ATTACHMENT A

"DO31"

DEPARTMENT: ENVIRONMENTAL AFFAIRS AND TOURISM
REPUBLIC OF SOUTH AFRICA

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BELLVILLE

Verwysing/Reference
23/4/2/307/4

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Navrae/Enquiries
Mr R Pillay

DIRECTORATE:
AIR QUALITY MANAGEMENT

22 July 2003

The Refinery Manager
Caltex Oil (SA) (Pty) Ltd
P O Box 13
MILNERTON
7435

Attention: Mr T. Parker

Dear Sir,

Re: Registration Certificate Caltex Oil (Pty) Ltd

The department has reviewed your submission dated 20th May 2002 and wish to inform you until further notice, registration certificate no. 307/4 (dated 6 September 1994) will be applicable to your operations. In addition to the conditions in the above registration certificate the following are applicable as stated in page 9 and 10 of your certificate:

1. The average sulphur content of all fuels used, shall be less than 2% (w/w), based on a density of 0,980 and calorific value of 40,5 MJ/kg. Records shall be kept of the average daily sulphur content of the fuels burned in boilers and furnaces. In the event of any deviation from the above reference, immediate steps are to be taken to rectify the situation. Fuels containing high sulphur Vacuum/ Visbreaker Residue are only burnt in heaters discharging to the 91,4 m stacks. The total amount of Sulphur Dioxide emitted from the refinery, shall not exceed 22 tons/day.

5. All gaseous emissions are discharged via the following stacks:

Stack	Height	Units
02F 201	61m (200 ft)	Crude pre heat
2F1 combined stack	61m (200 ft)	Crude, Visb., NHT, KHT
4F1 stack	59,1m (194 ft)	Platformer
No. 1 FCCU	59,6m (195 ft)	FCCU
56 F 201	53,3m (175 ft)	DHT
8F1	30,5m (100 ft)	Asphalt
YIP combined stack	91,4m (300 ft)	vacuum, sulphur Recovery, FCCU Preheat
Major combined	91,4 (300 ft)	Crude, Vacuum, FCCU, Boilers, Naphta Splitter
Flare	53,2 m	
71F1 Free standing stack	52 m	Isomerization

6. The SO_2 and SO_3 content of emissions from all relevant stacks shall be determined. These and records of all SO_2 monitoring results shall be submitted to the Air Pollution Control Officer, at quarterly intervals. Any ambient SO_2 results exceeding an average of 265 µg /m³ for a 24 hour period should be highlighted and where possible likely causes indicated

   All gaseous emissions shall be controlled to the extent that during normal operation and under stable meteorological conditions the ground level concentrations of sulphur dioxide within 10 km of the refinery will not exceed 265 µg /m³ average over any 24 hour period.

8. All practicable measures shall be taken to reduce fugitive emissions and odours to a minimum. A quarterly report on all steps taken and improvements achieved in this regard, as well as a programme for further reduction during the following period, shall be submitted.

9. In services where gas or oil fuel is to be used, any new or replacement burners are to be of the low NO_x design. Details of the burner replacement programme must be made available to the Chief Air Pollution Control Officer, and reported in the annual report.

10. Dust emissions from the Fluid Catalytic Cracking Units which are fitted with Electrostatic precipitators shall be below 100 mg of particulate matter per m³ as measured at 0°C and 760 mm Hg.

11. All fired heaters or boilers that burn fuel will be fitted with on line opacity monitors either on the total stack gas or on individual flue-gas ducts leading into any common stack. During operation, the opacity will not exceed 20% for 97% of the time on a shift basis. Availability of opacity metres will be greater than 96% on a calendar year basis. Where problems are experienced, suitable actions must be taken to correct the situation and records detailing performance, availability factors and details of the actions taken or planned are to be kept and reported in the annual report.

Please be advised the department is updating your registration certificate The conditions for your new registration certificate will be forwarded to you in due course. You are requested to provide the department with information regarding any changes to your process that differs from the above registration certificate.

Please feel free to contact me should you have any queries.

Yours faithfully

Mr Pillay
CAPCO: Cape Region

DEPARTMENT OF HEALTH
DEPARTEMENT VAN GESONDHEID
Republic of South Africa

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23/4/2/307/4

DIRECTORATE:
AIR POLLUTION CONTROL
1995 FEB 14

Caltex Oil (SA) (Pty) Ltd
P O Box 13
MILNERTON
7435

Dear Sir

REGISTRATION IN TERMS OF THE ATMOSPHERIC POLLUTION PREVENTION ACT, 1965 (ACT 45 OF 1965)

With reference to your application dated 6 July 1994, I enclose registration certificate No. 307/4 dated 6 September 1994 in respect of your petroleum refinery in Milnerton. This certificate supersedes certificate 307/1, 307/2 and 307/3.

Your attention is drawn to -

a. part 4 of the document accompanying this certificate;

and

b. section 12 of the Act which reads - " (1) A registration certificate shall be subject to the condition that all plant and apparatus used for the purpose of carrying on the scheduled process in question and all appliances for preventing or reducing to a minimum the escape into the atmosphere of noxious or offensive gases, shall at all times be properly maintained and operated and that the holder of the certificate shall ensure that all other necessary measures are taken to prevent the escape into the atmosphere of noxious or offensive gases...".

Yours faithfully

CHIEF AIR POLLUTION CONTROL OFFICER

REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF NATIONAL HEALTH AND POPULATION DEVELOPMENT

ATMOSPHERIC POLLUTION PREVENTION ACT, 1965

Registration Certificate Concerning Scheduled Processes

CALTEX OIL (SA) (PTY) LTD

is authorized to continue the processes listed below, with the equipment and plant as detailed in document number 307/4 on the premises known as Postdam Railway Reserve, Plattekloof Road, Milnerton.

1. HYDROCARBON REFINING PROCESSES (PROCESS NO 14 OF THE SECOND SCHEDULE)

Chief Air Pollution Control Officer

Certificate Number 307/4

Date 6 September 1994

1. SITUATION AND EXTENT OF PLANT

Situation

Postdam Railway Reserve, Plattekloof Road, Milnerton.

Extent

Approximately 162 hectare

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CHIEF AIR POLLUTION CONTROL OFFICER

No. 307/4

6 September 1994

2. NATURE OF PROCESS

REFINING OF HYDROCARBONS PROCESSES (No 14)

Crude oil is desalted with water and processed in the following units:

(1) Crude Units (2)

Desalted crude is distilled into the following products:
(a) Gas
(b) Naphtha
(c) Kerosene
(d) Light Diesel Gas Oil
(e) Heavy Diesel Gas Oil
(f) Residue
Most crude cuts require further processing.

(2) Vacuum Distillation Units (2)

The residue from the Crude Units is further distilled under reduced pressure to produce:
(a) Light Vacuum Gas Oil which, after sulphur reduction in the Diesel Hydrotreater, is blended into Finished Diesel Gas Oil.
(b) Heavy Vacuum Gas Oil - used as feedstock for the Fluid Catalytic Cracking Unit(s).
(c) Vacuum Residue - partially used as feed for Bitumen production and used as feedstock for the Visbreaker Unit.

(3) Naphtha Hydrotreater (1)

The Crude Naphtha is heated with hydrogen over a catalyst to remove sulphur and saturate olefins. Products from the Naphtha Hydrotreater are -

(a) gas rich in hydrogen sulphide which is routed to an Amine Unit;
(b) Light Straight Run which is used as gasoline blending component;

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CHIEF AIR POLLUTION CONTROL OFFICER

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6 September 1994

2. NATURE OF PROCESS

REFINING OF HYDROCARBONS PROCESSES (No 14) (CONT)

(c) Heavy Straight Run - used as feed to the Catalytic Reformer (Platformer).

(4) Kerosene Hydrotreater (1)

Similar to the Naphtha Hydrotreater. Products are -

(a) Gas rich in hydrogen sulphide; routed to an Amine Unit;
(b) sulphur-free Kerosene - sold as Illuminating Kerosene and/or Jet Fuel.

(5) Diesel Hydrotreater (1)

Similar to the other Hydrotreaters. Used to saturate olefins and reduce the sulphur content of the Crude Diesel Gas Oil, Light Vacuum Gas Oil and Light Cycle (Cracked) Gas Oil. After treatment these products are blended into Finished Diesel Gas Oil. The Diesel Hydrotreater has a separate Amine Unit to handle the very large volume of hydrogen sulphide produced.

(6) Amine Units (2)

Used to separate hydrogen sulphide from hydrocarbon gases by passing the gases through monoethylamine or diethylamine solution. The amine is reclaimed by stripping out the absorbed hydrogen sulphide, which is then routed to the Sulphur Recovery Units.

(7) Sulphur Recovery Units (2)

The hydrogen sulphide is partially burnt to sulphur dioxide. The sulphur dioxide and remaining hydrogen sulphide react over catalyst to produce pure sulphur and water. Any remaining sulphurous gases are incinerated.

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CHIEF AIR POLLUTION CONTROL OFFICER

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6 September 1994

2. NATURE OF PROCESS

(8) Catalytic Reformer (Platformer) (1)

Heavy Hydrotreated Naphtha is passed through a series of reactors containing a supported platinum catalyst. The low octane paraffins and naphthenes are reformed into higher octane compounds. Products are -

(a) Hydrogen (used in the Hydrotreaters);
(b) Gaseous Hydrocarbons;
(c) Liquefied Petroleum Gas;
(d) Platformates.

The platformates are used as gasoline blending components.

(9) Fluid Catalytic Cracking Units (2)

The Heavy Vacuum Gas Oil from the Vacuum Distillation Units is contacted with a silica/alumina zeolite catalyst at high temperatures. Cracked products are -

(a) Olefinic Gas;
(b) Liquefied Petroleum Gas;
(c) Cracked Naphtha;
(d) Light Cycle Gas Oil;
(e) Fuel Oil Blending Products.

The gas is routed to an Amine Plant for sulphur removal.

The Liquefied Petroleum Gas contains unwanted mercaptans which are removed in the Merox Unit.

The Naphtha is distilled into Light Cracked Naphtha and Heavy Cracked Naphtha. The Light Naphtha is routed to the Minal Plant for removal of sulphur compounds, from where it is routed to gasoline blending.

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2. NATURE OF PROCESS

The Heavy Naphtha is used as a blending component of Heavy Fuel Oil.

The Light Cycle Gas Oil is routed to the Diesel Hydrotreater.

The Fuel Oil Blending Product is routed to tankage as a blending component of Heavy Fuel Oil.

Fluid Catalytic Cracking Unit catalyst is continuously regenerated by burning off the coke laid down on the catalyst.

Fuel upgrading facility

The option exists to operate one FCCU in a fuel upgrading mode by routing a portion of Vacuum Residue, together with Heavy Vacuum Gas Oil to a Fluid Catalytic Cracking Unit using a special catalyst for the removal of heavy metals and asphaltenes. The residue from the Unit can then be used as partial feedstock for a second Fluid Catalytic Cracking Unit.

(10) Catalytic Condensation Unit (1)

LPG from the Fluid Catalytic Cracking Unit(s), after removal of basic nitrogen containing components, reacts over phosphoric acid impregnated catalyst to produce high octanenumber naphtha for use as blending component in petrol production. The remaining lower olefin LPG is routed to sales.

(11) Visbreaker (1)

A large portion of the residue from the Vacuum Distillation Units is thermally cracked into lighter products:

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2. NATURE OF PROCESS

(a) Gas
(b) Visbreaker Naphtha
(c) Visbreaker Gas Oil
(d) Visbreaker Residue

The gas is routed to an Amine Plant.

The Naphtha and Gas Oil are routed to the Naphtha and Diesel Hydrotreaters respectively.

The Visbreaker Residue, which has a substantially lower viscosity than the Vacuum Residue, is routed to Heavy Fuel Oil Blending.

(12) Asphalt Plant (1)

A portion of Vacuum Residue is further vacuum-distilled and air-blown to produce bitumen. Various grades of bitumen, cutback bitumen and bitumen emulsion are produced.

(13) Merox (1) and Minimum Alkaline (1) Plants

Mercaptans are removed from liquid hydrocarbons by blowing a caustic/hydrocarbon mixture with air in the presence of a catalyst. The mercaptans form disulphides, which dissolve in the product being treated.

(14) Jet Merox Plant (1)

Mercaptan sulphur in crude kerosene is converted to disulphides by means of a merox caustic solution.

(15) Utilities

These consist of a Water Treatment Plant, various Boilers, Air Compressors and several Open and Closed Water Systems.

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CHIEF AIR POLLUTION CONTROL OFFICER

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2. NATURE OF PROCESS

(16) Effluent Treatment

Before aqueous effluent is pumped to sea, it is treated for the removal or reduction of Ammonia, Chemical Oxygen Demand, Oil, Phenols, Sulphide, Total Suspended Solids and the Adjustment of pH.

(17) Tank Farm

The Tank Farm contains Crude Oil, intermediate products, finished products and water tanks.

(18) Flare

Non-recoverable gases are combusted in a flare.

(19) Isomerization Unit (1)

A mixture of n-paraffins contained in the naphtha obtained from the Naphtha Hydrotreater reacts under a hydrogen atmosphere over a catalyst bed to form iso-paraffins for use as a gasoline blending component.

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3. RAW MATERIALS AND PRODUCTS

Raw Materials

Crude oil - maximum 100 000 barrels per calendar day.

Products

Saturated Sales Gas
Fuel Gas
Liquefied Petroleum Gases (2 grades)
Sales Naphtha
Gasolines (3 grades)
Kerosenes (3 grades)
Diesel Gas Oils (4 grades)
Fuel Oils (4 grades)
Bitumen Products (13 grades)
Sulphur

CHIEF AIR POLLUTION CONTROL OFFICER

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6 September 1994

APPLIANCES AND MEASURES TO PREVENT AIR POLLUTION

1. The average sulphur content of all fuels used, shall be less than 2%(w/w), based on a density of 0,989 and a calorific value of 40,5 MJ/kg. Records shall be kept of the average daily sulphur content of the fuels burned in boilers and furnaces. In the event of any deviation from the above reference, immediate steps are to be taken to rectify the situation.
   Fuels containing high sulphur Vacuum/Visbreaker Residue are only burnt in heaters discharging to the 91,4 m stacks.

2. The two 45 ton per day two-stage Sulphur Recovery Units have an efficiency in excess of 95% and are available for 99% of operational time.

3. All gases that are unsuitable as fuel gas are incinerated.

4. All gaseous emissions are discharged via the following stacks:

Stack	Height	Units
02F-201	61m (200 ft)	Crude pre-heat
2F1 combined stack	61m (200 ft)	Crude, Visb., NHT, KHT
4F1 stack	59,1m (194 ft)	Platformer
16F 201/202 combined stack	53,3m (175 ft)	Boilers
~~No. 1 FCCU~~	~~58,8m (192 ft)~~ 59,5m 195 ft	FCCU
56F-201	53,3m (175 ft)	DHT
8F1	30,5m (100 ft)	Asphalt
YIP combined stack	91,4m (300 ft)	Vacuum, Sulphur Recovery, FCCU Preheat
Major combined	91,4 (300 ft)	Crude, Vacuum, FCCU, Boilers, Naphta Splitter
Flare	53,2 m	
71F1 Free standing stack	52 m	Isomerization

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CHIEF AIR POLLUTION CONTROL OFFICER

No. 307/4

6 September 1994

4. APPLIANCES AND MEASURES TO PREVENT AIR POLLUTION

6. The SO_2 and SO_3 content of emissions from all relevant stacks shall be determined. These and records of all SO_2 monitoring results shall be submitted to the Air Pollution Control Officer, at quarterly intervals. Any ambient SO_2 results exceeding an average of 285 $\mu g/m^3$ for a 24 hour period should be highlighted and where possible likely causes indicated.

   All gaseous emissions shall be controlled to the extent that during normal operation and under stable meteorological conditions the ground level concentrations of sulphur dioxide within 10 km of the refinery will not exceed 285 microgram per cubic metre average over any 24 hour period.

7. The off-gas from the spent caustic neutralisation column is incinerated using fuel gas.

8. All practicable measures shall be taken to reduce fugitive emissions and odours from the plant and liquid effluent to a minimum.

9. A programme to install low NOx burners, will be submitted as soon as possible.

10. Dust emissions from the Fluid Catalytic Cracking Units which are fitted with cyclone dust collectors shall be below 500 mg of particulate matter per m^3 as measured at 0°C and 760 mm Hg. A programme to reduce the dust emission to less than 120 mg/cubic metre, will be submitted as soon as possible.

11. Smoke emissions from the plant will be kept to a minimum and a programme to reduce the opacity of plumes to less than 20%, be implemented.

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5. DISPOSAL OF EFFLUENTS FROM PURIFICATION EQUIPMENT

No effluents.

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TOTAL NUMBER OF PAGES: 11

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DIRECTORATE: AIR POLLUTION CONTROL
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6 September 1994