10^{-1}$  (see calculation, pg. 3)

$P_d^*$  = Vapor pressure function<sup>(4)</sup> jet fuel =  $2.55 \times 10^{-4}$  (see calculation, pg. 3)

$D_n$  = Tank diameter

$$D_{6,7} = 110'8"$$

$$D_{8,9} = 100'8"$$

$$D_{10,11} = 50'8"$$

$M_{vg}$  = Vapor molecular weight gasoline<sup>(5)</sup> = 64 lbs/lb - mole @ 60°F

$M_{vd}$  = Vapor molecular weight jet kerosene = 130 lbs/lb - mole @ 60°F

$K_c$  = Product factor<sup>(6)</sup> = 1.0

$E_f$  = Seal factor<sup>(7)</sup> = 1.0

$T$  = Product storage temperature = 80°F

$$L_{s6,7} = 0.7 \times 8.8^{0.4} \times 0.173 \times 64 \times 1.0 \times 1.0 \times 110 = 2035$$

$$L_{s8} = 0.7 \times 8.8^{0.4} \times 0.173 \times 64 \times 1.0 \times 1.0 \times 100 = 1850$$

Due to low volatility of jet fuel ( $P_d^* \approx 2.6 \times 10^{-4}$ ) emissions from tanks 9, 10 and 11 are negligible and have been disregarded.

## NOTES:

(1) AP42 Emission Calculations 4/81, pg. 4.3-13, paragraph 4.3.2.3.

(2) Ibid, pg. 4.3-14, Assuming Liquid Mounted Resilient Seal.

(3) Discussion with FDER, Mr. I. Goldman, P.E.

(4)  $P^* = P/P_a - [1 + (1 \div P/P_a)^{0.5}]^2$   $P_g$  = True Vapor Pressure = 7.4 @  $T = 80^\circ\text{F}$ , RVP = 10  
 $P_d$  = TVP for distillate @  $T = 80^\circ\text{F} = 0.015$

(5) AP42 Emission Calculations 4/81, pg. 4.3-6, Table 4.3-1.

(6) Ibid, pg. 4.3-16, Note 5.

(7) Ibid, pg. 4.3-16, Note 6.

CALCULATION OF VAPOR PRESSURE FUNCTION  
(P\*)

$$P_g^* = \frac{\left(\frac{7.4}{14.7}\right)}{\left[1 + \left(1 - \frac{7.4}{14.7}\right)^{0.5}\right]^2} = \frac{0.503}{2.906} = 1.73 \times 10^{-1}$$

$$P_d^* = \frac{\frac{0.015}{14.7}}{\left[1 + \left(1 - \frac{0.015}{14.7}\right)^{0.5}\right]^2} = \frac{0.0102}{3.998} = 2.55 \times 10^{-4}$$

EVAPORATION LOSS FROM STANDING STORAGE TANKS  
(WITHDRAWAL LOSS)

$$L_w = \frac{0.943 \text{ GCWL}}{D} \quad (1)$$

$L_w$  = Withdrawal loss (lbs/yr)

$Q$  = Withdrawal rate (gal/yr)

$$Q_{6,7} = 7.76 \times 10^7 \text{ (1.85} \times 10^6 \text{ bbls/yr)}$$

$$Q_8 = 3.3 \times 10^7 \text{ (7.86} \times 10^5 \text{ bbls/yr)}$$

$$Q_9 = 6 \times 10^7$$

$$Q_{10,11} = 3 \times 10^7$$

$$C = 0.0015 \text{ bbls/1000 ft}^2 \quad (2)$$

$$W_1 = 5.6 \text{ lbs/gal @ 60}^\circ\text{F, RVP} = 10$$

$$D_{6,7} = 110' \text{ } \theta$$

$$D_8 = 100' \text{ } \theta$$

$$L_{w6,7} = \frac{0.943 \times 1.85 \times 10^6 \times 1.5 \times 10^{-3} \times 5.6}{110} = 133.2 \text{ lbs/yr}$$

$$L_{w8} = \frac{0.943 \times 7.86 \times 10^5 \times 1.5 \times 10^{-3} \times 5.6}{100} = 62.2 \text{ lbs/yr}$$

REFERENCE:

(1) Emission Factors AP42, pg. 4.3-18,19.

(2) Ibid, Table 4.3-5, Average Clingage Factors.

Due to low volatility of jet fuel withdrawal emissions from tanks 9, 10 and 11 are negligible and have been disregarded.

TOTAL EMISSIONS

$$L_t = L_s + L_w \quad (1)$$

$$L_{t6} = 2035 \text{ lbs/yr} + 133 \text{ lbs/yr} = 2168 \text{ lbs/yr}$$

$$L_{t7} = 2035 \text{ lbs/yr} + 133 \text{ lbs/yr} = 2168 \text{ lbs/yr}$$

$$L_{t8} = 1850 \text{ lbs/yr} + 62 \text{ lbs/yr} = 1912 \text{ lbs/yr}$$

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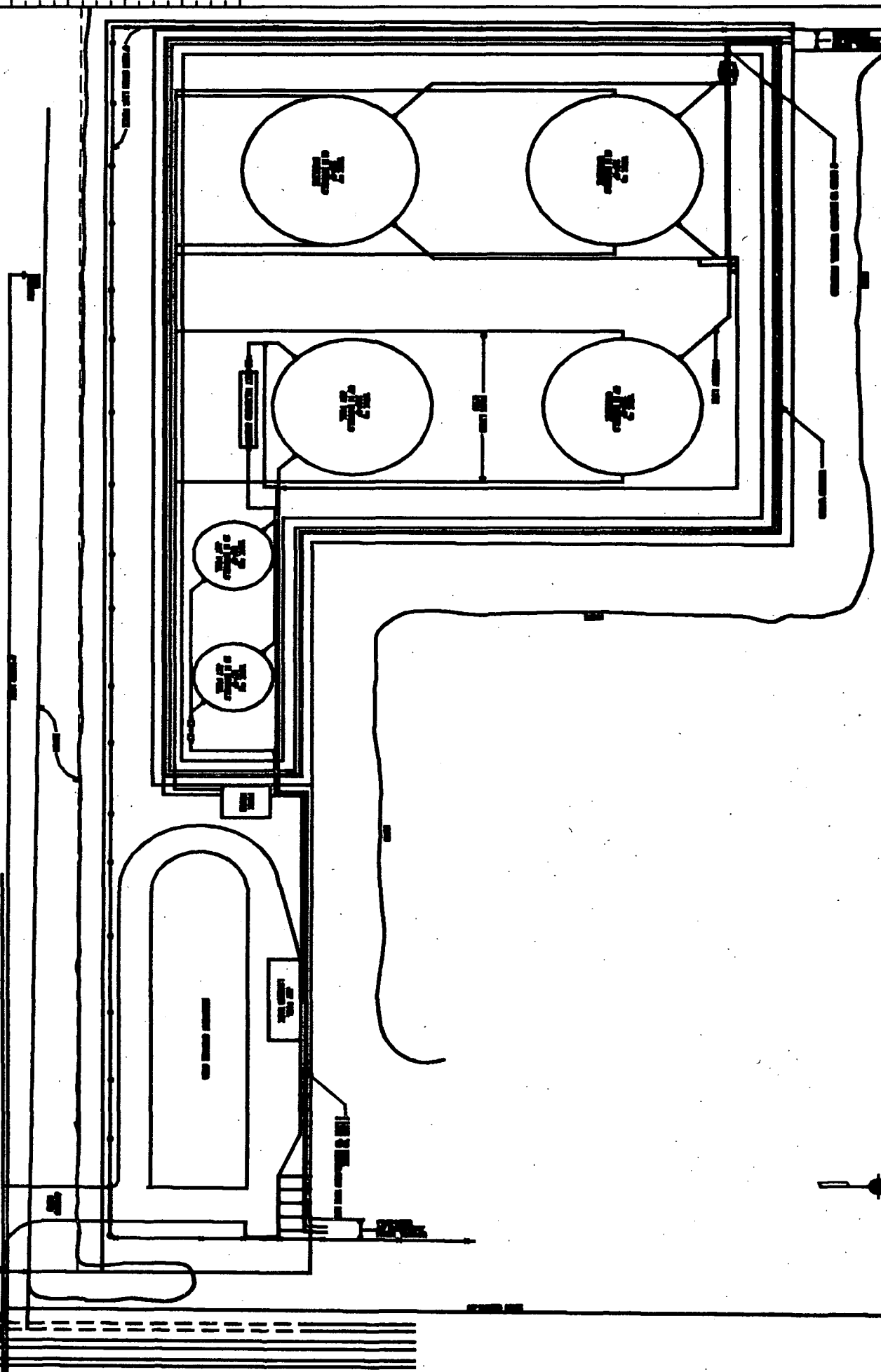
$$6248 \text{ lbs/yr}$$

$$\text{TOTAL EMISSIONS} = 6248 \text{ lbs/yr}$$

REFERENCE:

(1) AP42, pg. 4.3-19, Equation (5).

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Mobil Oil Corporation

U.S. Marketing & Refining Division  
Marketing Operations Engineering Department  
P.O. Box 22037

PIPE PLAN  
ADDITIONAL STORAGE & JETTY SYSTEM  
PORT EVERGLADES TERMINAL  
PORT EVERGLADES, FLORIDA

Scale - 1/4" = 1'-0"  
Date - 11/22/56

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