ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF ENFORCEMENT
EPA 330/2-76-007

REPORT ON

State Implementation Plan Air Pollution Inspection of Golden Eagle Refining Company

LOS ANGELES COUNTY, CALIFORNIA

NATIONAL ENFORCEMENT INVESTIGATIONS CENTER
DENVER, COLORADO
AND
REGION IX, SAN FRANCISCO, CALIFORNIA

FEBRUARY 1976

ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF ENFORCEMENT

STATE IMPLEMENTATION PLAN

INSPECTION OF

GOLDEN EAGLE REFINING COMPANY, INC.
2100 S. Figueroa St.
Carson, California 90745
213/320-6860
October 16, 1975

February 1976

National Enforcement Investigations Center - Denver, Colorado
and
Region IX - San Francisco, California

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INTRODUCTION

Background

The Golden Eagle Refining Company, Inc. operates a simple refinery at this location with a rated capacity of 2,500 m^3 (16,000 bbl) per stream day (SD). Major products from this refinery include JP-4 and JP-5 jet fuels, diesel fuel, and low sulfur fuel oil.

Golden Eagle employs about 35 people and operates three 8-hour shifts, 7 days per week, year around.

On October 16, 1975, a process inspection was conducted at this facility by NEIC personnel. The inspection was preceded by a letter to the Company on September 8, 1975 [Appendix A], announcing NEIC's intention to inspect the facility and requesting substantial amounts of process information.

During the inspection, an examination was made of the refining equipment, potential air pollution sources, and air pollution control equipment. The purpose of this inspection was to evaluate the degree of compliance of this facility with the requirements of the Federally approved State Implementation Plan as required by Section 110 of the Clean Air Act, as amended.

Company personnel were very cooperative throughout this inspection. They supplied all EPA requested information during the inspection interview or by subsequent letter.

Inspection Participants

Mr. Burl Freeman - Vice President for Refining, Golden Eagle Refining Co., Inc.

Mr. C. W. Leggett - Consultant to Golden Eagle

Mr. John R. Powell, Los Angeles County Air Pollution Control District (LAAPCD)

Mr. Paul de Percin - USEPA, NEIC

Mr. David L. Brooman - USEPA, NEIC

Applicable Regulations

The following rules contained in the Rules and Regulations of the Los Angeles County Air Pollution Control District (LAAPCD) [detailed in Appendix B] are applicable to this facility:

Rule 50. Ringelmann Chart

Rule 51. Nuisance

Rule 56. Storage of Petroleum Products

Rule 61. Organic Liquid Loading

Rule 62. Sulfur Content of Fuels

Rule 67. Fuel Burning Equipment

Rule 68.1 Fuel Burning Equipment - Combustion Contaminants

Rule 71. Carbon Monoxide

Rule 72. Pumps and Compressors

Rule 73. Safety Pressure Relief Valves

PROCESS DESCRIPTION

The Golden Eagle facility is a simple refinery which processes sweet (i.e., low sulfur) crudes received mostly from Alaska. The refinery also processes imported naptha. All crude and naptha are delivered to the refinery via pipeline. The main products from this refinery include JP-4 and JP-5 jet fuels, diesel fuel, low sulfur fuel oil, and refinery fuel gas which is consumed as fuel in the refinery.

Golden Eagle operates three atmospheric crude distillation towers and a rerun unit with a total capacity of 2,500 m^3 (16,000 bbl)/SD. There are two desalter units which are currently not operated while processing sweet crudes. Golden Eagle also operates a 720 m^3 (4,500 bbl)/SD naptha rerun stabilizer unit.

Figure 1 is a simplified process flow diagram for this refinery. Crude oil from storage is heated and introduced into an atmospheric crude flash tower. Fuel gas and light napthas are flashed off in this unit and separated in an accumulator. The fuel gas is used for refinery fuel; the light naptha is further processed in the naptha stabilizer, caustic treated, and then sent to storage.

The bottoms from the crude flash tower are reheated and introduced into a fractionator tower. Here, they are separated into heavy naptha, kerosene distillate, gas oils, and fuel oil. The heavy naptha is caustic washed and mixed with light naptha to produce JP-4 jet fuel. The kerosene distillate is caustic washed and results in JP-5 jet fuel. The gas oil and fuel oil are sent to storage.

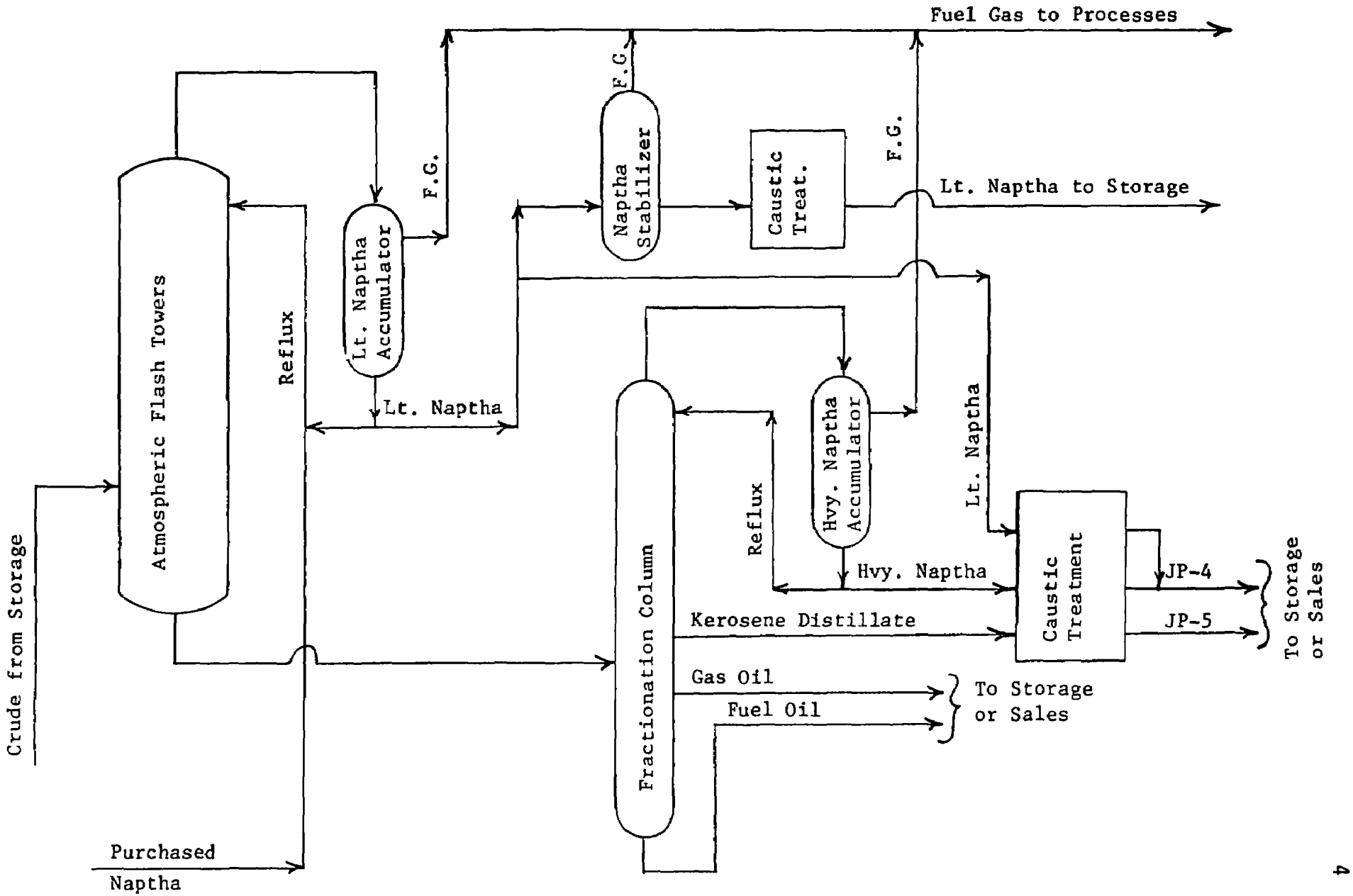


FIGURE 1
SIMPLIFIED PROCESS DIAGRAM
GOLDEN EAGLE REFINING CO., INC., CARSON, CA

The imported naptha is processed by introducing it as reflux to the atmospheric flash towers.

POTENTIAL SOURCES OF AIR POLLUTION EMISSIONS AND RELATED CONTROL EQUIPMENT

The Golden Eagle refinery is a small non-complex refinery with relatively few discrete potential sources of air pollution emissions. The major unit processes are closed systems. Release of materials to the atmosphere is discouraged because such releases would result in loss of product. The process heaters attendant to these units constitute the main emission sources.

There are a large number of relatively small potential sources of emissions related to the operation of the refinery. Such sources include leaks from valve seals, pump seals, and pipe flanges, and evaporative losses from storage tanks and process wastewater drains. Potential major sources of emissions and their related control equipment are discussed below.

Process Heaters and Boilers

There are nine process heaters and five steam boilers at this refinery ranging in size from 0.8×10^6 to 12.9×10^6 kg cal (3×10^6 to 51.4×10^6 Btu)/hour. A complete listing of these units is presented in Table 1.

All heater and boiler units at this refinery can be fired with refinery fuel gas, natural gas, or low sulfur fuel oil. Natural gas is purchased from the Southern California Gas Company on interruptible service. Refinery fuel gas and fuel oil are produced in the refinery. Golden Eagle can produce approximately two-thirds of the amount of gas fuel required.

Table 1

PROCESS HEATERS AND STEAM BOILERS
Golden Eagle Refining Company, Inc. -Carson, California

Unit No.	Identification	Rated Capacity/hr (10^6kg cal)	Rated Capacity/hr (10^6Btu)	Refinery Fuel Gas Usage/hr† (10^3 m^3)	Refinery Fuel Gas Usage/hr† (10^3SCF)	Natural Gas Usage/hr† ($10^3 m^3$)	Natural Gas Usage/hr† (10^3 SCF)	Fuel Oil Usage/hr† (liters)	Fuel Oil Usage/hr† (gal)	Stack Height (m.)	Stack Height (ft)	Stack Diameter (cm)	Stack Diameter (ft)	Stack Temp. (°C)	Stack Temp. (°F)	Stack Velocity (gas fired) (m/sec)	Stack Velocity (gas fired) (ft/sec)
H-1	No. 1 Crude Unit Heater	4.7	18.6	0.20	6.9	0.51	17.7	480	126	12.8	42	91	36	426	800	6.6	21.7
H-2	No. 2 Crude Unit Heater	6.5	25.7	0.27	9.6	0.70	24.5	660	174	20.7	68	122	48	371	700	4.8	15.6
H-3	No. 1 Crude Unit Heater	1.8	7	0.07	2.6	0.19	6.7	180	47	17.7	58	61	24	371	700	5.2	16.9
H-4	No. 1 Crude Unit Heater	1.5	6	0.06	2.2	0.16	5.7	160	41	17.7	58	61	24	371	700	4.4	14.5
H-5	No. 4 Rerun Unit Heater	3.5	14	0.15	5.2	0.38	13.3	360	95	17.7	58	76	30	371	700	6.6	21.6
H-6	Naptha Stabilizer Heater	3.5	14	0.15	5.2	0.38	13.3	360	95	17.7	58	76	30	371	700	6.6	21.6
H-7	Naptha Stabilizer Heater	0.8	3	0.03	1.1	0.08	2.9	80	20	16.8	55	61	24	371	700	2.2	7.2
H-8	No. 4 Rerun Unit Heater	5.0	20	0.21	7.5	0.54	19.0	510	135	21.9	72	107	42	371	700	4.8	15.8
H-9	No. 3 Crude Unit Heater	13.0	51.4	0.55	19.2	1.40	49.0	1320	348	25.0	82	168	66	371	700	5.0	16.5
--	B & W Steam Boiler	5.0	20	0.21	7.5	0.56	19.5	510	135	10.7	35	91	36	204	400	5.5	18.2
--	No. 1 Llewellyn Steam Boiler	1.8	7	0.07	2.6	0.19	6.7	180	47	24.4	80	109	43	204	400	1.3	4.4
--	No. 2 Llewellyn Steam Boiler	1.8	7	0.07	2.6	0.19	6.7	180	47	24.4	80	109	43	204	400	1.3	4.4
--	No. 3 Bigelow Steam Boiler	3.5	13.7	0.15	5.1	0.38	13.5	350	93	9.1	30	61	24	204	400	8.7	28.4
--	No. 4 Bigelow Steam Boiler	3.5	13.7	0.15	5.1	0.38	13.5	350	93	9.1	30	61	24	204	400	8.7	28.4

† *All Boilers and Heaters can be fired with refinery fuel gas, natural gas or low sulfur fuel oil. Data in columns indicate fuel usage if fired by that fuel alone.*

None of the heaters or boilers at this refinery have been equipped with emission control devices. None of these units have stack gas opacity monitors or alarms.

Sulfur oxide emissions from these units are controlled by limiting the amount of sulfur which can be contained in the fuels burned. Refinery fuel gas and natural gas must contain less than 1.1 gm/m^3 (50 grains/ 100 ft^3) of sulfur compounds. Fuel oil must contain less than 0.5% sulfur by weight.

Golden Eagle processes sweet Alaskan crudes and does not require sulfur removal processes to meet fuel sulfur content requirements. The resulting refinery fuel gases contain approximately 0.02 gm/m^3 (1 grain/ 100 ft^3) of sulfur. Fuel oils produced from these crudes contain approximately 0.25% sulfur by weight. Natural gas purchased from Southern California Gas routinely contains 0.005 gm/m^3 (0.2 grains/100 ft^3).

Internal Combustion Engines

There is only one stationary internal combustion engine at this refinery. It is a diesel unit used to drive a fire water pump and, hence, is only activated during emergencies or during inspections.

There are no emission control devices on this engine.

Storage Tanks

There are forty-nine storage tanks at this facility ranging in size from 7 to 12,700 m^3 (43 to 80,000 bbl) and used to store a variety of materials. Since some of these compounds are volatile, hydrocarbon vapors may escape from these tanks. Where such a potential exists,

the materials are stored in specially constructed tanks, such as pressure vessels and floating roof tanks, or are stored in tanks which are hard piped by manifolds to a vapor recovery and disposal system.

The vapor recovery/disposal system consists of a piping network serving twenty-one hydrocarbon storage tanks, a conservation sphere, a compressor, and a ground level flare. Vapors evolved from the storage tanks are stored in the sphere which has a flexible neoprene membrane. The sphere thus floats on the line with the diurnal variations in vapor evolution maintaining a slight positive pressure on the system.

Should the membrane become fully extended and the sphere become full, a switch activates the compressor. Vapors are then withdrawn from the sphere and manifold system and exhausted to the ground level flare.

The flare unit is a ground level rectangular unit with an estimated rated capacity of 12.6 x 10^6 kg cal (50 X 10^6 Btu)/hour. The unit is estimated to be able to handle approximately 1.2 m. tons (1.3 tons)/hour of hydrocarbon. The flare has a pilot light which is operated on refinery fuel gas.

A summary of the storage tanks at this facility, their configuration and the materials stored within is presented in Appendix C.

Blowdown Systems

The major process units have safety relief valves set at 2.5 kg/cm^2 (35 psi) release pressure. These valves are connected to a common manifold system which leads to a liquid knockout drum and ultimately

to the ground level flare system discussed above. Should an emergency arise, the process unit would vent through the header system to the flare.

Product Loading Racks

Golden Eagle has two 4-arm loading racks which can be used to load gasoline, JP-4 and JP-5 jet fuels, diesel fuel and crude oil. These racks are under a valid LAAPCD permit to operate. The units are inactive and there are no plans to operate them in the near future. All products are currently shipped from the refinery by pipeline.

The loading racks are tied into the same vapor recovery system that services the tank farm area.

Wastewater Treatment Facilities

Wastewater from these refining operations amounts to approximately 250 m^3/day (0.06 mgd) and results from boiler blowdown and process drainage. All wastewater at the refinery passes through an oil/water separator which is covered to prevent vapor losses. Skimmed oil from the separator is sent to slop storage and eventually reprocessed. The skimmed wastewater receives additional treatment with a 14% hypochlorite solution to control sulfides before being discharged to the Los Angeles County Sanitation District sewer system.

EMISSIONS DATA

Source Test Data

Both Golden Eagle and the LAAPCD were requested to supply copies of all stack tests conducted at the facility since 1972. No source test

data was received from either group so it is assumed that no tests have been run during this period.

Computed Emission Rates

Theoretical emission factors for various emission sources found at petroleum refineries are listed in Table 9.1-1 of the EPA publication AP-42 *Compilation of Air Pollutant Emission Factors,* Second Edition (second printing with Supplements 1-4). These emission factors were used to compute the following emission rates. Emissions from hydrocarbon storage tanks have not been calculated for this report. Rather, they will be included in a separate report being prepared by NEIC which will summarize storage tank emissions from all refineries in Los Angeles County.

Boilers and Process Heaters. As can be seen from the listing of process heaters and steam boilers presented in Table 1, all of these units can be fired with natural gas, refinery fuel gas, or low sulfur fuel oil. The AP-42 emission factors vary, depending on whether gaseous fuels or fuel oils are used to fire the units. Therefore, a range of theoretical emissions can exist depending on the available fuel situation. Under normal operating conditions, Golden Eagle would use 2/3 refinery fuel gas and 1/3 natural gas for fuel. When natural gas is curtailed, the 1/3 of the heat requirement normally supplied by natural gas would be supplied by fuel oil. Table 2 summarizes the theoretical emissions from all boilers and heaters under these two conditions. Heating values for the various fuels used in these calculations are 23,800 kg cal/m^3 (2,680 Btu/ft^3) for refinery fuel gas, 9,340 kg cal/m^3 (1,050 Btu/ft^3) for natural gas, and 9,800 kg cal/l (148,000 Btu/gal) for fuel oil.

Table 2

CALCULATED EMISSION RATES FROM VARIOUS UNIT OPERATIONS
Golden Eagle Refining Company, Inc.- Carson, California

Emission Sources	Calculated Emissions																	
	Particulates		Sulfur Oxides (SO_2)		Carbon Monoxide (CO)		Hydrocarbons		Nitrogen Oxides (NO_2)		Aldehydes		Ammonia					
	(kg/hr)	(lb/hr)	(kg/hr)	(lb/hr)	(kg/hr)	(lb/hr)	(kg/hr)	(lb/hr)	(kg/hr)	(lb/hr)	(kg/hr)	(lb/hr)	(kg/hr)	(lb/hr)				
Process Heaters and Steam Boilers																		
1†	1.1	2.5	Neg.		Neg.		1.7	3.8	13.1	28.8	0.2	0.4	Neg.					
2††	5.0	11.1	9.1	20	Neg.		1.6	3.4	21.5	47.2	0.2	0.4	Neg.					
Blowdown Systems with flaring	Neg.		Neg.		Neg.		1.5	3.3	Neg.		Neg.		Neg.					
Wastewater Treatment	Neg.		Neg.		Neg.		0.2	0.5	Neg.		Neg.		Neg.					
Pipeline Valves and Flanges	Neg.		Neg.		Neg.		8.5	18.7	Neg.		Neg.		Neg.					
Vessel Relief Valves	Neg.		Neg.		Neg.		3.3	7.3	Neg.		Neg.		Neg.					
Pump Seals	Neg.		Neg.		Neg.		5.2	11.3	Neg.		Neg.		Neg.					
Compressor Seals	Neg.		Neg.		Neg.		1.5	3.3	Neg.		Neg.		Neg.					
Miscellaneous	Neg.		Neg.		Neg.		3.0	6.7	Neg.		Neg.		Neg.					
Total†††	5.0	11.1	9.1	20	Neg.		24.8	54.5	21.5	47.2	0.2	0.4	Neg.					

† *All units operated at rated capacity and all units fired with refinery fuel gas or natural gas.*
†† *All units operated at rated capacity, natural gas supply curtailed, and 1/3 of Btu required supplied by oil. All other Btu input refinery fuel gas.*
††† *Total includes only situation 2 for process heaters and boilers. Considered worst situation.*

Nitrogen oxides are the main pollutant emitted from the process heaters and steam boilers. Calculated emission rates for this pollutant range from 13.1 to 21.5 kg (28.8 to 47.2 lb)/hr depending on the fuel use pattern.

Other Sources. Table 2 also summarizes the calculated theoretical emissions from other sources within the refinery. The largest of these sources appears to be leakage from pipeline valves and flanges which amounts to 8.5 kg (18.7 lb)/hr.

SUMMARY OF VIOLATIONS

A review of the LAAPCD records indicates that no recent citations have been issued to Golden Eagle for violations of the Rules and Regulations.

FUTURE EXPANSION PLANS

Golden Eagle has completed a preliminary design for a 6,500 m^3 (41,000 bbl)/day major expansion and up-grading at this refinery. The expansion, which is due to go on-line in 1979, will be designed to process Alaskan North Slope crude oil. Approximately 75% of the product from this expansion will be gasoline.

New units included in the design are an atmospheric crude unit, a vacuum crude unit, a unicracker, a power former unit, a hydrofiner unit, a DGA treating system, a hydrogen plant, a new flare, and a sulfur recovery plant with tail gas treatment. New storage tanks required for this expansion include two 79,500 m^3 (500,000 gal) crude tanks, two 31,800 m^3 (200,000 gal) regular gas tanks, and two 15,900 m^3 (100,000 gal) premium gas tanks. This entire expansion is subject to New Source Review by the EPA. The new process heaters and the new storage tanks are subject to the EPA New Source Performance Standards.

Golden Eagle has submitted an Environmental Impact Review Report on this expansion to the City of Carson, the LAAPCD, the State of California Air Resources Board (ARB), and the USEPA. The City of Carson is the lead group for the review/approval process.

INSPECTION SUMMARY

At the time of this inspection, all major units were in operation. All process units, storage vessels, potential pollution emission points and pollution control devices in use at the refinery were observed during the inspection. No visible emissions were detected from any of the process heaters or steam boilers. The ground level flare also appeared to be operating correctly.

General housekeeping at this facility appeared to be very good. The main process areas were neat with no noticeable spills, leaks, etc.

All equipment is operating under a valid LAAPCD permit.

APPENDIX A

NEIC Information Request Letter to
Golden Eagle Refining Company, Inc.

ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF ENFORCEMENT
NATIONAL FIELD INVESTIGATIONS CENTER—DENVER
BUILDING 53, BOX 25227, DENVER FEDERAL CENTER
DENVER, COLORADO 80225
September 8, 1975

Dear

Pursuant to the authority contained in Section 114 of the Clean Air Act, as amended, representatives of the EPA will conduct, within the next year, inspections of the operations to ascertain compliance with the Federally approved California State Implementation Plan.

Representatives from the Environmental Protection Agency will observe the facility's process operations, inspect monitoring and laboratory equipment and analytical methods, review source test data, examine appropriate records, etc. A process and air pollution flow diagram or a blueprint of the facility and production information should be available for the EPA personnel at the start of the inspections.

Detailed information about air pollution sources will be discussed during these inspections. Attached is a partial list of the information that will be needed in order to complete these inspections. We would appreciate it if you could inform the appropriate company personnel about the forthcoming inspections so that the necessary information will be readily available and the inspection can be expedited.

If you have any questions concerning these inspections, please feel free to contact Arnold Den, Chief, Air Investigations Section, Region IX, San Francisco, at 415/556-8752.

A representative of the EPA (Dr. Wayne Smith or Mr. David Brooman, 303/234-4658) will contact you within the next 30 days concerning this visit.

Sincerely,

Thomas P. Gallagher
Director

Attachments

A. Refinery Capacity in Barrels/Day

B. Furnaces, Boilers and Process Heaters (for each furnace boiler and heater)

1. Rated capacity in 10^6 BTU/hr heat input.
2. Maximum capacity as per cent of rated capacity.
3. For oil fired units:

    a. Rated capacity in gals/hr or 10^3 bbl/hr.
    b. Heating value in BTU's/gal.
    c. Per cent sulfur and ash in oil by wt.
    d. Specific gravity of oil.
    e. Firing pattern (atomization, etc. for furnaces).

4. For gas fired units:

    a. Rated capacity in 10^3 SCF/hr.
    b. Type of gas burned (list principal constituents in % by weight).
    c. Density lb/SCF.
    d. Heating value of gas in BTU's/SCF.
    e. Sulfur content of gas in % S by vol and grains/SCF.

5. Type(s) of control equipment and collection efficiency(s) (design and actual).
6. Pressure drop (inches of water) across collection devices(s).
7. Elevation above grade of stack outlets and other discharge points.
8. Identification of stacks equipped with recording monitors for determining opacities of stack effluents.
9. Existing stack test data. The full test reports describing methods used, test data, calculations, test results and process weights should be available.
10. Inside diameters of each stack (ft).
11. Temperature of effluent gas stream from each stack (°F).
12. Exit velocity of each stack effluent (ft/sec).

C. Incinerators: (For each incinerator)

1. Rated capacity in 10^6 BTU's/hr; include auxiliary burners separately.
2. Auxiliary burner fuels:
   oil - 10^3 bbl/hr and specific gravity.
   gas - 10^3 SCF/hr and density in lb/SCF.
   other - (describe) - lbs/hr (Heating value of each fuel).

3. Maximum capacity as per cent of rated capacity for auxiliary burners.
4. Sulfur and ash content of fuel as % by weight for auxiliary burners.
5. Type of material incinerated.
6. Rated capacity for material incinerated in lb/hr.
7. Sulfur and ash content of material incinerated as % by weight.
8. Heating value of material incinerated.
9. The gas flow rate reported at dry standard conditions (DSCFH).
10. Type(s) of control equipment and collection efficiency(s) (design and actual).
11. Pressure drop (inches of water) across collection device(s).
12. Elevation above grade of stack outlets and other discharge points (ft).
13. Identification of stacks equipped with recording monitors for determining opacities of stack effluents.
14. Existing stack test data. Data should include the full test reports describing methods used, test data, calculations, test results and process weights.
15. Inside diameter of each stack (ft).
16. Exit velocity of each stack effluent (ft/sec.).
17. Temperature of effluent gas stream from each stack in °F.

D. Catalytic Cracking Units, Coker Units: (For each unit)

1. Rated capacity - 10^6 BTU/hr and indicate the type of unit such as PCC, Coker, etc.
2. Maximum capacity as per cent of rated capacity.
3. Type of feed-stock used and barrels of fresh feed used per yr.
4. Sulfur content of feed-stock (% by weight).
5. Types of control equipment and collection efficiency(s) (design and actual).
6. Pressure drop (inches of water) across collection devices(s).
7. Elevation above grade of stack outlets and other discharge points (ft).
8. Identification of stacks equipped with recording monitors for determining opacities of stack effluents.
9. Existing stack test data. Data should include the full test reports describing methods used, test data, calculations, test results and process weights.
10. Inside diameter of each stack (ft).
11. Exit velocity of each stack effluent (ft/sec).
12. Total flow through unit in 10^3 bbl/hr and ton/hr.
13. Temperature of effluent gas stream from each stack in °F.
14. Indicate disposition of waste gas stream, i.e., burned in afterburner, etc.

15. Average hours of operation per month and average monthly catalyst makeup for the catalytic cracking units.
16. Indicate date of installation or latest modification.

E. Blowdown Systems:

1. Indicate type and efficiency of each air pollution control device.

F. Flares: (For each flare)

1. Type
2. Height and diameter of stack (ft).
3. Velocity of stack effluent (ft/sec).
4. Temperature of gas effluent (°F).
5. Rated capacity 10^6 BTU/hr and tons/hr (of flared material).
6. Amount of material flared and percent of time material being flared.
7. Maximum capacity as per cent of rated capacity.
8. Type of flare ignition device at top of stack.
9. Sulfur content of flared input (% by wt).
10. Where material comes from that is burned in flare.

G. Storage Vessels: (For each vessel)

1. Indicate type of tank (fixed roof, floating roof, vapor recovery, etc.)
2. Give storage capacity of each tank in 10^3 gallons or barrels.
3. Indicate type of material stored in each tank (crude oil, gasoline, finished petroleum product) and give annual average true vapor pressure (TVP) and seasonal maximum for actual storage condition of product stored in lbs/sq. in. absolute.
4. State tank diameter (ft).
5. Indicate if tank is equipped with submerged fill pipe.
6. Indicate if the tank is a pressure tank capable of maintaining working pressure sufficient at all times to prevent vapor or gas loss to the atmosphere.
7. State type of air pollution control equipment on each tank, i.e., conservation vent, vapor recovery system, etc.
8. Indicate average and seasonal maximum temperature of each tank.
9. Indicate date of installation or latest modifications.
10. Indicate if tank is used for multiple product storage.

H. Wastewater Treatment Systems:

1. Indicate gallons of waste water discharged daily.
2. Indicate source of such drains (process discharged).

3. Indicate type and efficiency of each air pollution control device and any existing test data indicating actual emissions. Data should include the full test reports describing methods used, test data, calculations, test results and process weight.

I. Internal Combustion Engines: (Stationary)

1. Type of engine.
2. Amount of fuel burned per day.
3. Type of fuel.

J. Vacuum Jets and/or Barometric Condensers

1. Indicate type and efficiency of each air pollution control device.
2. Indicate disposition of exhaust gases (eg. To afterburners, fireboxes, etc.).

K. Loading Rack Vapor Recovery:

1. Actual product throughput in 10^3 gallons per day and year.
2. Type of material loaded.
3. Type of vapor recovery system and rated collection efficiency.
4. Existing test data. The full test reports describing methods used, test data, calculations and test results should be submitted.

L. Submit schematic diagrams showing stacks and their respective process associations and control equipment.

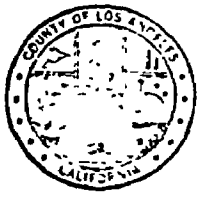
M. List any other significant (25 tons/yr. potential uncontrolled emission) sources of particulates, sulfur dioxide, carbon monoxide, oxides of nitrogen, and hydrocarbons not covered by Items B-L. Include:

1. Type of process and rated capacity.
2. Type of material processed.
3. Types of collection equipment and collection efficiency(s) (design and actual).
4. Pressure drop (inches of water) across collection devices.
5. Existing stack test data applicable to current operating conditions. The full test reports describing methods used, test data, calculations, test results and process weights should be submitted.

APPENDIX B

Select LAAPCD Rules and Regulations

APPENDIX B



County of Los Angeles
Air Pollution Control District

Rules and Regulations

IV

Prohibitions

Rule 50. Ringelmann Chart.

(Effective January 6, 1972 for any source not completed and put into service. Effective for all sources on January 1, 1973.)

A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is.

a. As dark or darker in shade as that designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines, or

b. Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection (a) of this Rule.

This amendment shall be effective on the date of its adoption for any source of emission not then completed and put into service. As to all other sources of emission this amendment shall be effective on January 1, 1973.

Rule 51. Nuisance.

A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property.

Rule 52., Particulate Matter - Concentration.

(Effective January 6, 1972 for any equipment not completed and put into service. Effective for all equipment on January 1, 1973.)

A person shall not discharge into the atmosphere from any source particulate matter in excess of the concentration shown in the following table: (See Rule 52 Table)

Where the volume discharged falls between figures listed in the table, the exact concentration permitted to be discharged shall be determined by linear interpolation.

The provisions of this rule shall not apply to emissions resulting from the combustion of liquid or gaseous fuels in steam generators or gas turbines.

For the purposes of this rule "particulate matter" includes any material which would become particulate matter if cooled to standard conditions.

This amendment shall be effective on the date of its adoption for any

Rule 56. Storage of Petroleum Products.

A person shall not place, store or hold in any stationary tank, reservoir or other container of more than 40,000 gallons capacity any gasoline or any petroleum distillate having a vapor pressure of 1.5 pounds per square inch absolute or greater under actual storage conditions, unless such tank, reservoir or other container is a pressure tank maintaining working pressures sufficient at all times to prevent hydrocarbon vapor or gas loss to the atmosphere, or is designed and equipped with one of the following vapor loss control devices, properly installed, in good working order and in operation:

a. A floating roof, consisting of a pontoon type or double-deck type roof, resting on the surface of the liquid contents and equipped with a closure seal, or seals, to close the space between the roof edge and tank wall. The control equipment provided for in this paragraph shall not be used if the gasoline or petroleum distillate has a vapor pressure of 11.0 pounds per square inch absolute or greater under actual storage conditions. All tank gauging and sampling devices shall be gas-tight except when gauging or sampling is taking place.

b. A vapor recovery system, consisting of a vapor gathering system capable of collecting the hydrocarbon vapors and gases discharged and a vapor disposal system capable of processing such hydrocarbon vapors and gases so as to prevent their emission to the atmosphere and with all tank gauging and sampling devices gas-tight except when gauging or sampling is taking place.

c. Other equipment of equal efficiency, provided such equipment is submitted to and approved by the Air Pollution Control Officer.

Rule 60. Circumvention.

A person shall not build, erect, install, or use any article, machine, equipment or other contrivance, the use of which, without resulting in a reduction in the total release of air contaminants to the atmosphere, reduces or conceals an emission which would otherwise constitute a violation of Division 20, Chapter 2 of the Health and Safety Code of the State of California or of these Rules and Regulations. This Rule shall not apply to cases in which the only violation involved is of Section 24243 of the Health and Safety Code of the State of California, or of Rule 51 of these Rules and Regulations.

Rule 61. Organic Liquid Loading.

(Effective June 29, 1971 for any equipment not completed and put into service. Effective for all equipment after July 1, 1972)

A person shall not load organic liquids having a vapor pressure of 1.5 psia or greater under actual loading conditions into any tank truck, trailer, or railroad tank car from any loading facility unless the loading facility is equipped with a vapor collection and disposal system or its equivalent approved by the Air Pollution Control Officer.

Loading shall be accomplished in such a manner that all displaced vapor and air will be vented only to the vapor collection system. Measures shall be taken to prevent liquid drainage from the loading device when it is not in use or to accomplish complete drainage before the loading device is disconnected.

The vapor disposal portion of the vapor collection and disposal system shall consist of one of the following:

a. An absorber system or condensation system which processes all vapors and recovers at least 90 per cent by weight of the organic vapors and gases from the equipment being controlled.

b. A vapor handling system which directs all vapors to a fuel gas system.

c. Other equipment of an efficiency equal to or greater than a or b if approved by the Air Pollution Control Officer.

This rule shall apply only to the loading of organic liquids having a

vapor pressure of 1.5 psia or greater under actual loading conditions at a facility from which at least 20,000 gallons of such organic liquids are loaded in any one day.

"Loading facility", for the purpose of this rule, shall mean any aggregation or combination of organic liquid loading equipment which is both (1) possessed by one person, and (2) located so that all the organic liquid loading outlets for such aggregation or combination of loading equipment can be encompassed within any circle of 300 feet in diameter.

This amendment shall be effective at the date of its adoption for any equipment not then completed and put into service. As to all other equipment this amendment shall be effective on July 1, 1972.

Rule 62. Sulfur Contents of Fuels.

A person shall not burn within the Los Angeles Basin at any time between May 1 and September 30, both dates inclusive, during the calendar year 1959, and each year thereafter between April 15 and November 15, both inclusive, of the same calendar year, any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 cubic feet of gaseous fuel, calculated as hydrogen sulfide at standard conditions, or any liquid fuel or solid fuel having a sulfur content in excess of 0.5 per cent by weight.

The provisions of this rule shall not apply to:

a. The burning of sulfur, hydrogen sulfide, acid sludge or other sulfur compounds in the manufacturing of sulfur or sulfur compounds.

b. The incinerating of waste gases provided that the gross heating value of such gases is less than 300 British Thermal Units per cubic foot at standard conditions and the fuel used to incinerate such waste gases does not contain sulfur or sulfur compounds in excess of the amount specified in this rule.

c. The use of solid fuels in any metallurgical process.

d. The use of fuels where the gaseous products of combustion are used as raw materials for other processes.

e. The use of liquid or solid fuel to propel or test any vehicle, aircraft, missile, locomotive, boat or ship.

f. The use of liquid fuel whenever the supply of gaseous fuel, the burning of which is permitted by this rule, is not physically available to the user due to accident, act of God, act of war, act of the public enemy, or failure of the supplier.

Rule 62.1 Sulfur Contents of Fuels.

a. A person shall not burn within the Los Angeles Basin at any time between the days of November 16 of any year and April 14 of the next succeeding calendar year, both dates inclusive, any fuel described in the first paragraph of Rule 62 of these Rules and Regulations.

b. The provisions of this Rule do not apply to:

1. Any use of fuel described in Subsections a,b,c,d,e, and f of said Rule 62 under the conditions and for the uses set forth in said Subsections.

2. The use of liquid fuel during a period for which the supplier of gaseous fuel, the burning of which is not prohibited by this Rule, interrupts the delivery of gaseous fuel to the user.

c. Every holder of. and every applicant for a permit to operate fuel-burning equipment under these Rules and Regulations shall notify the Air Pollution Control Officer in the manner and form prescribed by him, of each interruption in and resumption of delivery of gaseous fuel to his equipment.

Rule 62.2 Sulfur Contents of Fuels.

Notwithstanding the provisions of Section (f) of Rule 62 or any pro-

Rule 66.1. Architectural Coatings.

a. A person shall not sell or offer for sale for use in Los Angeles County, in containers of one quart capacity or larger, any architectural coating containing photochemically reactive solvent, as defined in Rule 66(k).

b. A person shall not employ, apply, evaporate or dry in Los Angeles County any architectural coating, purchased in containers of one quart capacity or larger, containing photochemically reactive solvent, as defined in Rule 66 (k).

c. A person shall not thin or dilute any architectural coating with a photochemically reactive solvent, as defined in Rule 66(k).

d. For the purposes of this rule, an architectural coating is defined as a coating used for residential or commercial buildings and their appurtenances; or industrial buildings.

Rule 66.2.Disposal and Evaporation of Solvents

A person shall not during any one day dispose of a total of more than 1½ gallons of any photochemically reactive solvent, as defined in Rule 66(k), or of any material containing more than 1½ gallons of any such photochemically reactive solvent by any means which will permit the evaporation of such solvent into the atmosphere.

Rule 67. Fuel Burning Equipment.

A person shall not build, erect, install or expand any non-mobile fuel burning equipment unit unless the discharge into the atmosphere of contaminants will not and does not exceed any one or more of the following rates:

1. 200 pounds per hour of sulfur compounds, calculated as sulfur

dioxide (SO_2);

2. 140 pounds per hour of nitrogen oxides, calculated as nitrogen dioxide (NO_2);
3. 10 pounds per hour of combustion contaminants as defined in Rule 2m and derived from the fuel.

For the purpose of this rule, a fuel burning equipment unit shall be comprised of the minimum number of boilers, furnaces, jet engines or other fuel burning equipment, the simultaneous operations of which are required for the production of useful heat or power.

Fuel burning equipment serving primarily as air pollution control equipment by using a combustion process to destroy air contaminants shall be exempt from the provisions of this rule.

Nothing in this rule shall be construed as preventing the maintenance or preventing the alteration or modification of an existing fuel burning equipment unit which will reduce its mass rate of air contaminant emissions.

Rule 68. Fuel Burning Equipment -- Oxides of Nitrogen.

A person shall not discharge into the atmosphere from any non-mobile fuel burning article, machine, equipment or other contrivance, having a maximum heat input rate of more than 1775 million British Thermal Units (BTU) per hour (gross), flue gas having a concentration of nitrogen oxides, calculated as nitrogen dioxide (NO_2) at 3 per cent oxygen, in excess of that shown in the following table:

NITROGEN OXIDES - PARTS PER MILLION PARTS OF FLUE GAS

FUEL	EFFECTIVE DATE	
	DECEMBER 31, 1971	DECEMBER 31,1974
Gas	225	125
Liquid or Solid	325	225

Rule 68.1. Fuel Burning Equipment - Combustion Contaminants.

A person shall not discharge into the atmosphere combustion contaminants exceeding in concentration at the point of discharge, 0.3 grain per cubic foot of gas calculated to 12 per cent of carbon dioxide (CO_2) at standard conditions.

Rule 69. Vacuum Producing Devices or Systems.

A person shall not discharge into the atmosphere more than 3 pounds of organic materials in any one hour from any vacuum producing devices or systems including hot wells and accumulators, unless said discharge has been reduced by at least 90 per cent.

This rule shall be effective at the date of its adoption for any equipment not then completed and put into service. As to all other equipment this rule shall be effective on July 1, 1972.

Rule 70. Asphalt Air Blowing.

A person shall not operate or use any article, machine, equipment or other contrivance for the air blowing of asphalt unless all gases, vapors and gas-entrained effluents from such an article, machine, equipment or other contrivance are:

a. Incinerated at temperatures of not less than 1400 degrees Fahrenheit for a period of not less than 0.3 second, or

b. Processed in such a manner determined by the Air Pollution Control Officer to be equally, or more, effective for the purpose of air pollution control than (a) above.

This rule shall be effective at the date of its adoption for any equipment not then completed and put into service. As to all other equipment this rule shall be effective on July 1, 1972.

Rule 71. Carbon Monoxide.

A person shall not, after December 31, 1971, discharge into the atmosphere carbon monoxide (CO) in concentrations exceeding 0.2 per cent by volume measured on a dry basis.

The provisions of this rule shall not apply to emissions from internal

combustion engines.

Rule 72. Pumps and Compressors.

A person shall not, after July 1, 1973, use any pump or compressor handling organic materials having a Reid Vapor Pressure of 1 5 pounds or greater unless such pump or compressor is equipped with a mechanical seal or other device of equal or greater efficiency approved by the Air Pollution Control Officer.

The provisions of this rule shall not apply to any pump or compressor which has a driver of less than one (1) horsepower motor or equivalent rated energy or to any pump or compressor operating at temperatures in excess of 500°F.

Rule 73. Safety Pressure Relief Valves.

A person shall not, after July 1, 1973, use any safety pressure relief valve on any equipment handling organic materials above 15 pounds per square inch absolute pressure unless the safety pressure relief valve is vented to a vapor recovery or disposal system, protected by a rupture disc, or is maintained by an inspection system approved by the Air Pollution Control Officer.

The provisions of this rule shall not apply to any safety pressure relief valve of one (1) inch pipe size or less.

APPENDIX C

Storage Tank Listing

STORAGE VESSELS

GOLDEN EAGLE REFINING CO., INC.

TANK NO.	TYPE OF TANK	STORAGE CAPACITY (THOUSANDS OF BBLS)	STORED MATERIAL	AVERAGE VAPOR PRESSURE psia	TANK DIAMETER	TANK HAS SUBMERGED FULL PIPE?	PRESSURE TIGHT VESSEL?	TYPE OF VAPOR EMISSION CONTROL DEVICE	TANK TEMPERATURE Avg.	TANK TEMPERATURE Max.	DATE INSTALLED OR MODIFIED	USED FOR MULTIPLE PRODUCT STORAGE?
501	Fixed	.5	Empty		11'-0"	Yes	No	Conservation Vent			1952	No
502	Fixed	.5	Empty		11'-0"	Yes	No	Conservation Vent			1952	No
503	Fixed	.5	Fuel Oil	1.9	11'-0"	Yes	No	Conservation Vent	150	180	1952	No
1001	Fixed	1.0	Diesel	.25	21'-6"	Yes	No	Conservation Vent	70	80	1945	No
1002	Fixed	1.0	Diesel	.25	21'-6"	Yes	No	Conservation Vent	70	80	1945	No
1003	Fixed with Vapor Recovery	1.0	Kerosene	.3	21'-6"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1945	No
1004	Fixed with Vapor Recovery	1.0	Kerosene	.3	21'-6"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1945	No
1005	Fixed with Vapor Recovery	1.0	Spent Caustic	-0-	21'-6"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1945	No
1006	Fixed with Vapor Recovery	1.0	Empty		21'-6"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1945	No
1013	Fixed with Vapor recovery	1.0	Slop Oil	.5	21'-6"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1945	No
1014	Fixed with Vapor recovery	1.0	Naphtha & Kerosene	.5	21'-6"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1945	No
1015	Fixed with Vapor recovery	1.0	Naphtha & Kerosene	.5	21'-6"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1945	No
1507	Fixed with Vapor recovery	1.5	Naphtha	1.7	26'-6"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1952	No
1508	Fixed with Vapor recovery	1.5	Naphtha	1.7	26'-6"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1952	No

STORAGE VESSELS

GOLDEN EAGLE REFINING CO., INC.

TANK NO.	TYPE OF TANK	STORAGE CAPACITY (THOUSANDS OF BBLS)	STORED MATERIAL	AVERAGE VAPOR PRESSURE psia	TANK DIAMETER	TANK HAS SUBMERGED FULL PIPE?	PRESSURE TIGHT VESSEL?	TYPE OF VAPOR EMISSION CONTROL DEVICE	TANK TEMPERATURE Avg.	TANK TEMPERATURE Max.	DATE INSTALLED OR MODIFIED	USED FO MULTIPL PRODUCT STORAGE
1509	Fixed with vapor recovery	1.5	Diesel	.25	21'-6"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1945	No
1510	Fixed with vapor recovery	1.5	Diesel	.25	21'-6"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1945	No
1511	Fixed with vapor recovery	1.5	Diesel	.25	21'-6"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1945	No
1512	Fixed with vapor recovery	1.5	Diesel	.25	21'-6"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1945	No
2024	Fixed	2.0	Crude	1.1	30'-0"	Yes	No	Conservation Vent	70	80	1945	No
2026	Fixed	2.0	Crude	1.1	24'-0"	Yes	No	Conservation Vent	70	80	1955	Yes
2027	Fixed	2.0	Crude	1.1	24'-0"	Yes	No	Conservation Vent	70	80	1955	Yes
5010	Fixed	5.0	Water		37'-6"	Yes	No	None	70	80	1955	No
5011	Fixed	5.0	Fuel Oil	1.9	38'-6"	Yes	No	Conservation Vent	150	180	1955	No
5012	Fixed	5.0	Fuel Oil	1.9	37'-0"	Yes	No	Conservation Vent	150	180	1955	No
10005	Fixed	10.0	Water		54'-6"	Yes	No		70	80	1945	No
10018	Fixed with Vapor recovery	10.0	Diesel	.25	55'-0"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1946	Yes
10019	Fixed with Vapor recovery	10.0	Naphtha	1.7	55'-0"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1946	Yes
20001	Floating roof	20.0	Naphtha	1.7	60'-0"	Yes	Floating roof	Floating roof	70	80	1962	Yes
20002	Floating roof	20.0	Empty		60'-0"	Yes	Floating roof	Floating roof	70	80	1962	Yes
30001	Fixed	30.0	Fuel Oil	1.9	84'-0"	Yes	No	Conservation Vent	150	180	1952	No

STORAGE VESSELS

GOLDEN EAGLE REFINING CO., INC.

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55001	Fixed with vapor recovery	55.0	Crude	3.0	115'-0"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1923	Yes
55002	Fixed with vapor recovery	55.0	Crude	3.0	115'-0"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1923	Yes
55003	Floating roof	55.0	Crude	3.0	100'-0"	Yes	Floating roof	Floating roof	70	80	1962	Yes
55004	Fixed	55.0	Fuel Oil	1.9	100'-0"	Yes	No	Conservation Vent	150	180	1965	No
55005	Fixed	55.0	Fuel Oil	1.9	100'-0"	Yes	No	Conservation Vent	150	180	1965	No
80010	Fixed with vapor recovery	80.0	JP-4	1.7	119'-0"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1923	Yes
80011	Fixed with vapor recovery	80.0	JP-4	1.7	119'-0"	Yes	Connected to vapor recovery	Vapor recovery	70	80	1923	Yes
80012	Fixed	80.0	Fuel Oil	1.9	119'-0"	Yes	No	Conservation Vent	150	180	1923	Yes
80014	Floating roof	80.0	Naphtha	.9	120'-0"	Yes	Floating roof	Floating roof	70	80	1962	Yes
80015	Fixed with vapor recovery	80.0	Fuel Oil	1.9	117'-0"	Yes	Connected to vapor recovery	Vapor recovery	150	180	1923	Yes
80016	Fixed with vapor recovery	80.0	Fuel Oil	1.9	117'-0"	Yes	Connected to vapor recovery	Vapor recovery	150	180	1923	Yes
80020	Fixed	80.0	Fuel Oil	1.9	119'-0"	Yes	No	Conservation Vent	150	180	1923	Yes

SD

GOLDEN EAGLE REFINING COMPANY, INC.
Carson, California

SUMMARY AND CONCLUSIONS

Golden Eagle Refining Company, Inc. operates a 2,500 m^3 (16,000 bbl)/SD simple crude oil refinery. Sweet Alaskan crudes are processed, as are purchased napthas. Atmospheric distillation and fractionation and naptha stabilization are the only processes conducted at this facility. The main products resulting from these operations include jet fuels, diesel fuel, and low sulfur fuel oil.

On October 16, 1975, NEIC conducted an air pollution related inspection at this facility. Substantial amounts of process and air pollution control equipment information were requested of, and received from, Golden Eagle. The Los Angeles County Air Pollution Control District (LAAPCD) was requested to supply information pertaining to stack testing conducted at this facility and any violation notices issued to Golden Eagle. Theoretical emission rates were calculated for various refinery operations using approved USEPA emission factors.

The following conclusions were derived from the inspection and information obtained:

1. No visible emissions were noted from any of the process heaters or steam boilers. The ground level flare also appeared to be operating correctly.

2. General housekeeping at the refinery appeared to be very good.

3. All equipment at the refinery is operating under a valid LAAPCD permit.

4. At the time of this inspection, there were no apparent violations of any of the LAAPCD rules.

5. There is no source test data available on any of the potential emission sources.

6. There have been no recent violation notices issued to Golden Eagle by the LAAPCD.

RECOMMENDATION

The EPA Region IX should be aware of Golden Eagle's new expansion plans. The proposed new process heaters and storage vessels are subject to the New Source Performance Standards. The entire new facilities are subject to New Source Review.