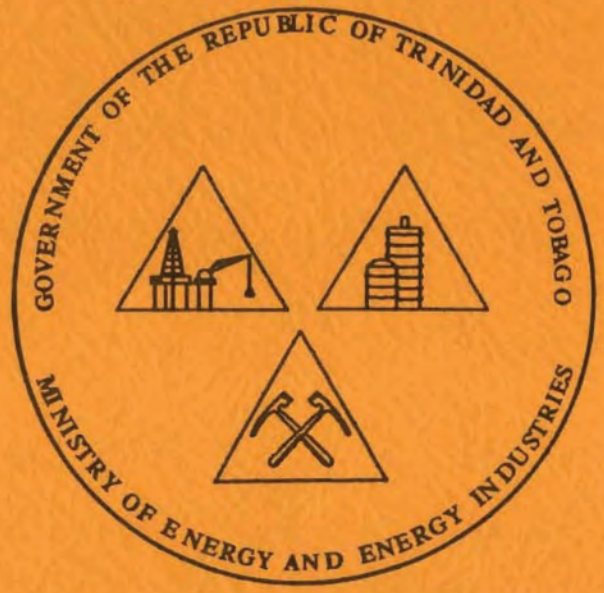
GOVERNMENT OF THE REPUBLIC OF TRINIDAD AND TOBAGO

MINISTRY OF ENERGY AND ENERGY INDUSTRIES



ANNUAL ADMINISTRATIVE REPORT

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

b/d	-	barrels per day
bcf	-	billion cubic feet
bbl	-	barrel, barrels
bcpd	-	barrels of condensate per day
bopd	-	barrels of oil per day
bpcd	-	barrels per calendar day
bspd	-	barrels of steam per day
bwpd	-	barrels of water per day
Mcfd	-	thousand cubic feet per day
MMcfd	-	million cubic feet per day
Mm^3d	-	mega cubic metres per day
MMbbl	-	million barrels

Overview of developments in the Petroleum Industry during 1993

In reviewing the events in the petroleum industry for 1993, the main achievements are to be noted in Government's effort to rationalize the local petroleum industry, the expansion of foreign investment in the energy sector and the ongoing developments of the natural gas industry. It should also be mentioned that during this year, commercial oil and natural gas production declined from their 1992 levels by 9% and 15%, respectively.

By an Act of Parliament in June 1993, the core assets, liabilities and obligations of the Trinidad and Tobago Oil Company (Trintoc) and the Trinidad and Tobago Petroleum Company (Trintopec) were vested in a single company, Petrotrin - the Petroleum Company of Trinidad and Tobago. It was incorporated in January 1993. This represented a significant milestone for the country as the integrated company sought to effect economies of efficiency in its activities in order to increase its profitability.

The first stage of the Government's programme for the divestment of its petrochemical holdings was also instituted in March of this year, with the sale of the Trinidad and Tobago Urea Company and Fertilizers of Trinidad and Tobago Ltd (Fertrin) to Arcadian Partners L.P. The Urea Company was fully state-owned, while Fertrin was a joint venture with Amoco. The terms and conditions of the divestment of the Trinidad and Tobago Methanol Company with a Ferrostaal/Helm consortium were being finalized at year end.

In early January, Nucor, a North Carolina-based steel producer, signed an agreement with the National Gas Company to supply natural gas for use in a patented process to convert iron ore into iron carbide. Nucor will build the first commercial scale plant for the new process at the Point Lisas Industrial Estate.

In September, the 1974 Production Sharing Contract for Block 6 with the British Gas Trinidad Ltd/Texaco Trinidad Inc. joint venture was amended. This allowed the companies to proceed with the development of the Dolphin Field located 55 miles off the South East Coast of Trinidad. First natural gas sales from the field are scheduled for the first quarter 1996. A Production Sharing Contract for the exploration of the adjacent Block E was also signed with the same companies at that time.

Pre-feasibility studies were started for the construction of a world scale liquid natural gas (LNG) facility at the Brighton Industrial Estate.

Finally, seven more CNG filling stations were opened, bringing the total to ten located in North, Central and South Trinidad.

ENERGY SECTOR ACTIVITIES

Geophysical Surveys

A considerable amount of geophysical activity was carried out during 1993 including seismic and gravity surveys. Following is a summary of these activities.

Amoco Trinidad Oil Company (Amoco)

Amoco conducted two seismic data acquisition programmes over the following areas:

- **Teak Field: 2-D seismic. Digicon Geophysical Corporation was contracted to conduct a survey north-east of the Teak Field. It was carried out between January 12-14, 1993 using the seismic vessel MV Digicon Explorer. The acquisition parameters are summarized in Table 1. Cost of acquisition and processing was US$100,000 (TT$580,000).**

- **S.E. Darien Ridge: 3-D seismic (approved in 1992, and conducted in February 1993). The entire programme was conducted by Western Geophysical using the MV Western Monarch. Cost of acquisition and processing was US$1.8m (TT$10.4m). The areal extent of the survey was 112 km^2. The acquisition parameters are summarized below in Table I.**

Table I

	3-D	*2-D*
Distance:CMP (prime) Data	*5,203km*	*110km*
Number of Lines	*-*	*8*
Navigation	*Syledis*	*Syledis*

Data Transmitted

The following reports were supplied by the company to the Ministry during 1993:

- **Columbus Basin study final report - An integrated study of the Columbus Basin analyzing structure, stratigraphy, and hydrocarbon distribution was received.**

- **Cassia field study, and Kapok post appraisal study - This consisted of various depth structure maps, time structure maps, velocity maps, and seismic lines. Scale: 1:20,000.**

British Gas (Trinidad)

Block KK5 - North Coast Marine Area

British Gas (Trinidad) contracted Geco to conduct a 2-D seismic acquisition programme over the offshore Block KK5 in the north coast marine area of Trinidad. The vessel, MV Geco Longva, was used to carry out the survey in May of 1993. The acquisition parameters are detailed at Table II.

Block E and Block 6

British Gas/Texaco consortium contracted Western Geophysical to conduct 2-D and 3-D seismic surveys over their East coast marine acreage, Block E and Block 6. The 2-D acquisition programme was conducted during October 29 to November 3, 1993 and the 3-D acquisition programme between November 9 and December 20, 1993.

Both surveys employed the services of the seismic vessel RV Western Hercules. The acquisition parameters are detailed at Table II. The estimated cost of acquisition was US$3.29m (TT$19.4m). Data was processed by Compagnie Generale de Geophysique in Houston, Texas.

Table II

	Dolphin 3-D	*Block E 2-D*	*KK5 2-D*
Distance:CMP (prime) Data	*8,962 km*	*406km*	*561km*
Infill Data	*3,108 km*	-	-
	———	-	-
TOTAL	*12,070 km*		
Sail	*1,446 km*	-	-
Navigation	*DGPS*	-	-

Hazard Surveys

British Gas/Texaco conducted one shallow hazard survey over the Dolphin Field (Block 6) during 1993. The survey comprised high resolution seismic operations, bathymetry (echo sounding, side-scan sonar) recordings, tide measurements, and magnetometer surveys. The survey was conducted by Wimpol Inc. and was centred around geographical coordinates.

Lat. : 10^0 11' N
Long. : 60^0 14' W

Soil Boring

As part of the geotechnical investigation required for the foundation design of the Dolphin field production platform, British Gas/Texaco conducted five soil borings within a three nautical mile radius of the geographical coordinates listed above. The survey was conducted by Fugro-McClelland's vessel, Seaprobe I, and was completed in December 1993.

Data Transmitted

The following data on the KK-5 Block, North coast marine area, were supplied to the Ministry in September, 1993:

- KK5 Seisworks 2-D Project

Raw Migration - 6 tapes, 6250 bpi
TVF/MIGR - 6 tapes, 6250 bpi
Navigation - 4 tapes, 8 mm

Seismic data processing report - Block KK5 prepared by J.D. Boswell, Western geophysical. May-August, 1993

Enron Gas & Oil Trinidad

Enron Gas and Oil Trinidad contracted Digicon to conduct a 3-D seismic acquisition programme over the South East Coast Consortium (SECC) Block in December 1992. Data was acquired between January 15 and April 14, 1993. Digicon employed a two boat operation using the MV China Seal (streamer) and the MV Digicon Explorer (gun and streamer) to conduct the survey. This configuration facilitated undershooting Trintomar's Pelican platform. The seismic acquisition parameters are detailed at Table III.

Estimated cost of acquisition was US$3.97m (TT$23.4m). The seismic data was processed in Houston, Texas by Digicon.

Table III

Distance: CMP (prime) Data		*12,326.5 km*
Infill Data		*726.6 km*
Undershoot Data		*217.3 km*
Reshoot Data		*69.3 km*
		———
TOTAL		*13,339.7 km*
Number of Lines	*572*	
Navigation	*Primary Syledis*	*Secondary DGPS*

Hazard Surveys

Enron conducted a number of hazard surveys over the SECC Block in order to determine design parameters for the location of various facilities. Wimpol Inc. of Houston, Texas was contracted to carry out the following surveys:

- Kiskadee Platform site survey
- Ibis 'A' and 'B' Platforms site surveys
- Surveys to verify the location of the 30" diameter Natural Gas Company pipeline and the Kiskadee Wells #1 and #2, relative to the Kiskadee Platform 'A' location.
- Shallow hazard surveys over the following proposed pipeline routes:

  Ibis 'A' to Trintomar 10" diameter pipeline (condensate/crude)
  Ibis 'A' to NGC 30" diameter pipeline (gas)
  Ibis 'A' to Ibis 'B' (gas/condensate)
  Pelican to Kiskadee 'A' (gas)

Wimpol Inc. employed side scan sonar, echosounder (for bathymetric profiling) a sub-bottom profiler system and a mini-sparker (for shallow and deeper data) and a magnetometer to conduct the hazard surveys.

Soil Borings

In April of 1993, Enron contracted Fugro-McClelland to conduct soil boring exercises over the proposed Kiskadee Platform 'A' and Ibis Platform 'A' locations. The survey vessel MV Jean Tide was used to conduct these surveys.

In October of 1993, Fugro-McClelland was again contracted to conduct soil boring exercises over the proposed Ibis 'A' and 'B' Platform locations. The vessel MV Seaprobe I was used, with John Chance and Associates being responsible for navigation.

Data Transmitted

The following data were supplied to the Ministry by Enron:

- Re-processed 2-D seismic lines: 1976. Migration, 10cm/sec, 1:25,000 scale
- 1993 3-D seismic survey

  8mm tapes - Landmark format, 32 bits, 4ms sample rate, 8.0s record length
  8mm tapes - SEG-Y format
  Film sepia of survey map
  Print of survey map
  Acquisition report
  Processing report
  Navigation report
  Paper and Sepia prints of inlines and crosslines (20th)

Southern Basin Consortium (SBC)

Data Transmitted

The SBC transmitted the following data to the Ministry:

- Gravity Data

  One 6250 bpi field tape of gravity measurements (all SBC recorded gravity profiles).

- Seismic Data

  Nine 6250 bpi tapes with final migrated seismic data in Landmark RT format.

One 8mm tape with the final migrated data in SEG-Y format.

- Reports

  Trinidad SBC long offset study TD90-150 by M. Lee Bell et.al., 8/91

  The Tectonic framework of Trinidad & nearby offshore areas from interpretation of geology, potential fields, and surface imaging by Shegelski and Kieniewicz, 6/92

  Trinidad SBC magnetic susceptibility field study by Kieniewicz and Williams, 1992

- Maps

  Golden Geophysical seismic lines (paper and film):

  TD90-120 pre-stack migration
  TD90-125 pre-stack migration
  TD90-130 pre-stack migration
  TD90-160 pre-stack migration

  1st Occurrence Gautier Depth Structure - Aden 4/93

  1st Occurrence Gautier Time Structure - Aden 4/93

Trinmar

Geophysical Studies

Seismic processing of Trinmar's 3-D Bottom Reference Cable Seismic Survey was completed on April 2, 1993 by Geco/Prakla in Houston. Interpretation of the data is being currently conducted on two Landmark workstations at Trinmar's offices in Point Fortin. Four teams working on the interpretation of the data are concentrating initially on field mapping for development, and one is concentrating on exploration opportunities.

A seismic amplitude study using the amplitude versus offset (AVO) analysis was done on the North Marine Prospect. The AVO work was done by Western Geophysical in Houston, Texas.

Other

In May, 1993 Trinmar contracted Tape Technologies Inc., to transcribe and store some 10,600 tapes at their facilities in Dallas, Texas.

Union Oil of California (Unocal)

Unocal contracted Geco to conduct a 3-D/2-D seismic acquisition programme over the offshore Block 89/3. The survey was conducted over the period February 21 to May 5, 1993. The entire programme was conducted using the vessel MV Geco Longva. The seismic acquisition parameters are detailed at Table IV:

Table IV

	3-D	*2-D*
Distance: CMP (prime) Data	*16,323 km*	
Sail	*2,951 km*	*173km*
Number of Lines	*768*	*8*
Navigation	*IDGPS (DGPS and ARGO Integrated)*	

Unocal also contracted Edcon to acquire 3-D gravity data simultaneously with the seismic data acquisition.

Processing of the seismic data with post-stack migration was conducted by Halliburton Energy Services in Houston, Texas. Processing was completed at the end of November, 1993. A subset of the data was also forwarded to Unocal's geophysical research center at La Palma,

California, for additional testing, and to perform a pre-stack migration. The pre-stack migration was completed in December of 1993.

Estimated expenditure was as follows:

-	seismic acquisition	US$ 2.92million
-	gravity acquisition	US$ 91,000
-	seismic processing	-

Data Received

The Ministry received the following data from Unocal during 1993:

- Bouguer gravity map over Block 89/3
- Bathymetry map over Block 89/3

Exploratory Drilling

The following is a review by company of the exploration activities of the petroleum sector during 1993.

Amoco Trinidad Oil Company

During the past year Amoco drilled two semi-exploratory wells, Samaan Deep Test 2 and Flambouyant 2-ST 1.

Samaan Deep Test 2

The Samaan Deep Test 2 well is located 0.5 miles southeast of the Samaan 'A' platform in the Samaan Field. Its primary objective was to test a series of Pliocene-aged sands below the producing field. The sands were seismically mapped and referred to as the '13' through '16' sands. The well was programmed to be drilled as a straight hole to a depth of 4 572m (15,000 ft) sub-sea. However the total depth was increased by 396m (1,300 ft) to 4 968m (16,300 ft) since the objectives were found to be deeper.

The well was spudded on January 31, 1993. At 4 633m (15,200 ft), the well was sidetracked due to stuck-pipe. Final TD 4 936m (16,195 ft), measured depth (MD) was achieved in 212 days. The objective sands were encountered but there was some uncertainty concerning the presence of the '15' and '16' sands.

The 13" sand was the only sand that had any fluorescence and show. It was determined however, that hydrocarbons present would be uneconomic to produce. The deeper sands did not appear to have any potential as reservoirs. As a result, the well was plugged and abandoned.

Flambouyant #2

The Flambouyant #2 prospect was the second well drilled off the Flambouyant platform located 12 miles north-east of the Cassia platform. The primary objectives were a series of Lower Pliocene-aged potential sand reservoirs. The sands of interest were the G-50 MP-90, MP-100 and MP-110. The well was drilled as a deviated hole with the kick-off point at 174m (570 ft); its approved total depth was 4 846m (15,900 ft) sub-sea.

Flambouyant #2, was spudded on the first of September and reached 4 176m (13,700 ft) drilled depth (DD) at year's end. As a result of drilling problems , the well was 30 days behind schedule. In addition to the unscheduled downtime there were unexpected variations in the geology of the area. This well was located 152m (500 ft) away from Flambouyant #1 (WEQB #1) well, while geology was expected to be similar. Contrary to expectations, one of the producible sands, the G-50 sand had 46m (150 ft) of section faulted out. The G-60 sand, although not expected to be hydrocarbon bearing had 68m (225 ft) of gross gas sand. 18m (60 ft) of the G-60 were cored for petrophysical analysis but only 13.4m (44 ft) of the core were recovered. Additionally, several sand lobes encountered between 2 286m (7,500 ft) and 3 353m (11,000 ft) were not present in Flambouyant #1.

British Gas/Texaco

Government approved the Production Sharing Contract (PSC) for Block 6 and Block E with the British Gas/Texaco consortium. Additionally, a gas sales contract was signed between National Gas Company and British Gas/Texaco. British Gas Inc. informed the Ministry of its intention to transfer its interests in the PSC to British Gas Trinidad Limited. The consortium started development of Block E and Block 6 with a seismic survey.

BHP Petroleum (Trinidad) Inc

BHP Petroleum (Trinidad) Inc informed the Ministry that the company had elected not to proceed with negotiations for an Exploration and Production Licence in respect of Block 89/2.

Enron Gas and Oil Trinidad

Enron began development of the Kiskadee Field during the second half of the year. A 3-D seismic survey of the SECC acreage was completed.

The 9 slot Kiskadee platform was set in position and four wells were spudded from it. Two wells, Kiskadee A-1 and Kiskadee A-2 were replacements for exploratory wells Kiskadee 1 (K #1)and Kiskadee 2 (K #2). The primary objective of these wells was the 15,000 ft sand.

Kiskadee A-1

The KA-1 well was spudded on July 26. The primary objective was prognosed to be encountered at 17,400 ft. The secondary objective, the 9,600 ft sand was expected at 2 956m (9,700 ft) DD. The programmed TD of the well was 5 456m (17,900 ft) DD.

The well was sidetracked at 792m (2,599 ft) when the drill pipe twisted off at the cross-over sub. KA-1 was again sidetracked, this time below the 9 5/8" casing.

Final TD was 5 363m (17,595 ft) DD. The objectives were achieved as forecasted. The interval 5 263.3m - 5 318.1m (17,268 - 17,448 ft) DD was perforated. Production rates were 28 MMcfd of gas and 1,300 barrels of condensate a day (bcpd) at year end.

Kiskadee A-2

Kiskadee A-2, proposed as an infill well, was spudded on August 2, 1993. The objective 4 572m (15,000 ft) sand was expected at 4 724m (15,500 ft) sub-sea at a location 45.7m (150 ft) updip of K-2. The well was drilled to 4 999m (16,400 ft) sub-sea and completed. As at December 30, the well was yet to be tested.

Kiskadee A-3 and Kiskadee A-4

KA-3 was proposed as an outstep development well to test hydrocarbon accumulations in the Kiskadee sand within an untested, upthrown fault block, east-south-east of well KA-2. This location is 305m (1,000 ft) north-east of exploration well K#1.

KA-4 was projected as an outstep development location to well KA-2, to exploit the south-eastern extension of the Kiskadee sand reserves proven by wells KA-1 ST2 and K#1. KA-4 was expected to be structurally on strike with well KA-1 ST2. As of December 23, 1993 drilled depth of KA-3 was 367m (1,205 ft). KA-4 was spudded on December 29.

Mobil Trinidad Oil Company

Mobil did not carry out any further exploration activities in the S-11 Block. The company gave official notice of relinquishment. Terms and conditions were being worked out at year's end.

Northern Basin Consortium (NBC)

Negotiations between the Ministry and the partners of the consortium were in progress for most of the year. A final joint-venture agreement

was completed.

The partners and their shareholdings are as follows:

Anderman/Smith Operating Company (Operator)	
Shell BV	32.5%
K Persad and Associates	10%
Petrotrin	25%

Pecten

Pecten and the Government reached an agreement in respect of the company's relinquishment of the Reverse L Block. Accordingly, Pecten agreed to the terms and conditions for the delivery of the Deed of Release and Surrender:

Petrotrin

The activities of the former companies, Trintoc and Trintopec which were combined to form Petrotrin are presented separately.

Trintoc

Trintoc completed the following studies:

- A Herrera study in the CO-133 (Catshill area) - The study identified one exploratory prospect.

- A study on the exploration potential of Lot 8 area. One possible location for Shallow Cruse objectives was identified.

- A study on the Balata East field that identified an appraisal prospect.

Gulf of Paria Study

The joint Trintoc/Lagoven study commenced in Caracas on August 1, 1993. It is expected to be completed by July 31, 1994. The objectives are to obtain a better understanding of the regional geological framework in the Gulf of Paria and to identify prospective areas. Data for the area from both companies were compiled. The interpretation of the seismic data is in progress.

Trintopec

Trintopec completed two studies and started a third as follows:

- Preparation of a map showing leads in the Southern Basin, Offshore Galeota and South Marine leases.

- A preliminary regional evaluation of mid-Miocene Nariva sand trend.

- Initiation of a geological evaluation of the SECC block -the study will focus on Early Pliocene and Late Miocene sandstone reservoirs. Interpretations of 3-D data acquired by Enron in 1993 will be utilized in this study.

Petrotrin

The following studies were completed by Petrotrin:

- The Regional Lower Cruse study :- The objective was to develop a geological framework for the Lower Cruse and evaluate its exploration potential.

- The Cretaceous Study Team constructed maps on Top Cretaceous and Top Gautier. Maps on depositional environments for major Cretaceous stages across the Southern Basin, with accompanying lithological descriptions, were constructed.

- The company began studying the post Middle Miocene horizon in the Southern Basin. Preliminary correlations using surface geology and faults were in progress at the end of 1993.

Premier Consolidated Oilfields (PCOL)

PCOL had proposed an exploratory well for the Icacos area. However, because of the need to acquire additional seismic data, the drilling of this prospect was deferred.

The Ministry received an application in respect of lease renewal from the company. After considering the application, Government has agreed to grant PCOL rights to the shallow horizons. New licences to that effect are to be issued.

The Ministry also received an application for permission to drill a well in the Fyzabad field. This well was designed to test the Mid-Cruse sands, interpreted as channel sands deposited in a deltaic environment. The well is expected to be drilled to a PTD of 945m (3,100 ft) on the top of a structural high at the level of the Cruse. Two follow-up wells are planned. However, all activities are subject to finalization of the licence arrangements.

Southern Basin Consortium (SBC)

Exxon, the operator for the SBC continued interpretation of the data acquired from its 2-D seismic survey of the Southern Basin.

Rocky Palace

This was the first exploratory well drilled by Exxon in the Southern Basin. The well was proposed to test the Cretaceous sands of the Naparima Hill formation, with the Gautier sands as a secondary objective. The well was spudded on October 2, 1993. The approved TD was 4 861m (15,950ft) MD. There were several oil shows, and 30.5m (100 ft) of resistive sand were logged. As of December 29, drilled depth was 4 153m (13,626 ft). Exxon informed the Ministry of its readiness to relinquish 25% of its leased area and retain the remainder - 511,471 acres - according to the terms of the Exploration and Production Licence. The Ministry also received a copy of the company's Integrated basin study and an Environmental impact assessment study done by the Institute of Marine Affairs of the 2-D seismic survey.

Unocal

An Exploration and Production Licence was signed by the company in respect of Block 89/3 in February, 1993. Drilling is expected to commence in July of 1994. The first two wells will evaluate the fractured reservoir potential of the Naparima Hill formation. Proposed locations are expected by February 1994 and the final selections are to be made by May 1994. Unocal has invited bids from 30 contractors for the supply of a semi-submersible rig.

Crude Oil Production & Development Drilling

Production

The average crude oil production for Trinidad and Tobago during 1993 was 124,393 bopd, a decrease of 8.3% when compared with the 1992 production of 135,750 bopd. All the oil producing companies showed decreases in production this year, with Amoco showing the largest decrease in production of 9,270 bopd.

Factors which adversely affected production this year were tropical storm Bret, which occurred in August 1993, and the onset of high water production at Amoco's field. But there were also some encouraging developments which had a positive impact on production. Among these were the Lease Operatorship and Farmout Programmes at Petrotrin, the coming on-stream of Enron's condensate production in November 1993, production from Amoco's Flambouyant #1 well, and the initial production response from Trinmar's Waterflood Expansion Project. These in some measure contributed towards off-setting steeper

production declines. Production from marine areas averaged 89,035 bopd, and represented 72% of 1993's total production.

Amoco Trinidad Oil Company

Crude oil production averaged 55,106 bopd, 14.4% below the 1992 average. The onset of high water production from the mature fields, together with unsuccessful drilling during the early part of the year, contributed to the reduced production performance. There was, however, enhanced production from drilling during the last quarter of 1993, but these could not push the yearly average production rate from drilling beyond 2,148 bopd. On the other hand, workover performance was successful this year, and contributed 4,046 bopd.

Trinmar

Crude oil production declined by 2.4% to average 31,218 bopd in 1993. A total shutdown of the fields occurred in August because of tropical storm Bret.

A concerted effort was made to optimize gas lift production performance on the company's North field, and this resulted in increased production there.

An early response to the waterflood project produced 400 bopd of secondary oil at year's end.

Petrotrin

Petrotrin, which was established in August 1993, incorporating the core petroleum assets of Trintoc and Trintopec, had an average production during 1993 of 36,804 bopd which included 1,886 bopd from Trintomar.

Premier Consolidated Oilfields

Production at PCOL averaged 785 bopd, 2% less than in 1992. No new oil was generated from drilling in 1993 and workover activity generated 8 bopd.

Enron Gas & Oil Trinidad

Condensate production at Enron commenced in November 1993 and averaged 390 bopd during the last quarter of the year.

Development Drilling

The total depth drilled in 1993 was 68 809m (225,751 ft) and recorded an 11% decrease from the depth drilled in 1992. There was a corresponding decline in the number of well completions from 59 in 1992 to 53 in 1993.

Amoco Trinidad Oil Company

There was heightened drilling activity at Amoco during 1993. Nineteen wells were spudded during the year as compared with only eight during the previous year. Four rigs were actively engaged in drilling development wells, while a fifth rig was engaged in exploration work. The depth drilled was 31 862m (104,534 ft) which was 73% greater than that of the previous year.

Drilling activity took place in all the major fields, with a high concentration of wells being drilled in the Poui field, where ten wells were drilled. Five wells were drilled in the Samaan field and four in the Teak field.

Trinmar

Only one rig, the R.M. Womack, was used for drilling. Five development wells were drilled and completed before drilling ceased in October as a result of budgetary constraints. Nonetheless, 6.6 rig months of activity were recorded, and a total depth of 7 411m (24,314 ft) was drilled. Drilling of these wells contributed 288 bopd to the yearly average.

Petrotrin

Two rigs were used by Petrotrin for the drilling of 26 development wells. The major accomplishment was the drilling of 14 thermal wells in the Forest Phase 1 Expansion Steam Project, as part of IDB Loan Project. Total depth drilled was 14 442m (47,382 ft).

Enron Gas & Oil Trinidad

Enron drilled and completed one well KA 1, and spudded a second well, KA 2, using one rig - the Adriatic IV. Depth drilled was 10,330.6m (33,893 ft).

Secondary and Enhanced Oil Recovery Operations

Secondary oil contributed 14.3% of the country's total oil production for 1993. The reduction in activities in this sector of operations resulted in a corresponding drop in the production to 18,099 bopd. There were only 12 active projects during the year, as compared to 16 active projects in 1992.

Amoco Trinidad Oil Company

Although Amoco injected 14,904 bwpd into the Teak waterflood and 1,786 bwpd into the Poui waterflood project, representing increases of 70.8% and 93.7% respectively, the reservoirs did not respond to greater volumes of injected water. These projects realised daily average productions of 6,121 and 815 barrels of oil or decreases of 1.3% and 21.3% respectively when compared with the previous year's production.

Trinmar

The Soldado Main Field waterflood which had been shut down in July 1991 was recommissioned. At the end of 1993, 25,364 bwpd were injected in the scheme which produced a daily average of 820 bopd.

Trintoc

Of the nine waterflood projects that were in operation in 1992 only four were active in 1993. As a result, there was a decrease of 61.9% in secondary crude oil production when compared with 1992's production. The volumes of water injected and oil produced were 3,180 bopd and 518 bopd.

Steamflood

Crude oil generated by this method decreased by 3.4% for 1993 in spite of the company's effort to increase its injection volume by 3,180 bspd, or 12.8%, from that of 1992.

Carbon Dioxide

Secondary oil production by carbon dioxide increased by 3.8% over the previous year's figure. The volume of carbon dioxide injected was 6,554 Mcfd, a decrease of 12.7% as compared with 1992's injection rate.

Trintopec

Of the five waterflood projects operated by this company, the Galeota waterflood is the only one into which water was injected. This project accounted for 66.1% of the oil produced by the company under this scheme. Trintopec injected 3,188 bwpd, realizing 657 bopd.

Steamflood

Trintopec injected 29,197 bspd and produced 7,201 bopd. These figures showed decreases of 7.5% and 5.8%, respectively, when compared to those of 1992.

Premier Consolidated Oilfields

The company increased its steam injection rate by 41.6% to 1,203 bspd during 1993. Increased production rates were not realized due to the

existence of nearby faults which acted on "thief zones".

Natural Gas

Marine Production

Natural gas production averaged 19.39 mega cubic metres per day (Mm^3d) (685 MMcfd), a decrease of 4.2% on the 1992 average.

Amoco Trinidad Oil Company

Amoco, the country's largest gas producer and supplier of natural gas to the National Gas Company, accounted for 87.6% of total gas production.

In 1993, Amoco's daily gas production averaged 16.99 Mm^3d (600 MMcfd), a 0.12% decrease on the 1992 figure, of which, 11.02 Mm^3d (389 MMcfd) of natural gas was produced to the NGC sales line. It should be noted that the 1992 sales figure was 10.45 Mm^3d (369 MMcfd). In addition to the company's gas well production, sales gas and gas for gas lifting were sourced from its Samaan compression facility.

A significant event occurred in January 1993, when the company brought on production the Flambouyant field with its first well, FL #1. This well began producing at 80 MMcfd. Production was increased and, at year-end, the well was producing at 100 MMcfd in an effort to alleviate the gas shortfall which was being experienced on the transmission system. At year-end the company had commenced drilling the first well in the Immortelle gas field.

Trintomar

For the entire year Trintomar produced 172 Mm^3d (6.06 Bcf) of gas with 0.69 million barrels (MMbbl) of condensate. The average rate of gas produced was 0.47 Mm^3d (16.6 MMcfd) with 1885 barrels condensate per day (bcpd), which represented a 58.5% decrease when compared with the 1992 gas production figure of 1.13 Mm^3d (40 MMcfd). At year-end, one well was producing gas to the sales line.

Enron Gas and Oil Trinidad

Enron Gas and Oil Trinidad initiated operations in Trinidad in mid 1993, with the spudding of its first KA-1. At year-end, two wells were completed. For 1993, gas production had averaged 0.72 Mm^3d (2.54MMcfd).

Trinmar

Trinmar accounted for 5.48% of total natural gas production at a rate of 1.06 Mm^3d (37.48 MMcfd). This represented a 14.7% decrease when compared with the previous year's rate. Gas production was mainly associated gas which was linked to the company's oil production which showed a decline in 1993.

Land production - Trintoc, Trintopec

Natural gas production from the land fields of the state-owned companies, Trintoc and Trintopec, represented 4.08% of total production. Trintoc achieved a production rate of 0.59 Mm^3d (20.99 MMcfd), an increase of 2.67% over the production rate for 1992. Trintopec, however, producing at 0.20 Mm^3d (6.97 MMcfd), experienced a 16.3% decrease when compared with 1992's production level. Both companies continued to supplement their fuel needs with purchases from the National Gas Company. Trintoc's purchases were for use in refinery operations, while Trintopec's were used primarily for steam generation in the area of enhanced oil recovery.

Conservation

The National Gas Company compressor platforms in the Teak and Poui fields compressed a total of 1.07 billion cubic metres (37.78 Bcf) of gas at an average daily rate of 2.93 Mm^3d (103.51 MMcfd). Of this,

approximately 1.00 billion cubic metres (35.32 Bcf) was delivered into the sales line at an average daily rate of 2.74 Mm^3d (96.78 MMcfd), while the remainder 0.19 Mm^3d (6.73 MMcfd) was used as fuel on the platforms.

On the Teak compressor platform, 0.59 billion cubic metres (20.97 Bcf) of gas was compressed at an average rate 1.63 Mm^3d (57.46 MMcfd), in comparison 1.72 Mm^3d (60.88 MMcfd) was compressed in 1992. On the Poui compression platform, a total of 0.474 cubic metres (16.75 Bcf) of gas was compressed at an average daily rate of 1.13 Mm^3d (45.89 MMcfd). In comparison, 1.19 Mm^3d (41.98 MMcfd) was compressed in 1992. The increase was attributed to less downtime on the compressors.

Utilisation

Gas Utilisation for 1993 was 85% of total production. Overall utilisation averaged 21.83 Mm^3d (771 MMcfd), which included quantities of re-compressed gas used for gas lift and sales. This overall utilisation showed a decrease of 1.7% when compared to 1992. The oil companies accounted for 38.9% of total consumption. The energy-based and small industrial users accounted for the remainder which was used both as fuel and as chemical feedstock.

Trinidad and Tobago Electricity Commission utilised natural gas at a rate of 3.86 Mm^3d (136.37 MMcfd), a 0.22% increase on the rate for 1992. T&TEC continues to be the most significant consumer of natural gas taking up to 27.0% of the gas sold by NGC.

The manufacturers of fertilisers (Fertrin, Tringen I, Tringen II, Hydro-Agri, and Trinidad and Tobago Urea Company) accounted for 42.3% of the total volume of gas sold by NGC. The companies consumed gas at an average daily rate of 6.19 Mm^3d (218.49 MMcfd) which was a decrease of 5.4% on the previous year.

The daily average consumption for Fertrin was 2.58 Mm^3d (91.21 MMcfd). Hydro-Agri's Braun plant used 0.85 Mm^3d (30.17 MMcfd), Tringen I plant consumption was 1.24 Mm^3d (43.91 MMcfd), while Tringen II used 1.19 Mm^3d (42.07 MMcfd) and the Arcadian urea plant accounted for 0.32 Mm^3d (11.13 MMcfd).

The Trinidad and Tobago Methanol Company utilised gas at a rate of 1.18 Mm^3d (41.53 MMcfd), a decrease of 8.5% when compared with the rate for 1992.

Caribbean Methanol Company began operations in October 1993 and consumed gas at a daily average rate of 0.28 Mm^3d (9.89 MMcfd).

Ispat utilised 0.81 Mm^3d (28.77 MMcfd) of natural gas; this represented a 7.4% increase on the previous year's figure.

Trintoc supplemented production from its own fields with purchases from NGC to provide the fuel necessary for its refineries. Natural gas consumption in the refineries averaged 1.29 Mm^3d (45.7 MMcfd), a 2.2% decrease from the 1992 consumption level.

Phoenix Park Gas Processors Company utilised an average of 0.49 Mm^3d (17.34 MMcfd) during 1993, while Trinidad Cement Limited and other small consumers continued at a combined daily average consumption of 0.55 Mm^3d (19.31 MMcfd).

Refining and Petrochemical Industry

Refining

The combined crude throughput of the Pointe-a-Pierre and Point Fortin refineries during 1993 was 104,415 bopd, representing a decrease of 9.6% over the previous year's figures. A total of 13.8 million barrels of crude oil was imported and processed under processing arrangements. Imported crudes comprised Venezuela's Lago Cinco and Lago Treco, and Suriname's Saramacca. Total indigeneous crude processed amounted to 25.6 million barrels.

Table V
Average Daily Refinery Throughput
(bopd)

Year	*Point Fortin*	*Pointe-a-Pierre*	*Total*
1989	*28,992*	*53,051*	*97,043*
1990	*18,787*	*78,780*	*97,567*
1991	*29,390*	*84,034*	*113,424*
1992	*30,401*	*85,232*	*115,633*
1993	*22,082*	*82,333*	*104,415*

Table VI
Crude Oil Imports
(bbl)

	1992	*1993*
Lago Cinco	*5,668,543*	*2,682,749*
Lago Trecco	*10,622,548*	*6,911,412*
Saramacca	*561,021*	*370,761*
Cano Limon	—	*3,644,939*

Table VII
Refinery Output
(bbls)

Product	*1993*	*1992*
LPG	*795,604*	*785,678*
Mogas	*6,388,020*	*5,739,549*
Aviation Gas	*9,856*	*1,904,607*
White Spirit	*(809,860)*	*(628,566)*
Kero/AVJET	*3,726,103*	*1,660,946*
Gas Oil	*6,218,048*	*6,791,335*
Fuel Oil	*19,656,073*	*22,951,299*
Lube oil	*238,922*	*447,932*
Bitumen	*124,796*	*95,147*
Petrochemicals	*1,652*	*(8,725)*
Other finished and unfinished products	*1,092,439*	*1,337,122*
Gas/loss	*1,118,523*	*1,245,232*
TOTAL	*38,560,176*	*42,321,826*

Consumption of Petroleum Products in Trinidad and Tobago

Overall domestic consumption of petroleum products declined by 26.8% in 1993 when compared with that of the previous year. See Table VII1.

Sales in Av Gas, White Spirit and Asphaltic products declined by 71.1%, 33% and 14.8% respectively. While sales in LPG, Motor Gasolene, Kero/Jet, Gas/Diesel oil and Fuel oil increased by 94.3%, 24.4%, 9.9%, 18.6% and 99.1% from 1992 to 1993.

Table VIII
Domestic Petroleum Product Consumption
(Million Litres)

Product	*Quantity*	
	1992	*1993*
Lpg	*45.1*	*84.5*
Motor Gas	*322.6*	*401.2*
Av. Gas	*1.5*	*0.4*
Kero/Jet	*98.2*	*107.9*
Gas/Diesel Oil	*121.1*	*143.6*
Fuel Oil	*0.8*	*1.6*
White Spirit	*1.4*	*0.9*
Petrochemicals	*0.3*	*0.7*
Asphaltic Products	*5.4*	*4.6*
Total	*596.4*	*754.4*

Nitrogenous Fertilizers and Methanol

Total production of ammonia during 1993 was 1,765,713 tonnes, a decrease of 7.8% from the previous year's production. Tringen 1 had the largest drop, followed by Tringen 11 and the Hydro-Agri Braun plant. Arcadian's (formally Fertrin's) plants recorded the only increased production. Total exports during 1993 were 1,750,011 tonnes, a respectable gain of 6% over the 1992 figure.

Production from all ammonia and methanol plants was restrained by curtailed natural gas supplies throughout 1993.

Arcadian's production increased by 2.6% to 793,095 tonnes in 1993, due to increased plant capacities resulting from partial completion of the de-bottlenecking of the ammonia units in September 1992 and October - November 1993. Total exports of ammonia from Arcadian during 1993 were 777,282 tonnes.

The Hydro-Agri Braun plant produced 219,495 tonnes of ammonia, a 7.63% decrease from the 1992 production level. Exports during 1993 amounted to 241,964 tonnes, a 2.4% decline from the previous year's figure.

The Tringen 1 plant produced 295,716 tonnes of ammonia in 1993, a 23.2% decrease from 1992's figure. This plant underwent a turn-around this year in addition to several unplanned shut-downs. Exports decreased by 11.7% this year to 320,833 tonnes.

The Tringen 11 plant produced 475,407 tonnes of ammonia in 1993, a 11.78% decline when compared to its performance in 1992. Exports decreased by 22.7% this year to 409,932 tonnes.

Arcadian Trinidad urea plant produced 527,162 tonnes of urea in 1993, an increase of 15.8% on its 1992 production. Due to increased plant capacity resulting from the plant's evaporation system upgrade. Exports also increased by 18.2% to 521,768 tonnes in 1993.

Total methanol production increased by 4.2% from 481,716 tonnes in 1992 to 500,237 tonnes in 1993, due to the start-up of the Caribbean Methanol Plant. Production from the Trinidad and Tobago Methanol Company plant (TTMC) declined by 12.9%. Total methanol exports decreased by 2.3% due to a large decrease in exports from TTMC.

Table IX
Production and Export of Petrochemicals 1993
(tonnes)

Company	Product	Production		Export	
		1992	1993	1992	1993
Hydro-Agri	Ammonia	237,631	219,495	247,953	241,964
Tringen 1	"	385,102	295,716	363,476	320,833
Tringen 11	"	519,677	457,407	530,582	409,932
Arcadian	"	772,654	793,095	508,283	777,282
Sub total	"	1,915,064	1,765,713	1,650,294	1,750,011
TTMC	Methanol	481,716	419,343	467,150	391,614
CMC	"	–	82,845	–	64,703
Sub total	"	481,716	502,188	467,150	455,317
Arcadian	Urea	455,088	527,162	441,324	521,768
PPGPL	Propane	1,429,556	1,329,110	1,378,757	1,387,431
	Butane	935,066	895,100	909,889	933,032
	Natural gasolene	1,070,105	1,032,437	1,070,105	1,037,437

Petroleum Inspectorate

During 1993, the five units of the Petroleum Inspectorate performed regular routine operations.

Fiscalization at Point Galeota

At Point Galeota, there was a 100% coverage of oil fiscalization and shipment of crude.

Inspection Unit

This unit continued to conduct inspection of rigs, offshore structures and land production facilities. Two hundred and eighty of these inspections were carried out in the current year.

Refining and Petrochemicals

The frequency of inspections at the refinery API separators was reduced. This was in an effort to allow the refinery upgrade to proceed uninterrupted. As such, a total of 16 API separator inspections was done at the Pointe-a-Pierre and Point Fortin refineries, as compared with 101 in 1992.

Also, 144 effluent samples were taken at both refineries and sent to CARIRI for analysis of oil and grease content. This compares with 141 during 1992.

Storage and Marketing

There continued to be an increase in the number of storage applications received by the Ministry, twice the amount received in 1992. This reflects in some measure the increase in the demand for diesel fuel. The replacement of leaking tanks coupled with the request for additional storage also contributed to this increase.

The Storage and Marketing Unit continued its effort at monitoring and sampling gasolene quality. Seventy three service stations were sampled for gasolene quality, while 134 service stations were calibrated.

Pipeline and Oil Loss

A total of 298 pollution incidents as reported, and 10,111 barrels of oil were spilled. Recovery of oil was 26.5%.

Accidents

There was a further decrease in the number of reportable lost-time accidents which occurred in the oil industry during 1993. A total of 271 reportable lost-time accidents was recorded in 1993, three less than the number recorded in 1992.

At Trintoc, there were 63 accidents in the manufacturing sector at the Pointe-a-Pierre and Point Fortin refineries and 41 in the production and drilling operations.

Trinmar had an increased number of accidents when 58 were recorded, as compared with 46 in 1992. Amoco, likewise, showed an increase in the number of accidents which totalled 53. Trintopec had 53 and National Gas Company had 3.

Fatalities

Two fatalities occurred at Petrotrin (Trintopec) in 1993. This was a decrease of three compared to the previous year's figures.

Non-personal Accidents

Vehicular accidents accounted for most of the non-personal accidents. A total of 367 vehicular accidents was reported, with Petrotrin recording 238 accidents.

There were four well blowouts, all of which occurred at Petrotrin (Trintopec). Two were in the Guapo Field, one at Palo Seco and the other at Central Los Bajos.

Pollution Incidents

The Ministry of Energy and Energy Industries in 1993 responded to 298 incidents of pollution reported by the oil companies. Approximately 10,111 bbl of crude oil escaped into the environment and 2,678 bbl were recovered. (See Table X). Trintoc, with 224 reported incidents, experienced the greatest number of spills. The majority of these oil spills were due to trunkline, pump and pipeline leaks. The company recovered 1843 bbl (70.9%) of the estimated 2600 bbl of crude oil which escaped during the year.

Trintopec reported 44 oil spill incidents but had the greatest estimated quantity of oil spilled. Of the estimated 7088 bbl spilled, only 623 bbl (8.8%) were recovered.

Trinmar reported 23 oil spill incidents offshore with an estimated net loss of 160 bbl of crude oil.

Amoco Trinidad Oil Company reported 5 oil spill incidents offshore Point Galeota, with an estimated net loss of 36 bbl of crude oil, while PCOL experienced 2 oil spill incidents with an estimated net loss of 20 bbl of crude.

Table XI gives a comparison of the situation with respect to oil pollution in 1992 and 1993. There was a definite increase in oil spill incidents and oil loss in 1993.

Table XII summarises the trends in the data on the quantities of oil spilled and recovered and the net oil losses over the period 1989-1993.

Table X
Oil Pollution Statistics 1993
(bbl)

Company	No. of Incidents Reported	Estimated Quantity Spilled	Estimated Quantity Recovered	Estimated Net Loss	Percentage Recovered
Trintoc	*224*	*2600.0*	*1843.0*	*757.0*	*70.8*
Trintopec	*44*	*7088.1*	*623.9*	*6459.2*	*8.8*
Trinmar	*23*	*353.3*	*193.3*	*160.0*	*54.7*
Amoco	*5*	*36.0*	*0.0*	*36.0*	*0.0*
PCOL	*2*	*39.0*	*18.5*	*20.5*	*47.4*
TOTAL	*298*	*10111.4*	*2678.7*	*7432.7*	*26.5*

Table XI
Comparison of Pollution Statistics

	1992	1993	% Change in 1993
Spill Incidents	*282*	*298*	*0*
Oil Spilled (bbl)	*8115*	*10111.4*	*+ 24.6*
Oil Recovered	*5079*	*2678.7*	*- 47.3*
Oil Lost	*3036*	*7432.7*	*+144.8*

Table XII
Summary Report of Crude Oil Spilled by Volume
(bbl)

Period	BBL Spilled	BBL Recovered	Net Loss	Percent Recovered
1989	*2452.00*	*1948.00*	*504.0*	*79.4*
1990	*10855.0*	*8889.0*	*1966.0*	*81.9*
1991	*5345.0*	*2860.0*	*2485.0*	*53.5*
1992	*8115.00*	*5079.0*	*3036.0*	*70.1*
1993	*10111.3*	*2678.6*	*7432.7*	*26.5*

The Study on pollution prevention and control within the petroleum sector in the Republic of Trinidad & Tobago - Japanese International Co-operation Agency (JICA)

The Terms of Reference (TOR) for a Study on pollution prevention and control within the petroleum sector in the Republic of Trinidad and Tobago was finalised on February 8, 1993, when both the TOR and the Minutes of the Meeting were signed by the Permanent Secretary and the leader of the JICA's Study team.

On returning to Japan, JICA selected a team of consultants, Techno Consultants Inc., in association with Cosmo Oil Company to execute the pollution study on its behalf.

In order to commence work on the project, an eight-member Japanese team visited this country from September 13 to October 8, 1993 and together with its counterpart agency, the Ministry of Energy and Energy Industries, conducted the first survey in the study on oil pollution in the petroleum sector.

The objective of the study was to review the present conditions of petroleum pollution and to formulate a programme for minimising pollution within the petroleum sector in the Republic of Trinidad and Tobago; this would contribute to the country's sound industrial development and environmental protection in the following facilities:

- **Refinery (Pointe-a-Pierre)**
- **Offshore petroleum fields**
- **Petroleum storage and pipeline**

The study will be conducted with particular reference to the following:

- **Identification and characterization of oil pollution sources**
- **Survey and study of selected sources**

- Formulation of a Master plan for pollution prevention and control
- Conclusion and Recommendation.

A progress report on the first field survey was presented by the Japanese to personnel from the Ministry and the respective oil companies at the Ministry's offices on October 1993.

The Japanese honoured its technology transfer agreement with the Ministry by exposing the local project counterpart, Mr. Oswald Adams, Senior Chemical Engineer (Ag) to pollution control operations and technical data during his visit to Japan from November 21-December 15, 1993. The JICA team returned to Trinidad and Tobago on February 21, 1994 to conduct the second survey of the oil pollution study.

The Ministry carried out checks on the inventory of equipment and chemicals stocked by the area controllers at the different oil companies - Amoco, Trintoc (Point Fortin and Pointe-a-Pierre), Trinmar, Trintopec, Trinidad & Tobago Coast Guard, and National Petroleum Marketing Company Limited, for use in the event of an oil spill under the National Oil Spill Contingency Plan (NOSCP).

Forty two new chemicals were approved by the Ministry for use in the petroleum industry.

Laboratory Analyses

The Ministry was actively involved in conducting analytical studies on different aspects of the energy industries. CARIRI's Petroleum Testing Laboratory honoured its TT$500,000 contract with the Ministry of Energy and Energy Industries in 1993 in performing analyses on 1606 samples. Tests are detailed at Table XIII.

Table XIII
Laboratory Analyses

Description	*Tests*	*Fee*
Gasoline Analysis Including Lead	*31*	*$ 32,550.00*
Gasoline Analysis Excluding Lead	*484*	*62,400.00*
Royalty Lease Evaluations 1	*9*	*36,000.00*
T.B.P. Analysis	*1*	*12,000.00*
Oil and Grease	*101*	*19,120.00*
Effluent Sampling	*960*	*133,740.00*
Metal Content in Crude Oil	*20*	*5,500.00*
Total	*1606*	*$301,310.00*

The Laboratory also co-operated with the Ministry in its monthly sampling and effluent quality studies at Petrotrin.

The Petroleum Testing Laboratory was also contracted by Techno Consultants Inc., acting on behalf of JICA as the agency to test water and oil samples, as well as to conduct hydrometric measurements, as part of the Technical Co-operation project between the Ministry and JICA.

Quarry Unit

Exploratory Activity

The year 1993 was devoted to two projects in the Valencia Forest Reserve where the field crews re-evaluated state lands previously partially quarried for sand and gravel. They were the following:

The Oropouche Road sand and gravel survey

This survey which began in 1992 was finally completed in June, 1993. The mining survey technicians and survey crew completed cutting and chaining a total of 1 262m (4,140ft) on a grid spacing of 76m (250 ft) by January 15, 1993. They then moved to the next survey site in

Plantation Road.

The auger crew however, drilled 34 auger holes and recovered and logged 265m (869ft) of borehole material between January 4 and June 24, 1993 to complete the survey. In this survey, which extended over an area of approximately 76 acres (31 ha), an estimated reserve of 233 614 cu m (305,556 cu.yd) of sand and gravel was computed, but an area of only 40 acres (16 ha) could be considered of commercial value for quarrying purposes. Within the area surveyed the depth of overburden averaged about 1.2m (4ft) throughout, while the water table level was approximately 1.5m (5ft) on average.

The Plantation Road phase I - sand and gravel survey

This survey which commenced on January 16 was concluded on December 31, 1993. It was interrupted from February 26, 1993 to April 30, 1993 during which time the field crew was wholly engaged in the relocation exercise of the Ministry's warehouse from Morvant to Pointe-a-Pierre.

A total of 13 472m (44,200ft) was cut and chained by the survey crew across an area of approximately 160 acres of state lands, while a total of 112 auger holes was drilled and 999m (3,277ft) of borehole material was recovered and logged by the auger crew. Volumetric estimates have proved that the Phase 1 Block still contains computed reserves of 16 581 240 cu m (21,687,500cu.yd) of sand and gravel.

Of the 160 acres evaluated, approximately 100 acres proved up commercial reserves with an average overburden depth of 1.2m (4ft and a water table depth of 2.1m (7ft).

Resource Allocation

Despite requests for additional gravel bearing acreages on state lands by a few concessionaires who had either exhausted their acreages, or whose reserves were close to exhaustion, as well as applications by a few new potential operators, no new state resources were allocated in 1993. Pending the ratification of policy guidelines for the industrial minerals sector, the Quarry Unit continued, however, to process applicants who primarily requested lands containing reserves of sand and gravel.

In 1993 also, requests for permission to conduct exploration for precious metals in Tobago were received from two international mining companies, and a framework for dealing with these specific requests is being evaluated.

Policy And Planning - Quarry Advisory Committee

In an effort to finalize new policy guidelines for effective administrative management of the industrial minerals sector, the Quarry Advisory Committee convened several times to discuss and debate the issues.

The Committee also held special meetings to address specific matters such as the continued quarrying operations of K.P. Transport Limited within the Aripo Savannah Scientific Reserve as well as the temporary closure of the Tapana Road by the Ministry of Works and Transport.

Regulatory Activities

Updating Quarry Location Maps/Operating Quarries List

An islandwide inspection of all operating quarries was executed during 1993. With each visit new undocumented information came to hand, which was used to update all the quarry-related file data. An effort was also made to revise the existing quarry location maps. This was aborted, however, as many of the base maps originally used were inaccurate. New maps are now being created along with a revised list of operating concessionaires.

Investigations

Twelve investigations were executed during 1993. They covered encroachment upon State and private lands, pollution of the Aripo and Oropouche rivers, dust control problem in the Ravine Sable area, and

beach sand-mining in Tobago. Several of these investigations were carried out in conjunction with officers from the Water Resources Agency, the Lands and Surveys Division, Forestry Department and the Town and Country Planning Division.

In the case of Tobago, talks were held with the representatives of the Tobago House of Assembly with respect to alleviating the sand-mining problem and the larger issues of quarrying and aggregate supply in Tobago.

Routine Monitoring

Routine site visits were carried out throughout the year (site visits were conducted throughout the entire country, including Tobago, but mostly concentrated in the Valencia and Wallerfield areas) in an effort to curb the unauthorised extraction of sand and gravel, and to ensure that concessionaires were concerned with optimizing production while minimizing negative environmental impacts.

Royalties

An effort was made in 1993 to improve the Royalty collection procedures by Wardens. The Quarry Unit convened a meeting of all concerned Wardens or Revenue Officers with responsibility for the revenue collection in areas where state lands are quarried. The Director of Surveys was also represented.

St. George East

Ministry of Energy and Energy Industries records indicate 9 950 cu m (13,014.50 cu yd) of material were extracted from state concessions in the Ward of St. George East for 1993. This figure, an increase of 9 145 cu m (11,962.00 cu yd) over the quantity extracted for 1992,may not be solely due to a rise in production levels but may also be as a result of repeated requests by the Ministry for greater accuracy by checkers of the Wardens Office with regard to the documentation process.

In 1993, $49,484.00 in royalties have been paid, while there is an outstanding amount of $142,439.28.

St. Andrew/St. David

Aggregate extraction within the ward of St. Andrew/St. David has increased almost twofold from 123 764 cu m (161,878.50 cu yd) in 1992 to 303,307.25 cu m in 1993. A total of $185,294 was paid in royalties. with $1,129,507 in arrears, almost half of which is owed by one company which has since gone into liquidation.

St. Patrick

There is one state concessionaire in the ward of St. Patrick quarrying porcellanite. Approximately 6 639 cu m (8,684 cu yd) of material was removed for 1993 by this concessionaire who paid the revenue office $19,768.54 in royalties for the year. No arrears were recorded for the ward of St. Patrick.

Supportive

Staff of the Quarry Unit were also engaged in many activities supportive to other governmental entities. Among them were the following :

- Export of industrial mineral aggregates - application processing - Ministry of Trade and Industry

- The export of industrial mineral aggregates to Caricom destinations continued in 1993 as a vital facet of the industrial mineral sector. At least eleven local companies found markets up the islands for our construction aggregates -some as suppliers of material, while others were actually involved in construction activities. This Ministry, through the Quarry Unit, has supported the Ministry of Trade and Industry by processing and evaluating each application for an export licence

and making recommendations according to the decisions of the Cabinet Appointed Aggregate Export Committee.

Ministry of Planning and Development - Town and Country Planning Division

The Quarry Unit is usually asked to comment and advise the Town and Country Planning Division on developmental matters related to the quarrying industry. In 1993 at least two such matters were attended to:

- developmental works in the Chaguaramas area where Chaguaramas Terminals Limited was engaged in removing two limestone spurs within their leased compound.

- an application to quarry sand from his private land holdings by Mr. Ramesh Choon in Claxton Bay.

Rio Claro Regional Corporation - Request for Sand

The Rio Claro Regional Corporation had requested the use of sand for repairing cricket pitches within its area of jurisdiction. The Quarry Unit was asked by the Director of Surveys to visit and facilitate the request as available sand would allow. At least two visits were made to the extraction/sand site along the Guayaguayare Road by members of the quarry unit in expediting this matter.

MTS - Request for beach sand

The Quarry Unit facilitated the Maintenance and Technical Services Ltd (MTS) office by visiting the Guayamara beach site a few times where sand was removed under our supervision for use in plant propagation at their El Dorado nursery.

Lands and Surveys Division- National Land Information System

As part of a Cabinet-convened committee, staff of the Quarry Unit were involved in drawing up recommendations towards the development of a National Land Information System.

UWI Geology Students - Tobago Mapping Project

As in the past, staff of the Unit were instrumental in making arrangements in Tobago for Dr. Trevor Jackson of the University of the West Indies, Geological Department, Mona, Jamaica and his five students of Geology, who carried out their mapping exercises in the Plymouth area.

MINISTRY ACTIVITIES

General Administration

General Administration is responsible for providing the administrative and managerial support services to the Ministry which includes the Head Office at Riverside Plaza and the Development Section at the Japs Building, San Fernando.

The areas in which the General Administration functions are Personnel Management, Records Management, Registry, Office Management, Training, Processing of Work Permits and Retail Marketing Licences for petrol filling stations and Internal Auditing.

Personnel Management

The Personnel Division processes all aspects of personnel matters relating to a staff of 200 members including 181 monthly and 19 daily rated employees.

During the year under review, a number of appointments, promotions, transfers, separation, took effect. Following are the details in respect of these activities:

Promotions

2 Senior Planning Officer
1 Auditing Assistant

Transfers

1 Clerk 1 [transferred on appointment as Clerk 1]

Appointments

1 Geologist Assistant
1 Administrative Assistant

Retirements

1 Draughtsman III
1 Clerk Stenographer IV
1 Clerk Typist 1

Training

In 1993, training of staff at all levels was vigorously pursued both locally and overseas. Locally, twenty-nine persons benefitted from courses offered by the agencies of Trinidad and Tobago Management Development Centre, Central Training Unit, Roytec, The University of the West Indies and other Energy and Oil Based Industries. Fifteen officers attended overseas training programmes.

Public Service Reform

In keeping with the mandate of the Public Service Reform Programme initiated by government, the Ministry of Energy and Energy Industries organised its retreat for its staff in December 1992. A major consequence of this exercise was the establishment of a Change Team for the Ministry, headed by the Permanent Secretary. Its main function was to discuss the concerns and recommendations raised at the retreat as well as matters deriving from the Public Service Reform Programme for improvement of efficiency at the Ministry.

The Team held several meetings in 1993 from which a new structure was developed to manage the "Change Process" within the Ministry.

The new structure was based on seven action groups, which were to address the following areas:

Strategic Planning
Administrative Reform
Organisational Policy
Operational Problems
Communication and Public Relations

Social Affairs
Newsletter

Staff members were appointed and the mission and objectives of each of the groups were identified. The Permanent Secretary addressed the staff in both the North and South offices at a post retreat meeting inn June 1993, at which the process was explained and the staff introduced to the teams.

The groups continued their deliberations during the year as they sought to achieve their work programme of activities. Two issues of the newsletter were produced in 1993.

Work Permits

A total number of 785 work permits were considered by the Ministry of Energy and Energy Industries for recommendation to the Ministry of National Security.

Accounts

Review of Revenue and Expenses

Revenue

The Ministry is responsible for collecting revenue in areas related to the petroleum industry. The main source of revenue is royalty on crude oil, condensate and natural gas. For the year ended 31st December 1993, the Ministry collected $522,771,190. Of this sum, $506m relates to royalty on oil and gas and $15m to the Oil Impost.

Other sums collected were the following:

	$
Market Licences	73,800
Exploration and production Licences	1,000
Lease Operators - sub licences	600
Marketing Licences for petroleum by-products	4,500
Asphalt from Pitch Lake	1,581
Sale of reports and maps	5,906
Seismographic Surveys	685,723
Surplus Income from the sale of petroleum products	478,919

Royalty

Royalty is payable by the oil companies at the rate of 12 1/2% for marine production and 10% for land production on the net field storage value of the produced crude.

Royalty on gas is at 1.5 cents per thousand cubic feet sold except for Enron and Trintomar which pay at 5% of gross sales.

Seismographic Surveys

Revenue received under this item relates to sale of seismic sections of data from the North and East coasts from a survey concluded in 1980/81.

Oil Impost

The Petroleum Regulations provide for the annual expenses of the Ministry of Energy and Energy Industries to be met by contribution from all the licensed petroleum producing companies.

The expenses are determined at the end of the year and include those expenses which are incurred on behalf of the Ministry of Energy and Energy Industries by other Ministries and Departments. The total expenses as determined are charged to the various licensees based on the

ratio of petroleum produced by the licensee to the country's total production.

In an effort to alleviate the burden of meeting all of the government spending to Ministries from the Consolidated Fund and in recognition of the fact that the requirements of this Ministry can only be met from the limited resources of the Government, this Ministry has been making efforts (albeit unsuccessfully) to have its funding via the Oil Impost paid in advance.

Expenditure

For the year 1993 the Ministry was allocated $12,417,809 towards Recurrent Expenditure and $318,087 towards the Development Programme.

Of this sum the actual expenditure for Recurrent Expenditure amounted to $11,515,824.86 and $21,940.16 for Development Programme, a total expenditure of $11,537,765.02. Releases from the Ministry of Finance for the year amounted to $11,805,810.

The main expenditure constraint during the year was the delay experienced in the release of funds.

Under the Development Programme in 1993, $21,940 was spent in establishing the Geological Core Repository. The other projects scheduled were deferred due to lack of staff.

Table XIV apportions the overhead expenditure between the north and south offices. Where actual expenses could not be determined expenses were apportioned by benefit.

Table XV gives a breakdown of the direct expenses incurred among various sections, the largest category of expenses being salaries.

Table XIV
Indirect Expenses
TT Dollars

	P.O.S.	*San Fernando*	*Total*	*Remarks*
Uniforms	*4,040*	*1,024*	*5,064*	*AVI*
Electricity	*52,824*	*0*	*52,824*	*AVI*
Telephones	*199,317*	*67,842*	*267,159*	*AVI*
Rent - Accommodation	*100,395*	*255,300*	*355,695*	*CC*
Equipment	*136,636*	*0*	*136,636*	*AVI*
Office Stationery	*50,257*	*25,128*	*75,385*	*AB*
Books and Periodicals	*98,006*	*2,875*	*100,881*	*AVS*
Materials and supplies	*6,300*	*12,805*	*19,105*	*AB*
Upkeep of vehicles	*30,743*	*7,685*	*38,428*	*AB*
Repairs to vehicles	*10,392*	*2,600*	*12,992*	*AB*
Repairs and Maintenance (Building & Equipment)	*192,677*	*50,000*	*242,677*	*AB*
Consultancy and Contracted Services	*671,782*	*123,540*	*795,322*	*CC*
Training	*14,274*	*2,309*	*16,583*	*VR*
Expenses	*66,089*	*16,520*	*82,609*	*AB*
Entertainment	*2,065*	*900*	*2,965*	*AB*
Prestigious Building	*12,603*	*0*	*12,603*	*AVI*
Office Equipment	*34,902*	*0*	*34,902*	*AVI*
Contributions to Int'l bodies	*161,996*	*53,998*	*215,994*	*AB*
TOTAL	*1,683,302*	*568,528*	*2,251,830*	

LEGEND

AVI - Actual value of invoices
CC - Contracted cost
AB - Apportioned by benefit
AVS - Actual value supplied
VR - Value received

Table XV
Direct Expenses
TT Dollars

	Administration	*Accounts*	*Energy Planning*	*Engineering*	*Geology & Geophysics*	*Legal*	*Library*	*Operations*	*Total*
Salaries	*1,492,500*	*503,858*	*664,682*	*827,915*	*1,319,242*	*182,021*	*263,125*	*2,538,060*	*7,791,403*
Wages & Gratuity			*469,632*						*469,632*
Overtime					*6,749*				*6,749*
Allowances	*26,462*				*737*	*201*		*9,830*	*37,230*
N.I.S.	*25,687*	*9,990*	*7,135*	*13,557*	*17,838*	*2,141*	*6,422*	*39,960*	*122,730*
Travelling	*43,235*	*4,775*	*37,786*	*39,084*	*76,189*	*8,120*	*4,686*	*316,353*	*540,228*
Severance Pay					*1,756*				*1,756*
TOTAL	*1,587,88*	*518,623*	*709,603*	*880,556*	*1,892,143*	*202,483*	*274,233*	*2,904,203*	*8,969,728*

Review of subsidy/surplus

The subsidy for 1993 showed a 30% decline when compared to the previous year's figure, while the surplus increased seventeen times. The subsidy arises when the reference price is higher than the wholesale price set by the Petroleum Pricing Order. The surplus arises when the reverse condition is true.

The regional market prices of petroleum products (to which the reference prices are directly related) increased progressively during the first half year causing a corresponding increase in the subsidy. In the second half year, however, the prices market were declining, so that by the end of the third quarter some of the products which were heavily subsidised fell into surplus. From September to the year end there was a surplus on premium and regular gasoline. Table XVI details the subsidy/surplus for 1978 to 1993.

Table XVI
Subsidy/surplus 1978 - 1993

Year	*Total $*	*Subsidy Per barrel (cents)*	*Surplus $*
1978	*93,635,718*	*111.42*	-
1979	*178,295,170*	*227.36*	-
1980	*286,628,408*	*368.84*	-
1981	*327,286,923*	*469.48*	-
1982	*345,694,250*	*533.15*	-
1983	*155,616,925*	*265.83*	-
1984	*31,807,120*	*52.00*	*23,655,533*
1985	*36,187,980*	*56.09*	*23,550,359*
1986	*49,357,585*	*80.52*	*60,450,410*
1987	*32,153,573*	*56.85*	*17,584,503*
1988	*23,034,063*	*42.11*	*29,332,503*
1989	*83,617,664*	*153.43*	*778,365*
1990	*203,852,832*	*375.50*	*531,394*
1991	*149,947,487*	*287.20*	*531,611*
1992	*91,667,423*	*192.90*	*655,532*
1993	*63,181,565*	*140.01*	*11,465,473*

Energy Planning

The Energy Planning Division is responsible for a wide range of activities within the Ministry which are related both to the Division's primary portfolio of planning and also to the administration and implementation of energy sector policies. The Division continued to function with two significant constraints viz, (i) the shortage of junior professional and support staff and (ii) the continuing failure to upgrade the Ministry's computer equipment. It is becoming increasingly mandatory that the Data management demands of the Division and the entire Ministry be adequately satisfied through a modern management information system utilizing the expertise of a professional in this area who is equipped with adequate human and material resources. This would to a very great extent provide an opportunity for the professional staff in the Division to increase the level of analytical activities which is in such great demand for effective and timely decision making.

The report of the Energy Planning Division is presented under the following broad categories:-

- Policy Matters
- Regional and International Organizations
- Petroleum pricing
- Projects
- Data Management
- Training and Conferences

Underlying the issues raised and discussed under these categories were developments and trends which emerged in the domestic and international petroleum industry. The issue of privatization, significant investment activity and proposals for future investments in the natural gas and petrochemical industry were notable.

Policy Matters

Draft Energy Policy

The Division reviewed and collated the comments which were submitted by a wide range of agencies, institutions and individuals on the Green Paper - Draft Energy Policy for Trinidad and Tobago. These comments were categorized and formulated into a comprehensive document and submitted to the Standing Committee on Energy. Many fundamental issues were raised and the Division was engaged in an ongoing analysis which was continuing at the end of 1993.

Some of the major issues which were highlighted in the public comments were as follows:-

- The format and structure of the document
- The issue of privatization within the petroleum and petrochemical industry.
- The future direction of the natural gas industry and the role of the National Gas Company.
- Proposals for the Pointe-a-Pierre and Point Fortin refineries.
- The domestic marketing of petroleum products; price regulation vs deregulation; controlled marketing vs decontrol of marketing.
- Environmental management in the sector.

The document is to be redrafted in 1994.

Production Sharing Contract

The Division participated in the negotiations for the terms and conditions of an amended Production Sharing Contract for Block 6 and a new contract for Block E with the British Gas/Texaco consortium. A Natural Gas Supply Contract with the National Gas Company was also finalized during these negotiations. These negotiations were finalized in 1993 and the contracts were signed in the month of September.

The amended commencement of development activity under the terms of Production Sharing Contract was an historic event. All petroleum production activity in the past had been conducted under the terms of Exploration and Production licences. Under the terms of this contract the State is entitled to a percentage share of production which represents all taxes, royalties and other liabilities of the contract (British Gas/Texaco). Also included in this share would be the State's "surplus" arising from the operations. The Ministry of Energy and Energy Industries has the responsibility to manage the contract and this would represent an interesting new challenge.

Standing Committee On Energy

In the role of secretariat to the Standing Committee on Energy, the Ministry of Energy and Energy Industries has direct responsibility for co-ordinating and overseeing all activities with respect to the development of agendas, notification of meetings, circulation of documents and the preparation of Minutes. The Energy Planning Division played a significant role in these activities during 1993. In addition, the Division was required to provide inputs and prepare specific reports with regard to the following issues:

- The abandonment/sale of Amoco's Mora Platform.
- Comments on the report of Pleasant and Associates re Petroleum study for Government of Trinidad and Tobago.
- Renewal of PCOL leases.

- BG/Texaco/GOTT negotiations.

- Exploration of and equity shareholding in the Northern (Caroni) Basin.

- Impact of the floating exchange rate on subsidy/levy on petroleum products.

- Preparation of reports modifications to recommendations on the Green Paper on Energy document.

- CNG Regulations.

- Upgrade of Pointe-a-Pierre Refinery.

Regional and International Organizations

Giplacep

Trinidad and Tobago is currently the temporary Secretariat of the Informal Group of Latin American and Caribbean Petroleum Exporting Countries (GIPLACEP). It comprises the following states: Venezuela, Colombia, Ecuador, Mexico and Trinidad and Tobago. Energy Ministers from these countries meet on an informal basis to discuss issues which could impact on the petroleum development within the grouping. As the temporary Secretariat, Trinidad and Tobago has the responsibility to develop the agenda and prepare a report for the next meeting. The report prepared by the Energy Planning Division for discussion at the meeting dealt with privatization in GIPLACEP countries, regional energy cooperation, and the global oil situation 1990-1993. The meeting was twice postponed and no firm date for the next meeting has been since finalized.

Olade

A document entitled "Preparatory Notes to the XXIII Council of Experts and XXIV Meeting of Ministers of the Latin America Energy Organization"(OLADE) was prepared by the Division for the briefing of the delegates to the meeting. This meeting was held in San Jose, Costa Rica from October 27 to November 3 1993.

Petroleum Pricing

Ex-refinery prices for domestic petroleum products were computed on a monthly basis. A review of the system/methodology for the determination of these prices, which was initiated in 1992, was successfully completed in 1993.

The Division was involved in the development of a new structure for the pricing of petroleum products. This new structure incorporated the new Road Improvement Tax which was introduced by the Ministry of Finance for specific products viz, motor gasolenes, auto diesel and compressed natural gas.

The level of the subsidy and projected 3% of annual gross income limit of the oil producing companies was monitored on a monthly basis.

The Division monitored the international crude markets on a daily basis. This is an ongoing exercise which results in the preparation and dissemination of a weekly bulletin on market prices and trends, with quarterly and annual summary reports.

In 1993, the Permanent Petroleum Pricing Committee was reactivated under the coordination of the Technical Advisory Group to the Standing Committee on Energy. Membership in the Permanent Petroleum Pricing Committee is drawn from the Ministry of Finance, the Board of Inland Revenue, the Technical Advisory Group and the Ministry of Energy and Energy Industries. The Energy Planning Division computed domestic crude prices, prepared pricing reports and provided technical support for the ongoing work of the committee.

Data Management

Data management continues to be an essential and demanding area of the Energy Planning Division's portfolio. The Division remains the repository of a significant amount of energy data. This data is vital for the functioning of the Division and serves to meet the needs of many agencies, both locally and internationally.

The Statistics and Development Section of the Ministry continued to be the primary source of petroleum data utilized within the Division in respect to analyses of petroleum (crude oil and natural gas) production trends, exploration and development activity, and refining and marketing trends. However, the Division also had to rely heavily on direct requests for data from the petroleum companies to complement these sources. Energy conversion, production and distribution by T&TEC, which is not part of the Ministry's portfolio, is a notable example of data which had to be sourced externally.

The Energy Economic Information System (SIEE) database is an integral component of the information system. This system is serviced by members of the Division and is supervised by the SIEE Advisor, who interacts with OLADE.

In fulfillment of the commitments made by the participants at the IV Working Group of SIEE Advisors, held in Trinidad from September 28 to October 2, 1992, the Division undertook activities which led to the update and provision of country data on specific energy variables. The work done centred on the following:-

- crude and product prices;
- crude and natural gas reserves;
- supply/demand of crude oil, natural gas, electricity, secondary energy products and the exports and imports of these products where applicable;
- preparation of the Energy Balance for 1992; and
- the sectoral consumption of energy products.

The Division also assisted the Ministry's Library with the collation and verification of data used in the Caribbean Energy Information System (CEIS).

Projects

Amoco's Gas Compression Project

The Division was involved in an in-depth evaluation of the impact on Government revenue of the installation of compressors in Amoco's Teak and Poui fields. This project involves the compression of low pressure gas which would otherwise be flared. The compressed gas will be used to supplement the company's gas lift requirements.

Trinidad and Tobago Methanol Company

The Division participated in the work of the Steering Committee which was mandated to finalize terms and conditions of the agreements required for the divestment and expansion of TTMC with a Ferrostaal/Helm consortium. The agreements (arising from the working of the committee) were signed on January 31, 1994.

Energy Sector Loan Contracts

The Division coordinated the Annual Consultations between the Government, the executing agency (Petrotrin) and the lenders - the Inter-American Development Bank (IDB) and the Caribbean Development Bank (CDB). In respect of loans for the Refinery Upgrade, Heavy Oil Project and the Trinmar Waterflood projects these consultations are required under the Energy Sector Loan contracts with the lending agencies and were held in September and October of 1993.

Ethanol/Methanol Gasolene Blending

A Committee was established in late 1992, through the offices of the Ministry of Agriculture, on behalf of Caroni to study the effect of replacing the octane enhancer, lead, with a more environmentally favoured additive, that of ethanol/methanol. The Committee, which comprised representatives from NPMC, TTMC, Petrotrin and this Ministry, examined the impact of this additive on the two test cars which were made available by the assembly plants Neal and Massy and Amar. At the same time, comparisons were done on the two control cars, both using leaded gasolenes.

During the study, NPMC and Trintoc undertook laboratory tests on the lubricating oils, and on samples of the gasolene blends, respectively. At the end of the study, the engines of all four cars were examined. An oral and verbal and slide presentation of the project was made by Caroni Ltd. in December 1993.

Training

Personnel from the Division were exposed to advanced training in certain specialized fields in 1993. This included attendance at the following conferences, workshops, courses and seminars.

Local

The Society of Petroleum Engineers (SPE) Conference. The Division assisted in the planning of this conference and exhibition. Personnel also served during the conference.

Seminar on Hedging.

Planning and Project Cycle Management.

Overseas

Workshop in Integrated Energy Planning Models.

OLADE/SIEE Advisors Meeting.

Senior Executive Development Program - Banff School of Advanced Management (BSAM).

Technical Services

Petroleum Geology and Geophysics Section

The activities conducted by the Petroleum Geology and Geophysical Section during 1993 include the following:

Routine administrative duties.

Attendance at technical meetings conducted by the various companies.

Evaluation of exploration proposals submitted by the companies.

Two members of the Geophysical Section conducted a four-day visit to the seismic survey vesssel MV Geco Longva, during acquisition of the Unocal 3-D seismic and gravity data over offshore Block 89/3.

One member of the Section was posted on two training assignments with Unocal Corporation. The first assignment involved exposure to the processing of the Unocal 3-D seismic data at Halliburton Energy Services in Houston, and at Unocal's Seismic Research Facilities in Brea, California. The second assignment involved geophysical interpretation on a Landmark workstation at Sugarland, Texas, and a field study of the naturally fractured reservoirs in California. The trainee also attended a gravity and magnetics acquisition and interpretation course conducted by Gibson Consulting in Sugarland, Texas.

Routine

Evaluation of Exploration and Development Wells

During 1993, two exploratory wells were evaluated, classified and monitored: Exxon's Rocky Palace 1 and Amoco's Samaan Deep Test-2. One semi-exploratory prospect, PCOL's Fyzabad prospect, was also evaluated.

Seven development wells were monitored by the Petroleum Section: Enron's KA-1, KA-2, KA-3 and KA-4 in the Kiskadee Field, SECC block; Amoco's Flambouyant #1, a re-entry of WEQB #1; and Immortelle #1 ST5, a re-entry of SEG 11. The seventh well, Amoco's Flambouyant #2, a follow-up well, was given some exploratory footage.

Amoco's Flambouyant #2, a follow up well, was given some exploratory footage.

Other activities

Thee following activities were also undetaken by the Section:

- Preparation of annual and quarterly reports on the exploration activities of the oil companies operating in Trinidad during 1993.
- Appraisal of PCOL's expired licences, prior to the finalizing of the E&P Licences; the draft E&P Licences were also vetted and minimum work obligations suggested.
- Evaluation of the Northern Basin Consortium's draft licence and Trinidad Exploration Development Company's application for a licence.
- A research paper on the tectonics of the southeast corner of the Caribbean as it relates to Trinidad and Tobago.
- Review and discussion of the minimum work obligations in negotiations for Block E and Block 6 - British Gas/ Texaco.

Mr. R. Welsh was an observer involved in the Diapisub project conducted by the University of Bordeaux I and was involved in the development of diving safety codes.

Mrs. H. Inniss-King organized and attended meetings with the professors from Stanford and Indiana Universities, concerning the establishment of Research and Development linkages.

Financial and other assistance was provided for Dr. T. Jackson and UWI (Mona) students engaged in mapping exercises in Tobago.

Meetings

External Committees

The Ministry of Energy was represented on the following Cabinet appointed committees:-

- WASA Task Force - Mrs D Medina-Tyson and Mrs H. Inniss-King.
- Interministerial Committee on the Law of the Sea - Mr R. Welsh.

Projects

Relocation of Core Repository

During May-August, the geological warehouse at Morvant was relocated to Petrotrin's compound at Pointe-a-Pierre. Prior to the move, all equipment and data were sorted by members of the Section. Tenders for the installation of shelving at Point-a-Pierre were evaluated and a supplier chosen. Mr. S. Seegobin, supervised the field crew during the setting up of the new repository at Pointe-a-Pierre.

Request for Technical Report - North Coast Marine Area (NCMA)

This in-house project involved the evaluation of British Gas's 2-D seismic survey, between the Orchid and Poinsettia fields. The exercise was undertaken to evaluate the potential for the existence of oil reservoirs below the metamorphic basement in the NCMA. This project is expected to be completed by April, 1994.

New Geologic Map of Trinidad and a Stratigraphic Lexicon for the Cenozoic of Trinidad

The project involves the updating of Kugler's Geological Map of Trinidad (1959) to incorporate current information. Meetings were held with Mr. J. Saunders of the University of Basle to co-ordinate the revision of the Geologic Map and Stratigraphic Lexicon with this Ministry. The state companies and the GSTT are also to be involved. Ms. C. Roberts is the chairperson of the Committee formed to manage the project.

Reorganization of Exploratory Well File System

In conjunction with the Drawing Office, the reorganization and cataloguing of all exploratory well files was completed. Two section members have the responsibility for the ongoing management of the system.

Training

During 1993, the following training programmes were undertaken:

In-House

In-house Log Interpretation conducted by Ms. C. Roberts

Introduction to Geophysical Workstation conducted by Mr. E. Welsh

Local

Interpretation of Old 'E' Logs

Applied Geochemistry

Exploration Economics. Risk Analysis and Prospect Evaluation

Overseas

Prospect and Plan Assessment OGCI, Houston, Texas

Six weeks Training Unocal, Houston, Texas

Quarry Section

Overview

The Quarry Section, despite its staff shortage in 1993 continued its work contending with the myriad problems affecting the administrative management of the industrial minerals sector. In this regard, the section continued the preparation and presentation of proposals for policy guidelines for the Sector.

Geological exploratory activity, that is, continued industrial minerals evaluation field work of the Unit in 1993 was concentrated primarily in the Valencia Forest Reserve where lands previously quarried for sand and gravel were re-evaluated by our geological field crew.

The Unit's mining inspector was engaged throughout the year in complaints investigations, routine monitoring and inspections of operating quarries. He was engaged in the acquisition of relevant data in this field to update the Ministry's quarry location maps and quarry operators list.

The industrial minerals policy was not finalized in 1993 thus the effective functioning of the Quarry Unit and the Quarry Advisory Committee in respect of the administrative resolution of many pressing matters affecting the quarrying industry was made difficult. The staff of the Quarry Unit was involved in many supportive activities, in collaboration with other governmental entities, in several matters relating to its mandate.

Training

Mr. C. Alexander attended an ECA Environmental Management Training Seminar entitled "Train the Trainer" with the theme - "Planning Tools for Environmental Management". No other formal training of Unit staff took place in 1993.

Committees

Blasters Certification Committee

This committee is a Cabinet Appointed Committee set up to assist the Industrial Inspections Supervisor of the Ministry of Labour, Employment and Manpower Services, in discharging its duties in accordance with the relevant provisions of the Factories (Protective) Measures Order of 1977. The Committee had a number of meetings in 1993 at which the competence of a number of persons desirous of being recommended to the Commissioner of Police to be authorized to carry out blasting operations in Trinidad and Tobago was assessed. Mr. C.T. Alexander participated as a member of this Committee.

Change Team - Ministry of Energy and Energy Industries

Mr. Howard John was very instrumental in the entire Change Team process throughout 1993. Other members of the Unit were also involved to a lesser degree in the Change Team process.

Gas Section

The main function of the Natural Gas Section is the monitoring and regulation of the production, compression, transmission, sale and utilization of natural gas. In addition, the section ensures that all operations involving these facets of the natural gas industry are carried out safely and efficiently. The section is also the main repository for natural gas data and information relating to:

- production and various forms of utilization of natural gas by the petroleum companies; and
- availability of natural gas to, and consumption by, the non-oil sector.

In 1993 the main objectives of the section included the:

- determination of gas demand - present and future;
- prevention of wastage of gas and ensure conservation;
- determination of the country's gas reserves by companies by area;
- determination of deliverability and future production trends of gas wells by fields;
- maintenance of statistical records of information and ensuring dissemination of this information regarding natural gas; and
- preparation of any other report from which the Minister or Senior Officers may receive information, advice and recommendations regarding natural gas.

Review of activities

As of January 1, 1993, the country's non-associated gas reserves were estimated at 13.88 trillion cubic feet (Tcf) of which 8.4 Tcf was proven gas. During 1993, the Section continued to monitor the operations of the gas producing companies, Amoco and Trintomar, and also that of Enron, which began production in November, 1993.

In addition, the Section monitored the compression operations of Amoco and the National Gas Company where compression performance from both companies was better than that of the previous year. In July, the section examined Amoco's proposal to install compression facilities, on its Poui and Teak platforms. A report was submitted in September.

In the review year, activities were mainly focussed on the two new gas fields (Amoco's Flambouyant field and Enron's Kiskadee field) which were brought on production during the year, while drilling had commenced at Amoco's Immortelle field.

With the increase in activities in the gas industry, the Section was hard pressed to keep up with the activities in the gas producing fields, the new field development, compression operations, and gas demand shortfalls throughout 1993, which occurred despite the bringing on-stream of the two gas fields.

In the period, the Section continued to make its twelve-month forecast of the gas supply/demand situation, to establish the end of the shortfall period which was projected to end by March 1994. Due to aggressive work by Amoco, a balance in the system was realized towards the end of January 1994. Despite this, closer monitoring of the situation continued as there was great reliance on the productivity of one well, Flambouyant #1, which was producing at a rate of 100 MMcfd.

Staff

With increased activities in the gas sector, the section continued to function with a Senior Petroleum Engineer and a Petroleum Engineering Assistant (PEA I).

A university student was employed July-September and was engaged in creating a data base of gas discovery well data by extracting the information from paper files.

Engineering and Technical Services

The activities of the Engineering and Technical services were hindered greatly due to a lack of staff in key areas. This was reflected in delays in the implementation of some projects and in the preparation and delivery of reports.

Reservoir

During 1993, the Reservoir Engineering area was without its normal staff of a Senior Petroleum Engineer and a Petroleum Engineer I/II. As a result, important tasks relating to the monitoring, administration, evaluation and regulation of Secondary and Enhanced recovery projects could not be undertaken.

The Director of Technical Services assumed the responsibilities of (i) having the oil reserves updated and (ii) verifying and providing this data to those who requested it.

The Section continued to do the following:

- Provide Reserves estimates to the various agencies and other publics.
- Monitor and review the fluid injection and enhanced recovery projects.
- Maintain and update the fluid injection records.

Other activities which engaged the attention of the Director of Technical

Services were as follows:

- Processing and approving duty free entries destined for offshore exploration and production and onshore special projects. More than 600 duty free entries, each containing an average of 30 - 40 duty free items destined for use in petroleum exploration and production, were processed.

- Processing of Duty Free Minister's Licence.

- Processing Work Permit applications.

- Providing technical evaluation of projects (gas compression projects, gas development projects, enhanced recovery projects and tar-sand mining).

- Arranging/coordinating technical meetings between the Ministry and the Industry players and vendors.

- Commissioning and performing preparatory specification for gas reserve audits.

- Participating on committees: (Inter ministerial, inter industry, Bilateral).

- The overall management of the Engineering Technical Services Section.

Microfilm/Databank

Microfilm

For the period January to December 1993, a total of 253 well files were filmed and duplicated at a cost of $6,681.00. During that period, all files that were processed yielded no rejects. This indicated that the quality control measures that were put in place, ensured that all filmed and duplicated files were fit for archiving.

Several problems contributed to the non-completion of the listing and sorting of the files being completed. The main reason for the failure being lack of staff to assign to the task for long periods. At the time of writing, files were still being sorted with a view to having the exercise completed within a reasonable time frame.

Data Bank

For the year under review, this Section accomplished several of its objectives with regard to the computer needs of the entire Ministry.

These included the following:

- an evaluation of the present computer system;

- an analysis of the present and projected environment; and

- the design of a computer system to enable the Ministry to function effectively and efficiently.

The procurement and installation of the system is scheduled for completion in 1994.

Development Section

The Operations Section is primarily concerned with the technological development and processing of the nation's hydrocarbon resources, as well as the safety aspects of the energy sector.

As such, the work activity at the Section is diverse, but the well-developed organizational structure facilitated the accomplishment of the activities during 1993.

The main divisions of the Sections are as follows:

Petroleum Engineering
Chemical Engineering
Mechanical Engineering
Petroleum Inspectorate

Our clients, with whom we interact on a daily basis, include all the operating oil companies, petrochemical companies, service companies, National Petroleum Marketing Company and the National Gas Company.

Work activity

The significant highlights of 1993's activities were as follows:

- Re-evaluation of the platform design of Enron's Kiskadee platform.
- The witnessing of oil and gas well testing of Enron's Kiskadee wells #1 and #2.
- Approval of 47 service station applications for storage of gasolene and diesel fuel.
- Certification of non-Ministry-approved workovers on behalf of the Board of Inland Revenue (BIR).
- Inspection of 280 rigs and structures (offshore and onshore).
- Inception meetings with Unocal to provide them with information on safety, drilling and production practices in Trinidad and Tobago.
- Greater demands were placed on the Section in 1993 when, for the first time, it had to certify the non-ministry-approved workovers in accordance with the Petroleum Taxes Act of 1992.

Other routine duties performed by the Section were:

Preparation of monthly bulletins and weekly operations report.
Approval of 70 drilling and 374 workover programmes.
Monitoring of petrochemical plants and other operations.
Inspection of gas stations and filling stations.

Training

The organizational effectiveness in 1993 was due to the rapid training of the six new engineering recruits, who benefitted from attending regular training courses. The local training is part of an ongoing arrangement with the operating companies whereby Ministry personnel are invited to participate in their Technical Training Courses. Engineers attended courses in the key areas listed below:

Petroleum Production Engineering
Drilling Engineering
Reservoir Engineering
Completions and Workovers
Surface Production Operation
Stuck Pipe Prevention
Machine Maintenance Reliability Concepts
Process Safety Management

Implementation of staff rotation

In keeping with a policy decision of the Ministry, Staff rotation was undertaken at the Operations Section. The Petroleum Engineers, Chemical Engineers and Engineering Assistants were rotated within their units. The Petroleum Inspectors were not rotated. This was part of a deliberate attempt to preserve the degree of specialized services which they now provide to their clients.

Information Services

Physical facilities

Physical space continued to be a major concern in the accommodation of the library collection as solutions were sought to alleviate the problem. There has not been any success on this matter and further short term attempts were made to maintain some order and accessibility to the collection. A shelving unit was placed in the librarian's office to house the computer collection, thereby providing additional space on the open shelves. The vertical file collection, comprising pamphlets, conferences, courses, newsletters and brochures, was also weeded and cleared of items that were no longer needed. Two new 4-drawer vertical file cabinets were obtained, one of which was kept in Port of Spain and the other sent to the South Office library. The large numbers of the back issues of the core periodicals were sorted and organised into the available space. This was an outstanding project which was completed with the assistance of a UWI student under the vacation employment programme.

Computer system

During this year, a milestone of 20,000 items was achieved as the volume of data stored in the computerised database steadily increased. A proposal for the upgrading of the computer system which has been in use since 1985 has been submitted and it is expected that new equipment would be received in the near future.

Services

The collection increased this year through the acquisition of 536 books, of which 488 were donated. 1,613 periodicals were purchased and 884 were received as gifts; 1,357 items were added to the database. Reference and circulation services included 1,030 queries. Loans amounted to 465 books and 421 periodicals.

Staff

Ms. Perlita Forbes, temporary Clerk Typist 1, joined the library staff this year in replacement of Ms. Sumatee Babooram, who was reassigned to the South Office of the Ministry.

Training

Staff participated in the following training programmes:

Local

Introduction to CDS-ISIS
Pascal applications for CDS-ISIS
Workshop on the Ambionet/Infoterra environmental database

Caribbean Energy Information System

The major activity undertaken this year was the implementation of an User Needs Survey for the system. The services of a retired supervisor with the Central Statistical Office were contracted to carry out the exercise and was done over a period of three months. The project was sponsored by the International Development Research Centre (IDRC). A report of the survey was prepared and submitted to the annual Liaison Officers Network meeting, which was held in Trinidad during June 28 - July 2 1993. The meeting was sponsored by IDRC in association with this Ministry and the United Nations Economic Commission for Latin America and the Caribbean. At the local network level several meetings were held this year in connection with a proposal by the Caribbean Industrial Research Institute (Cariri) to institute a National Technical Information System. A pilot phase was being proposed in the energy sector. The proposal was presented at a meeting and circulated for comments. The Ministry has submitted its comments.

Legal Services

Work completed by the Legal Section during 1993 can be described under the following headings:

Contracts

The Legal Section was involved in negotiations, which were finalised in 1993, regarding Pecten's release from their obligations to drill a second well under the licence for the Lower Reverse "L" Block. In exchange for Pecten's release the company agreed to fulfill certain obligations under a "Study Agreement" and a "Workstation Transfer Agreement". These agreements which were worked on by the Legal Section in consultation with Pecten's lawyers, were signed on November 17, 1993. It is contemplated that on the fulfillment of the obligations under these contracts, Pecten will be released from the licence over the Lower Reverse "L" Block and the block will then be open.

Also, towards the end of 1993, the Legal Section was involved in preliminary negotiations with Mobil who wish to be released from their obligations under the licence for the S-11 Block.

Cabinet Notes

The Senior State Counsel with other principal officers of the Ministry formulated the provisions of the Compressed Natural Gas Regulations which were approved by Cabinet. These provisions have been forwarded to the Chief Parliamentary Counsel for Drafting in the required form.

Further, the Section prepared a note for Cabinet in an attempt to resolve the issue of expired PCOL leases in the Southern Basin. Cabinet approved the proposal that the Upper Horizons be given back to PCOL and the Deeper Horizons be given to the Southern Basin Consortium. This of, course, will facilitate the optimum development of the area.

Legislation

Comments were forwarded by the Legal Section on legislation drafted by the Chief Parliamentary Counsel with respect to the recommendations contained in the "Report on all aspects of the Domestic Marketing of LPG, with special emphasis on safety and service to the Public".

Also, the Price of Petroleum Products (Amendment) Order 1993 and the Petroleum Production Levy and Subsidy (Gross Margin)(Amendment) Order 1993 were made to take effect on July 30, 1993.

Negotiations for Licences and Production Sharing Contracts

Negotiations with British Gas/Texaco for Block E were completed in 1993 and a Production Sharing Contract dated September 9, 1993 and prepared by the Legal Section, was awarded to BG/Texaco. This contract, together with an amendment to the Production Sharing Contract for Block 6, was registered by the Legal Section with the Registrar General's Department.

The year 1993 saw the commencement of negotiations with Krishna Persad and Associates for the Mora Block, off the East Coast, which was being relinquished by Amoco.

Others

The Legal Section continued to research and compile information concerning licences in an effort to complete the regularization of the Petroleum Register.

The Section was also involved in completing a great number of legal opinions on matters relating to the energy industry.

LIST OF APPENDICIES

APPENDIX I

SUMMARY OF EXPLORATORY AND SEMI-EXPLORATORY ACTIVITIES IN 1993

OPERATOR	WELL NAME	LOCATION (LINKS)	LAHEE EXPLORATORY CLASS	DATE SPUDDED	DATE COMPLETED	DEPTH DRILLED (METRES)	TD OF WELL (METRES)	GEOLOGICAL OBJECTIVE	RESULT/ REMARKS
AMOCO	SAMAAN DEEP TEST - 2ST	266,792 N 788,861 E	C2b	93.01.31	93.08.29	4 936	4 936	13, 14, 15,16 SANDS	ABANDONED - DRY
	FLAMBOUYANT 2	104,856 N 931,601 E	A2b	93.09.16	-	4 181	4 684	PLIOCENE SANDS	RIG ON LOCATION
EXXON	ROCKY PALACE 1ST	156,036.1 N 364,014.4 E	A3	93.08.05	-	4 092	4 879	NAPARIMA HILL GAUTIER FORM	DRILLING

APPENDIX II

ANNUAL STATISTICS OF PRODUCTION, DRILLING, REFINING, EXPORTS AND IMPORTS 1993 - 1983

	ITEM	UNIT	PERCENTAGE CHANGE 1993 OVER 1992	1993	1992	1991	1990	1989
1.	CRUDE OIL	'000 BBL	-9.27	44,634	49,195	52,423	55,039	54,509
2.	CASING HEAD GASOLINE (C.H.P.S.)	'000 BBL	0	0	0	0	0	0
3.	TOTAL CRUDE OIL AND NATURAL GASOLENE (1+2)	'000 BBL	-9.27	44,634	49,195	52,423	55,039	54,509
4.	CRUDE OIL PRODUCTION - STATE OIL RIGHTS	'000 BBL	-9.60	42,373	46,871	50,120	52,401	51,756
5.	CRUDE OIL PRODUCTION - PRIVATE OIL RIGHTS	'000 BBL	-2.71	2,261	2,324	2,303	2,638	2,753
6.	TOTAL IMPORTS	'000 BBL	-9.75	16,478	18,259	15,806	7,467	2,059
7.	IMPORTS OF REFINED PRODUCTS	'000 BBL	84.63	1,826	989	251	924	1,020
8.	IMPORTS OF CRUDE OIL FOR REFINING	'000 BBL	-14.09	14,469	16,843	15,333	6,543	1,039
9.	IMPORTS OF OTHER OILS FOR REFINING AND BLENDING	'000 BBL	-57.14	183	427	222	0	0
10.	TOTAL EXPORTS	'000 BBL	-21.16	48,729	61,807	60,150	53,481	50,073
11.	EXPORT OF CRUDE OIL	'000 BBL	-12.30	20,504	23,380	26,245	28,030	27,167
12.	EXPORTS OF REFINED PRODUCTS	'000 BBL	-26.55	28,225	38,427	33,905	25,451	22,906
13.	RUNS TO STILLS	'000 BBL	-9.67	38,190	42,277	41,438	33,589	27,854
14.	DAILY REFINERY CAPACITY	BBL/DAY	1.96	260,000	255,000	255,000	255,000	305,000
15.	NUMBER OF WELLS SPUDDED	AS STATED	-5.08	56	59	104	119	86
16.	TOTAL NUMBER OF WELLS COMPLETED	AS STATED	-42.86	36	63	109	116	83
17.	NUMBER OF WELLS COMPLETED AS OIL WELLS	AS STATED	-46.15	28	52	90	91	70
18.	NUMBER OF WELLS ABANDONED	AS STATED	-54.55	5	11	16	13	13
19.	TOTAL DEPTH DRILLED	METRE	-10.72	69,072	77,366	153,133	153,498	136,206
20.	DEPTH DRILLED ON STATE OIL RIGHTS	METRE	-4.69	67,533	70,858	139,757	141,312	130,240
21.	DEPTH DRILLED ON PRIVATE OIL RIGHTS	METRE	-76.35	1,539	6,508	13,376	12,186	5,966
22.	AVERAGE DEPTH OF COMPLETED WELLS (16)	METRE	36.20	1,979	1,453	1,678	1,450	1,635
23.	AVERAGE NUMBER OF WELLS PRODUCING	AS STATED	1.06	3,341	3,306	3,236	3,172	3,199
24.	AVERAGE NO. OF WELLS PRODUCED BY FLOWING	AS STATED	-2.10	326	333	368	371	364
25.	AVERAGE NO. OF WELLS PRODUCED BY ARTIFICIAL LIFT	AS STATED	1.41	3,015	2,973	2,868	2,801	2,835
26.	AVERAGE DAILY PRODUCTION PER PRODUCING WELL	BARREL	-10.07	36.6	40.7	44.4	47.5	46.7
27.	AVERAGE DAILY PRODUCTION PER FLOWING WELL	BARREL	-13.24	87.8	101.2	103.7	129.9	106.0
28.	AVERAGE DAILY PRODUCTION PER ARTIFICIAL LIFT WELL	BARREL	-8.26	31.1	33.9	36.8	36.6	39.1
29.	TOTAL VALUE OF DOMESTIC EXPORTS *	'000$	7.61	8,405,615	7,811,404	8,340,929	8,636,852	6,573,802
30.	TOTAL VALUE OF PETROLEUM PRODUCTS (ITEM 29) *	'000$	-1.60	2,932,086	2,979,658	2,794,214	2,681,814	2,133,054
31.	TOTAL VALUE OF ASPHALT PRODUCTS *	'000$	25.69	19,984	15,900	33,491	25,061	36,794
32.	TOTAL NATURAL GAS PRODUCED	MILLION M^3	-4.50	7,080	7,414	7,404	6,651	7,233
33.	USED AS FUEL	MILLION M^3	-6.30	4,030	4,301	4,038	3,726	3,744
34.	REPLACED IN FORMATION	MILLION M^3	0	0	0	0	0	0
35.	LOSSES, NOT COLLECTED	MILLION M^3	-17.58	136	165	207	206	254

* Source : Central Statistical Office from The Annual Overseas Trade Part A

Continued

APPENDIX II

ANNUAL STATISTICS OF PRODUCTION, DRILLING, REFINING, EXPORTS AND IMPORTS 1993 – 1983

	ITEM	UNIT	1988	1987	1986	1985	1984	1983
1.	CRUDE OIL	'000 BBL	55,208	56,641	61,640	64,259	62,041	58,344
2.	CASING HEAD GASOLINE (C.H.P.S.)	'000 BBL	0	1	25	23	29	34
3.	TOTAL CRUDE OIL AND NATURAL GASOLENE (1+2)	'000 BBL	55,208	56,642	61,665	64,282	62,071	58,378
4.	CRUDE OIL PRODUCTION – STATE OIL RIGHTS	'000 BBL	52,377	54,098	59,176	61,845	59,734	55,988
5.	CRUDE OIL PRODUCTION – PRIVATE OIL RIGHTS	'000 BBL	2,831	2,543	2,464	2,414	2,308	2,356
6.	TOTAL IMPORTS	'000 BBL	4,354	5,527	7,797	3,852	6,774	8,133
7.	IMPORTS OF REFINED PRODUCTS	'000 BBL	1,751	2,115	5,742	3,609	6,428	8,133
8.	IMPORTS OF CRUDE OIL FOR REFINING	'000 BBL	2,560	3,412	1,560	243	346	0
9.	IMPORTS OF OTHER OILS FOR REFINING AND BLENDING	'000 BBL	43	36	495	0	0	0
10.	TOTAL EXPORTS	'000 BBL	54,489	55,749	58,175	60,345	61,294	57,715
11.	EXPORT OF CRUDE OIL	'000 BBL	27,205	28,370	32,867	35,358	32,518	31,065
12.	EXPORTS OF REFINED PRODUCTS	'000 BBL	27,284	27,379	25,308	24,987	28,776	26,650
13.	RUNS TO STILLS	'000 BBL	31,206	31,472	29,936	29,673	28,147	27,178
14.	DAILY REFINERY CAPACITY	BBL/DAY	305,000	305,000	305,000	305,000	305,000	305,000
15.	NUMBER OF WELLS SPUDDED	AS STATED	142	145	176	182	198	174
16.	TOTAL NUMBER OF WELLS COMPLETED	AS STATED	153	160	169	197	213	179
17.	NUMBER OF DRILLING WELLS COMPLETED AS OIL WELLS	AS STATED	110	111	133	156	165	162
18.	NUMBER OF DRILLING WELLS ABANDONED	AS STATED	19	15	18	14	17	13
19.	TOTAL DEPTH DRILLED (ALL WELLS)	METRE	177,631	189,735	222,294	199,402	206,830	183,797
20.	DEPTH DRILLED ON STATE OIL RIGHTS	METRE	167,746	184,620	219,246	192,149	200,438	163,539
21.	DEPTH DRILLED ON PRIVATE OIL RIGHTS	METRE	9,885	5,115	3,048	7,253	6,392	20,258
22.	AVERAGE DEPTH OF COMPLETED WELLS (16)	METRE	1,333	1,295	1,395	1,100	1,153	1,051
23.	AVERAGE NUMBER OF WELLS PRODUCING	AS STATED	3,252	3,256	3,209	3,167	3,142	3,140
24.	AVERAGE NO. OF WELLS PRODUCED BY FLOWING	AS STATED	331	320	352	325	319	344
25.	AVERAGE NO. OF WELLS PRODUCED BY ARTIFICIAL LIFT	AS STATED	2,921	2,936	2,857	2,842	2,823	2,796
26.	AVERAGE DAILY PRODUCTION PER PRODUCING WELL	BARREL	46.4	47.7	52.6	55.6	54.1	50.9
27.	AVERAGE DAILY PRODUCTION PER FLOWING WELL	BARREL	115.2	114.5	139.7	139.7	139.6	121.4
28.	AVERAGE DAILY PRODUCTION PER ARTIFICIAL LIFT WEL	BARREL	38.6	40.4	41.9	46.0	44.0	42.1
29.	TOTAL VALUE OF DOMESTIC EXPORTS *	'000$	5,320,886	5,178,962	4,854,712	5,120,719	5,044,400	5,431,684
30.	TOTAL VALUE OF PETROLEUM PRODUCTS (ITEM 29) *	'000$	3,252,182	3,748,392	3,528,661	4,191,329	4,168,910	4,692,967
31.	TOTAL VALUE OF ASPHALT PRODUCTS *	'000$	24,350	22,665	21,866	15,925	11,130	6,737
32.	TOTAL NATURAL GAS PRODUCED	MILLION M^3	7,438	7,512	7,585	7,412	7,228	6,318
33.	USED AS FUEL	MILLION M^3	3,515	3,311	3,190	2,957	2,552	3,102
34.	REPLACED IN FORMATION	MILLION M^3	0	0	0	0	0	0
35.	LOSSES, NOT COLLECTED	MILLION M^3	246	187	149	261	249	214

* Source : Central Statistical Office

APPENDIX III

SUMMARY OF DEVELOPMENT DRILLING IN TRINIDAD AND TOBAGO - 1993

FIELD, AREA OR DISTRICT	NUMBER OF OIL PRODUCERS COMPLETED	NUMBER OF ABANDONED WELLS	TOTAL COMPLETION	TOTAL DEPTH DRILLED IN METRES	NUMBER OF RIGS ACTIVELY DRILLING DEVELOPMENT WELLS ON 31st. DECEMBER, 1993
1	4	1	5	7 411	0
2	7	0	7	5 964	0
4	3	1	4	3 098	0
5	0	0	0	5 382	0
8	0	0	0	144	0
10	0	0	0	0	0
11	14	2	16	33 864	3
TOTAL	28	4	32	55 863	3

APPENDIX 111A

KEY TO AREA - NUMBER ON APPENDIX 111

AREA NUMBER	DESCRIPTION
1	Soldado, North Marine, Couva Marine, Maniocu, (Gulf of Paria Block 1)
2	Pt. Ligoure, F.O.S., Area IV and Guapo, Point Fortin West and Central, Parrylands Cruse, Guapo, Boodoosingh
3	Brighton (Land and Marine), Vessigny, Merrimac
4	Palo Seco, Los Bajos, Erin, Central Los Bajos, Mackenzie, South Erin
5	Forest Reserve, Fyzabad, Point Fortin East, New Dome, San Francique, Apex Quarry
6	Quarry, Coora, Quinam, Morne Diablo
7	Oropouche
8	Penal, Barrackpore, Wilson, Siparia
9	Moruga North and West, Rock Dome, Inniss, Trinity, Catshill, Balata, Bovallius
10	Guayaguayare, Moruga East, Maloney
11	Galeota, Teak, Samaan, Poui, Cassia, Dolphin (Block 6), Diamond Prospect, East Coast, Reverse 'L' West, Mora, Pelican, Arima, South East Galeota, North West Teak, OPC, West Samaan, West East Queen Beach Pamberi

APPENDIX IV

MONTHLY ANALYSIS OF DRILLING AND WORKOVER ACTIVITY - 1993

(Depth drilled in metres)

MONTH	NEW WELLS STARTED	DRILLING WELLS COMPLETED												TOTAL WELLS	TOTAL AGGR DEPTH	AGGR DEPTH PER WELL	OLD WELLS	
		OIL & GAS PRODUCERS		INJECTION WELLS		ABANDONED						COMPLETED OTHER					RE-COMPLETED	ABANDONED
						AFTER TESTING		DRY HOLES		TECHNICAL CAUSES								
		NO.	AGGR DEPTH	NO.	AGGR DEPTH	NO.	AGGR DEPTH	NO.	AGGR DEPTH	NO.	AGGR DEPTH	NO.	AGGR DEPTH					
JANUARY	3	2	6 443	0	0	0	0	1	2 330	0	0	0	0	0	8 773	2 924	3	6
FEBRUARY	2	0	0	0	0	0	0	0	0	0	0	1	1 180	1	1 180	1 180	8	0
MARCH	1	1	1 990	0	0	0	0	0	0	0	0	0	0	0	1 990	1 990	5	0
APRIL	2	2	5 706	0	0	0	0	0	0	0	0	0	0	0	5 706	2 853	5	0
MAY	4	0	0	0	0	0	0	1	2 987	0	0	0	0	0	2 987	2 987	8	1
JUNE	8	6	7 056	1	503	0	0	0	0	1	2 127	0	0	1	9 686	1 211	9	0
JULY	5	4	7 979	0	0	0	0	0	0	0	0	0	0	0	7 979	1 995	11	0
AUGUST	6	2	1 733	0	0	0	0	2	6 192	0	0	0	0	0	7 925	1 981	9	0
SEPTEMBER	6	4	7 314	0	0	0	0	0	0	0	0	0	0	0	7 314	1 828	12	0
OCTOBER	6	2	4 901	0	0	0	0	0	0	0	0	0	0	0	4 901	2 451	6	0
NOVEMBER	8	3	8 863	0	0	0	0	0	0	0	0	1	1 521	1	10 384	2 596	18	0
DECEMBER	5	2	2 427	0	0	0	0	0	0	0	0	0	0	0	2 427	1 214	7	1
TOTAL 1993	56	28	54 412	1	503	0	0	4	11 509	1	2 127	2	2 701	36	71 252	1 979	101	8
TOTAL 1992	59	52	77 728	0	0	0	0	8	10 886	3	2 926	0	0	63	91 540	1 453	89	1

APPENDIX V
MONTHLY ANALYSIS OF LAND AND MARINE DEPTH DRILLED - 1993
(metres)

MONTH	STATE LAND	PRIVATE LAND	SUB-TOTAL LAND	MARINE	SUB-TOTAL STATE	TOTAL	RIG MONTHS	DAILY AVG. DEPTH	DAILY AVG. DEPTH/ RIG	MARINE % OF TOTAL DEPTH
JANUARY	0	0	0	2 532	2 532	2 532	3.00	82	27.2	100.0
FEBRUARY	0	0	0	6 338	6 338	6 338	4.00	226	56.6	100.0
MARCH	0	0	0	2 197	2 197	2 197	4.00	71	17.7	100.0
APRIL	0	0	0	4 207	4 207	4 207	4.60	140	30.5	100.0
MAY	1 094	0	0	3 096	4 190	4 190	4.32	135	31.3	73.9
JUNE	2 080	1 539	0	2 607	4 687	6 226	4.57	208	45.4	41.9
JULY	2 742	0	0	4 956	7 698	7 698	4.19	248	59.2	64.4
AUGUST	1 217	0	0	7 931	9 148	9 148	5.35	295	55.1	86.7
SEPTEMBER	1 158	0	0	2 408	3 566	3 566	6.23	119	19.1	67.5
OCTOBER	4 133	0	0	5 322	9 455	9 455	7.10	305	43.0	56.3
NOVEMBER	3 293	0	0	4 131	7 424	7 424	5.83	247	42.4	55.6
DECEMBER	1 423	0	0	4 668	6 091	6 091	6.00	196	32.7	76.6
TOTAL	17 140	1 539	0	50 393	67 533	69 072	59.20	189	38.3	73.0

APPENDIX VI

CRUDE OIL PRODUCTION BY FIELDS, AREAS OR DISTRICTS - 1993

COMPANY, FIELDS AREAS OR DISTRICTS	DISCOVERY YEAR	TOTAL WELLS COMPLETED	ANNUAL PRODUCTION		CUMULATIVE PRODUCTION THROUGH DECEMBER, 1993
			1993	1992	
			BARRELS	BARRELS	' 000 BARRELS
TRINIDAD & TOBAGO OIL CO. LTD.					
BALATA EAST AND WEST	1952	75	70,974	78,006	3,801
CATSHILL	1950	135	173,113	136,300	23,831
INNISS	1956	41	10,265	12,081	6,321
ROCK DOME	1962	3	0	0	16
PENAL	1936	289	240,228	271,487	63,879
NEW DOME	1928	31	7,068	6,156	3,163
GRAND RAVINE	1929	168	161,937	162,643	27,778
SAN FRANCIQUE	1929	27	0	0	5,983
AREA IV AND GUAPO	1963	192	545,697	528,014	41,624
PARRYLANDS 1-5	1913	511	367,240	353,883	42,796
POINT FORTIN CENTRAL	1916	265	492,104	545,260	23,219
POINT FORTIN WEST	1907	319	143,961	145,552	21,350
LOS BAJOS	1918	29	0	0	546
ERIN	1963	4	11,050	0	721
MAHAICA	1954	6	0	0	0
GUAYAGUAYARE	1902	700	516,769	543,948	90,429
TRINITY	1956	95	79,749	89,431	15,673
BARRACKPORE	1911	407	708,941	825,018	37,017
OROPOUCHE	1944	128	71,675	66,438	7,000
MORNE DIABLO	1926		1,482	1,866	331
FOREST RESERVE	1913	2,062	1,324,223	1,429,958	267,116
PALO SECO	1929	944	482,179	514,547	96,535
BRIGHTON	1903	623	273,302	310,633	71,868
PT. LIGOURE	1937	15	95,373	114,457	3,090
ERIN	1963	24	0	10,612	2,380
COUVA MARINE	1963	6	0	0	301
CRUSE	1913	150	87,580	38,533	26,097
WILSON	1936	82	43,465	47,679	20,298
BALATA CENTRAL	1949	6	0	0	371
MAYARO		9	0	0	0
SIPARIA			3,637	3,461	
LEASE OPERATORS			140,408	117,881	294
TOTAL		7,346	6,052,420	6,353,844	903,828

continued

APPENDIX VI

CRUDE OIL PRODUCTION BY FIELDS, AREAS OR DISTRICTS - 1993

COMPANY, FIELDS AREAS OR DISTRICTS	DISCOVERY YEAR	TOTAL WELLS COMPLETED	ANNUAL PRODUCTION		CUMULATIVE PRODUCTION THROUGH DECEMBER, 1993
			1993	1992	
			BARRELS	BARRELS	' 000 BARRELS
TRINIDAD NORTHERN AREAS					
FOS/FT	1954	35	145,078	90,346	7,486
SOLDADO	1955	741	11,249,476	11,617,269	537,660
TOTAL		776	11,394,554	11,707,615	545,146
AMOCO TRINIDAD OIL CO. LTD.					
TEAK	1969	131	8,547,612	11,798,440	298,989
SAMAAN	1971	72	3,868,621	4,194,053	201,896
POUI	1974	81	6,488,880	6,697,380	191,616
CASSIA	1973	10	587,616	809,005	17,933
MORA	1982	6	21,089	53,665	945
FLAMBOUYANT	1993	1	599,937	0	600
IMMORTELLE	1993	1	0	0	
TOTAL		302	20,113,755	23,552,543	711,979
TRINTOMAR					
PELICAN	1990	2	687,453	936,939	3,867
TOTAL		2	687,453	936,939	3,867
ENRON					
KISKADEE	1993	1	36,975	0	37
TOTAL		1	36,975	0	37
GRAND TOTAL		14,081	44,634,046	49,194,879	2,700,925

continued

APPENDIX VI

CRUDE OIL PRODUCTION BY FIELDS, AREAS OR DISTRICTS - 1993

COMPANY, FIELDS AREAS OR DISTRICTS	DISCOVERY YEAR	TOTAL WELLS COMPLETED	ANNUAL PRODUCTION		CUMULATIVE PRODUCTION THROUGH DECEMBER, 1993
			1993	1992	
			BARRELS	BARRELS	' 000 BARRELS
TRINIDAD & TOBAGO PETROLEUM CO.LTD.					
FYZABAD/APEX QUARRY	1920-1938	1,049	840,738	765,334	176,475
GUAPO/BOODOOSINGH	1922	684	805,748	854,638	51,244
MORUGA EAST	1953	80	38,384	19,684	2,806
MORUGA NORTH	1956	23	4,440	7,021	1,085
MORUGA WEST	1957	130	33,634	41,154	9,419
COORA/QUARRY	1936	744	523,828	540,266	94,808
PALO SECO/ERIN/MC KENZIE	1926	1,660	2,433,940	2,628,150	133,600
NORTH MARINE	1956	19	0	0	1,269
GALEOTA	1963	105	611,978	670,566	19,600
CENTRAL LOS BAJOS	1973	279	712,151	762,460	13,479
OROPOUCHE	1975	3	0	0	274
BARRACKPORE	1977	10	0	0	129
MORNE DIABLO/QUINAM	1926	103	17,881	16,886	7,490
TABAQUITE	1911	238	28,714	33,749	1,959
MALONEY	1902	1	0	0	2
GOUDRON	1902	2	10,763	11,351	49
TOTAL		5,130	6,062,199	6,351,259	513,688
PREMIER CONSOLIDATED OILFIELDS LIMITED					
SIPARIA	1957	5	3,637	3,462	916
SAN FRANCIQUE	1929	116	163,604	167,930	4,579
FYZABAD/ROODAL	1918	281	80,093	79,989	13,847
PALO SECO	1915	83	3,892	4,895	1,680
BARRACKPORE	1970	9	30,292	31,479	514
ICACOS	1955	11	5,172	4,924	521
DEFUNCT FIELDS	1954	19	0	0	323
TOTAL		524	286,690	292,679	22,380

APPENDIX VII
CRUDE OIL PRODUCTION BY MONTHS AND METHODS - 1993
(barrels)

APPENDIX VII
CRUDE OIL PRODUCTION BY MONTHS AND METHODS - 1993
(barrels)

MONTH	FLOWING			GAS LIFT			PUMPING		
	NO.OF WELLS	PRODUCTION	DAILY AV. PER WELL	NO.OF WELLS	PRODUCTION	DAILY AV. PER WELL	NO.OF WELLS	PRODUCTION	DAILY AV. PER WELL
JANUARY	339	874,643	83.2	602	2,080,815	111.5	2390	930,643	12.6
FEBRUARY	346	888,742	91.7	586	1,780,867	108.5	2356	849,846	12.9
MARCH	336	902,721	86.7	579	1,986,166	110.7	2384	946,664	12.8
APRIL	332	845,577	84.9	597	1,890,977	105.6	2378	911,884	12.8
MAY	328	848,567	83.4	597	2,005,425	108.4	2394	923,882	12.4
JUNE	324	754,532	77.6	601	1,926,296	106.8	2390	900,344	12.6
JULY	335	833,320	80.2	592	1,917,382	104.5	2426	954,201	12.7
AUGUST	320	784,244	79.1	603	1,924,221	102.9	2410	907,757	12.2
SEPTEMBER	316	824,953	87.0	598	1,881,745	104.9	2385	898,865	12.6
OCTOBER	319	863,100	87.3	601	1,949,500	104.6	2431	940,925	12.5
NOVEMBER	313	977,593	104.1	603	1,847,767	102.1	2434	894,590	12.3
DECEMBER	301	1,041,521	111.6	594	2,002,311	108.7	2373	919,256	12.5
TOTAL 1993		10,439,513			23,193,472			10,978,857	
AVERAGE 1993	326	28,601.4	87.8	596	3,544	106.6	2396	30,079	12.6

Continued

APPENDIX VII
CRUDE OIL PRODUCTION BY MONTHS AND METHODS - 1993
(barrels)

MONTH	PLUNGER LIFT			OTHER METHODS			TOTAL NO. OF WELLS PRODUCING	TOTAL OIL PRODUCTION	DAILY AVG. PER PRODUCING WELL	B.O.P.D.	SALT WATER	
	NO.OF WELLS	PROD'N	DAILY AV. PER WELL	NO.OF WELLS	PROD'N	DAILY AV. PER WELL					PRODUCTION	% OF TOTAL FLUID
JANUARY	0	0	0.0	25	851	1.1	3,356	3,886,952	37.4	125,386	5,581,541	58.9
FEBRUARY	0	0	0.0	21	690	1.2	3,309	3,520,145	38.0	125,719	4,850,562	57.9
MARCH	0	0	0.0	24	903	1.2	3,323	3,836,454	37.2	123,757	5,424,303	58.6
APRIL	0	0	0.0	21	698	1.1	3,328	3,649,136	36.5	121,638	4,505,053	55.2
MAY	0	0	0.0	19	782	1.3	3,338	3,778,656	36.5	121,892	5,775,826	60.5
JUNE	0	0	0.0	24	755	1.0	3,339	3,581,927	35.8	119,398	5,548,479	60.8
JULY	1	2,389	77.1	21	784	1.2	3,375	3,708,076	35.4	119,615	5,473,642	59.6
AUGUST	1	2,440	78.7	22	674	1.0	3,356	3,619,336	34.8	116,753	5,379,111	59.8
SEPTEMBER	1	2,427	80.9	27	727	0.9	3,327	3,608,717	36.2	120,291	5,329,529	59.6
OCTOBER	1	2,030	67.7	27	423	0.5	3,379	3,755,978	35.9	121,161	5,306,317	58.6
NOVEMBER	1	2,103	70.1	22	566	0.9	3,373	3,722,619	36.8	124,087	5,257,671	58.5
DECEMBER	1	2,379	79.3	20	583	0.9	3,289	3,966,050	38.9	127,937	5,483,385	58.0
TOTAL 1993		13,768			8436			44,634,046			63,915,419	
AVERAGE 1993	1	38	37.7	23	23	1.0	3,341	122,285	36.6	122,285	175,111	58.9

APPENDIX VIII

ANALYSIS OF CRUDE OIL PRODUCTION BY OPERATING COMPANIES - 1993

(barrels)

COMPANY	FLOWING			GAS LIFTING			PUMPING		
	AV. NO. OF WELLS	PRODUCTION	DAILY AV. PER WELL	AV. NO. OF WELLS	PRODUCTION	DAILY AV. PER WELL	AV. NO. OF WELLS	PRODUCTION	DAILY AV. PER WELL
AMOCO TRINIDAD OIL COMPANY LTD.	44	5,380,197	335.0	111	14,733,558	363.7	0	0	0.0
PREMIER CONSOLIDATED OILFIELDS LTD.	4	21,758	14.9	1	811	0.0	87	241,919	7.6
TRINIDAD NORTHERN AREAS	68	2,665,750	107.4	240	7,204,757	82.2	61	1,524,047	68.5
TRINIDAD AND TOBAGO OIL COMPANY LTD.	129	1,272,640	27.0	243	1,253,150	14.1	938	3,526,628	10.3
TRINIDAD AND TOBAGO PETROLEUM COMPANY LTD.	75	374,740	13.7	1	1,196	3.3	1,317	5,686,263	11.8
TRINTOMAR	3	687,453	627.8	0	0	0.0	0	0	0.0
ENRON	1	36,975	101.3	0	0	0.0	0	0	0.0
TOTAL 1993	324	10,439,513	88.3	596	23,193,472	106.6	2,403	10,978,857	12.5
TOTAL 1992	333	12,329,943	101.2	627	25,594,494	111.5	2,320	11,237,859	13.2

Continued

APPENDIX V111

ANALYSIS OF CRUDE OIL PRODUCTION BY OPERATING COMPANIES - 1993

(barrels)

COMPANY	PLUNGER LIFT			OTHER			AV. NO. OF WELLS PRODUCED	TOTAL OIL PRODUCED	DAILY AV. PER WELL	COMPANY'S PROD'N AS A % OF TOTAL PROD'N	SALT WATER	
	AV. NO. OF WELLS	PROD'N	DAILY AV. PER WELL	AV. NO. OF WELLS	PROD'N	DAILY AV. PER WELL					PRODUCTION	% OF TOTAL FLUID
AMOCO TRINIDAD OIL COMPANY LTD.	0	0	0	0	0	0	155	20,113,755	355.5	45.1	36,419,902	64.4
PREMIER CONSOLIDATED OILFIELDS LTD.	1	13,768	38	22	8,434	1	114	286,690	6.9	0.6	230,491	44.6
TRINIDAD NORTHERN AREAS	0	0	0	0	0	0	369	11,394,554	84.6	25.5	5,687,098	33.3
TRINIDAD AND TOBAGO OIL COMPANY LTD.	0	0	0	1	2	0	1,311	6,052,420	12.6	13.6	5,854,505	49.2
TRINIDAD AND TOBAGO PETROLEUM COMPANY LTD.	0	0	0	0	0	0	1,393	6,062,199	11.9	13.6	12,921,771	68.1
TRINTOMAR	0	0	0	0	0	0	3	687,453	627.8	1.5	2,801,652	80.3
ENRON	0	0	0	0	0	0	1	36,975	101.3	0.1	0	0.0
TOTAL 1993	1	13,768	37.7	23	8,436	1.0	3,347	44,634,046	36.5	100.0	63,915,419	58.9
TOTAL 1992	0	0	0	26	32,583	3.4	3,306	49,194,879	40.7	100.0	62,250,770	55.9

APPENDIX IX

TOTAL AND DAILY AVERAGE CRUDE OIL PRODUCTION BY MONTHS FOR ALL COMPANIES - 1993

(Production in barrels)

MONTH	AMOCO TRINIDAD OIL CO. LTD.		PREMIER CONSOLIDATED OILFIELDS LTD.		TRINIDAD NORTHERN AREAS		TRINIDAD & TOBAGO OIL CO. LTD.		TRINIDAD & TOBAGO PETROLEUM CO. LTD.		TRINTOMAR		ENRON	
	PRODUCTION	B.O.P.D	PRODUCTION	B.O.P.D	PRODUCTION	B.O.P.D	PRODUCTION	B.O.P.D	PRODUCTION	B.O.P.D	PRODUCTION	B.O.P.D	PRODUCTION	B.O.P.D
JANUARY	1,805,377	58,238	24,909	804	952,702	30,732	516,955	16,676	514,253	16,589	72,756	2,347	0	0
FEBRUARY	1,606,287	57,367	22,368	799	884,593	31,593	474,958	16,963	471,473	16,838	60,466	2,160	0	0
MARCH	1,733,708	55,926	25,426	820	972,327	31,365	522,190	16,845	521,318	16,817	61,485	1,983	0	0
APRIL	1,609,615	53,654	24,106	804	948,685	31,623	503,813	16,794	498,990	16,633	63,927	2,131	0	0
MAY	1,691,938	54,579	24,894	803	961,132	31,004	517,174	16,683	501,734	16,185	81,784	2,638	0	0
JUNE	1,556,405	51,880	22,949	765	938,365	31,279	501,792	16,726	494,319	16,477	68,097	2,270	0	0
JULY	1,627,978	52,515	23,235	750	961,493	31,016	525,093	16,938	520,944	16,805	49,333	1,591	0	0
AUGUST	1,651,206	53,265	24,375	786	898,017	28,968	495,397	15,981	507,051	16,356	43,290	1,396	0	0
SEPTEMBER	1,628,423	54,281	22,827	761	920,563	30,685	500,120	16,671	495,212	16,507	41,572	1,386	0	0
OCTOBER	1,676,452	54,079	23,937	772	979,097	31,584	505,079	16,293	526,533	16,985	44,880	1,448	0	0
NOVEMBER	1,685,271	56,176	24,106	804	964,488	32,150	486,054	16,202	500,292	16,676	49,281	1,643	13,127	438
DECEMBER	1,841,095	59,390	23,558	760	1,013,092	32,680	503,795	16,251	510,080	16,454	50,582	1,632	23,848	769
TOTAL 1993	20,113,755	55,106	286,690	785	11,394,554	31,218	6,052,420	16,582	6,062,199	16,609	687,453	1,883	36,975	101
TOTAL 1992	23,552,543	64,351	292,679	800	11,707,615	31,988	6,353,844	17,360	6,351,259	17,353	936,939	2,560	0	0

APPENDIX X

LAND AND MARINE CRUDE OIL PRODUCTION - 1993

(barrels)

MONTH	MARINE							TOTAL MARINE	DEVIATED FROM SHORE				LAND
	TNA: SOLDADO	TRINTOC: A.B.M.	TRINTOC: PT. LIG	TRINTOPEC: GALEOTA	AMOCO	TRINTOMAR	ENRON		TNA: F.O.S.	TRINTOC: A.S.	TRINTOC: A.L.S	TRINTOPEC: GUAPO	
JANUARY	945,312	13,408	0	55,101	1,805,377	72,756	0	2,891,954	7,390	5,672	7,991	1,196	972,749
FEBRUARY	872,499	11,889	0	51,302	1,606,287	60,466	0	2,602,443	12,094	4,067	7,168	1,116	893,257
MARCH	960,440	13,577	0	52,800	1,733,708	61,485	0	2,822,010	11,887	4,811	7,924	1,516	988,306
APRIL	933,555	12,480	0	46,111	1,609,615	63,927	0	2,665,688	15,130	5,850	7,661	1,204	953,603
MAY	944,820	14,145	0	50,724	1,691,938	81,784	0	2,783,411	16,312	4,360	7,963	1,211	965,399
JUNE	925,298	14,574	0	51,232	1,556,405	68,097	0	2,615,606	13,067	3,869	7,631	810	940,944
JULY	950,269	14,173	0	50,034	1,627,978	49,333	0	2,691,787	11,224	4,143	7,907	1,019	991,996
AUGUST	888,128	13,264	0	52,101	1,651,206	43,290	0	2,647,989	9,889	3,121	7,911	896	949,530
SEPTEMBER	909,229	13,718	0	47,462	1,628,423	41,572	0	2,640,404	11,334	2,340	7,563	843	946,233
OCTOBER	967,482	13,709	0	55,054	1,676,452	44,880	0	2,757,577	11,615	4,563	8,068	950	973,205
NOVEMBER	954,008	11,860	0	50,234	1,685,271	49,281	13,127	2,763,781	10,480	5,741	7,695	1,267	933,655
DECEMBER	1,002,351	13,029	0	49,823	1,841,095	50,582	23,848	2,980,728	10,741	5,919	9,891	1,109	957,662
TOTAL	11,253,391	159,826	0	611,978	20,113,755	687,453	36,975	32,863,378	141,163	54,456	95,373	13,137	11,466,539

APPENDIX XI

AVERAGE NO. OF PRODUCING WELLS LAND AND MARINE - 1993

MONTH	MARINE							TOTAL MARINE	DEVIATED FROM SHORE				LAND
	TNA: SOLDADO	TRINTOC: A.B.M.	TRINTOC: PT. LIG	TRINTOPEC: GALEOTA	AMOCO	TRINTOMAR	ENRON		TNA: F.O.S.	TRINTOC: A.S.	TRINTOC: A.L.S	TRINTOPEC: GUAPO	
JANUARY	339	37	0	37	157	5	0	575	12	23	1	10	2,736
FEBRUARY	340	30	0	37	156	5	0	568	15	27	1	9	2,690
MARCH	336	34	0	36	154	4	0	564	15	22	1	10	2,711
APRIL	342	35	0	36	156	5	0	574	15	22	1	10	2,706
MAY	339	37	0	40	157	5	0	578	15	22	1	9	2,713
JUNE	341	38	0	34	156	5	0	574	15	21	1	9	2,719
JULY	344	38	0	35	155	5	0	577	20	22	1	9	2,746
AUGUST	344	37	0	35	154	3	0	573	17	22	1	9	2,734
SEPTEMBER	348	38	0	34	154	2	0	576	17	17	1	10	2,706
OCTOBER	355	32	0	37	154	1	0	579	18	21	1	10	2,750
NOVEMBER	350	33	0	37	157	2	1	580	18	24	1	10	2,740
DECEMBER	349	31	0	34	156	2	1	573	17	20	2	10	2,667
AVERAGE	344	35	0	36	156	4	0	574	16	22	1	10	2,718

APPENDIX XII

CRUDE OIL PRODUCTION BY LEASE - 1993

(barrels)

MONTH	STATE LEASE			PRIVATE LEASE		
	NO.OF WELLS	PRODUCTION	DAILY AV. PER WELL	NO.OF WELLS	PRODUCTION	DAILY AV. PER WELL
JANUARY	2,747	3,695,337	43.4	609	191,615	10.1
FEBRUARY	2,706	3,344,174	44.1	603	175,971	10.4
MARCH	2,707	3,640,608	43.4	616	195,846	10.3
APRIL	2,710	3,463,215	42.6	618	185,921	10.0
MAY	2,724	3,588,627	42.5	614	190,029	10.0
JUNE	2,800	3,396,340	40.4	539	185,587	11.5
JULY	2,754	3,511,678	41.1	621	196,398	10.2
AUGUST	2,744	3,430,111	40.3	612	189,225	10.0
SEPTEMBER	2,707	3,422,285	42.1	620	186,432	10.0
OCTOBER	2,750	3,562,286	41.8	629	193,692	9.9
NOVEMBER	2,747	3,537,692	42.9	626	184,927	9.8
DECEMBER	2,679	3,780,289	45.5	610	185,761	9.8
TOTAL 1993		42,372,642			2,261,404	
AVERAGE 1993	2,731	116,089	42.5	610	6,196	10.2

APPENDIX XIII

CRUDE OIL PRODUCTION BY COMPANY LEASE - 1993

(barrels)

COMPANY	STATE LEASE		PRIVATE LEASE	
	PRODUCTION	% OF TOTAL PRODUCTION	PRODUCTION	% OF TOTAL PRODUCTION
AMOCO TRINIDAD OIL COMPANY LIMITED	20,113,755	100.0	0	0
PREMIER CONSOLIDATED OILFIELDS LIMITED	45,674	15.9	241,016	84.1
TRINIDAD NORTHERN AREAS	11,394,554	100.0	0	0
TRINIDAD AND TOBAGO OIL COMPANY LIMITED	5,239,065	86.6	813,355	13.4
TRINIDAD AND TOBAGO PETROLEUM COMPANY LIMITED	4,855,166	80.1	1,207,033	19.9
TRINTOMAR	687,453	100.0	0	0
ENRON	36,975	100.0	0	0
TOTAL 1993	42,372,642	94.9	2,261,404	5.1
TOTAL 1992	46,870,826	95.3	2,324,053	4.7

APPENDIX XIV

SUMMARY OF FLUID INJECTION IN TRINIDAD AND TOBAGO 1989 - 1993

NO.OF PROJECTS IN OPERATION AT END OF YEAR				INJECTION VOLUMES			OIL PRODUCED BY WELLS UNDER PROJECT INFLUENCE				OIL EXPRESSED AS A PERCENTAGE OF COUNTRY'S TOTAL PRODUCTION
YEAR	WATER	STEAM	CARBON DIOXIDE	CARBON DIOXIDE (Mcf/d)	WATER & OTHER FLUIDS (bwpd)	STEAM (bspd)	WATER INJECTION PROJECTS (bopd)	THERMAL RECOVERY PROJECTS (bopd)	CARBON DIOXIDE PROJECTS (bopd)	ALL PROJECTS (bopd)	
1989	22	16	4	1,271	31,074	54,991	10,931	11,902	88	22,921	15.3
1990	21	16	5	4,389	41,188	54,544	14,420	11,491	188	11,679	17.3
1991	18	16	5	3,562	24,608	42,926	11898	10,361	237	22,496	15.7
1992	16	15	5	7,509	15,667	40,528	9,273	9,536	277	19,086	13.9
1993	12	15	5	6,554	48,422	40,510	8,931	8,880	288	18,099	14.8

APPENDIX XV
SECONDARY AND ENHANCED OIL RECOVERY OPERATIONS - 1993

WATER INJECTION

COMPANY	ACTIVE PROJECTS	WATER INJECTED (bwpd)	OIL PRODUCED (bopd)	WATER PRODUCED (bwpd)	GAS PRODUCED (Mcfd)	WATER CUT %
AMOCO	2	16,690	6,936	4,183	7,187	37.6
TNA	1	25,364	820	1,733	2,026	68.9
TTPCL	5	3,188	657	469	498	41.7
TRINTOC	4	3,180	518	578	175	52.7
ALL COS	12	48,422	657	469	498	43.8

STEAM INJECTION

COMPANY	ACTIVE PROJECTS	STEAM INJECTED (bspd)	OIL PRODUCED (bopd)	WATER PRODUCED (bwpd)	OIL/STEAM RATIO
TTPCL	6	29,197	7,201	29,499	0.25
TRINTOC	8	10,110	1,601	7,430	0.16
PCOL	1	1,203	78	416	0.06
ALL COS.	15	40,510	7,201	29,499	0.22

CARBON DIOXIDE INJECTION

COMPANY	ACTIVE PROJECTS	CO2 INJECTED (Mcfd)	OIL PRODUCED (bopd)	WATER PRODUCED (bwpd)	GAS PRODUCED (Mcfd)	G.O.R
TRINTOC	5	6,554	288	109	2,419	8,399
ALL COS.	5	6,554	288	109	2,419	8,399

APPENDIX XVI
WATER INJECTION SUMMARY BY PROJECTS - 1993

COMPANY	FIELD	PROJECT	WATER INJECTION (bwpd)	OIL PRODUCED (bopd)	WATER PRODUCED (bwpd)	GAS PRODUCED (Mcf/d)	WATER CUT %
AMOCO	TEAK	A/C/E WATERFLOO	14,904	6,121	2,917	4,616	32.3
	POUI	01/87	1,786	815	1,266	2,571	60.8
	ALL	ALL	0	6,936	4,183	7,187	37.6
TNA	MAIN FIELD		25,364	820	1,733	2,026	68.9
	ALL	ALL	25,364	820	1,733	2,026	68.9
TRINTOC	CATSHILL	CO-30.BLK.24	1,216	101	52	32	34.0
		N SAND	777	161	104	69	39.2
	PT.FORTIN	CRUSE 'G'	0	37	23	31	38.3
	TRINITY	SHALLOW HERRER	1,187	219	399	43	64.6
	ALL	ALL	3,180	518	578	175	52.7
TRINTOPEC	PALO SECO	PS/UF/500/1	0	34	57	26	62.6
	FYZABAD	FM/UF/172/1	0	22	10	17	31.3
		FM/UF/169/1	0	103	148	78	59.0
	MACKENZIE	MK/UF/48/1	0	64	10	45	13.5
	GALEOTA	GAL/HF/15/11	3,188	434	244	332	36.0
	ALL	ALL	3,188	657	469	498	41.7
TOTAL	ALL	ALL	31,732	8,931	6,963	9,886	43.8

APPENDIX XVII
STEAM INJECTION SUMMARY BY PROJECTS - 1993

COMPANY	FIELD	PROJECTS	STEAM INJECTED (bspd)	OIL PRODUCED (bopd)	WATER PRODUCED (bwpd)	WATER CUT %	OIL/STEAM RATIO
TRINTOPEC	QUARRY		7,001	1,074	4,817	81.8	0.15
	FYZABAD		2,406	536	3,301	86.0	0.22
	GUAPO		3,857	1,234	6,132	83.2	0.32
	CENTRAL LOS BAJOS		4,568	1,653	5,602	77.2	0.36
	PALO SECO		9,858	2,461	8,628	77.8	0.25
	BENN. V'GE		1,507	243	1,019	80.7	0.16
	ALL	ALL	22,196	6,127	29,499	80.4	0.25
TRINTOC	F.RESERVE	Project 111	6,622	816	5,768	87.6	0.12
		Ph.1 West Ext.	105	89	98	52.4	0.85
		Phase 1 Ext.	0	84	65	43.6	0.00
	P.LANDS'E'.	Steamflood	1,411	157	914	85.3	0.11
		Phase 1. Exp.	292	85	69	44.8	0.29
		Phase 1a. Exp.	133	98	111	53.1	0.74
	Pt.FORTIN	Cruse 'E'	1,246	239	375	61.1	0.19
		Cruse 'E' Ext.	301	33	30	47.6	0.11
	ALL	ALL	10,110	1,601	7,430	82.3	0.16
PCOL	FYZABAD	Thermal 1	1,203	78	416	84.2	0.06
	ALL	ALL	1,203	78	416	84.2	0.06
ALL COS.	ALL	ALL	33,509	7,806	37,345	80.8	0.22

CARBON DIOXIDE INJECTION SUMMARY BY PROJECTS - 1993

COMPANY	FIELD	PROJECT	INJECTION (Mcfd)	OIL (bopd)	WATER (bwpd)	GAS (Mcfd)	G.O.R
TRINTOC	F.RESERVE	Forest Sds.	904	6	0	4	667
		Zone 5 Sds.	501	139	85	1,379	9921
		Exp.CO2 CYC.	45	13	0	7	538
		UCWE	2,282	43	21	42	977
	OROPOUCHE	CO2 FLOOD	2,822	87	3	987	11345
ALL COS.	ALL	ALL	6,554	288	109	2,419	8399

APPENDIX XVIII

NATURAL GAS PRODUCTION BY COMPANIES

(Thousand Cubic Metres/Day)

COMPANY	1989	1990	1991	1992	1993
AMOCO	16876	14004	15781	17020	16991
TRINMAR	1783	1853	1984	1255	1061
TRINTOPEC	392	296	259	235	197
TRINTOC	791	606	556	609	594
P.C.O.L.	4	4	3	3	3
TRINTOMAR	0	1444	1722	1142	470
ENRON					72
TOTAL	19846	18207	20305	20264	19388

APPENDIX XIX

NATURAL GAS UTILIZATION - 1989 - 1993

(Million Cubic Metres/Day)

	COMPANY	1989	1990	1991	1992	1993
REFINERY (AS FUEL)	Trintoc(P-a-P)	0.48	0.86	0.99	1.05	1.02
	Trintoc(P/F)	0.25	0.23	0.28	0.28	0.27
		0.73	1.08	1.27	1.33	1.29
FIELD USE (AS FUEL)		1.59	1.53	1.36	1.27	1.39
PRODUCTION USE *		6.02	5.56	5.83	5.89	5.80
OIL COMPANY UTILIZATION *	Sub-Total	8.33	8.17	8.46	8.49	8.49
FERTILIZER MANUFACTURE	Hydro-Agri(FCL)	0.69	0.76	0.87	0.87	0.86
	Fertrin	2.56	2.60	2.68	2.58	2.59
	Tringen 1	1.33	1.45	1.40	1.50	1.25
	Tringen 11	1.20	1.11	1.31	1.31	1.20
	Urea	0.28	0.29	0.29	0.28	0.32
	Fertilizer Sub-Total	6.06	6.22	6.55	6.54	6.21
POWER GENERATION	T & TEC	3.31	3.37	3.68	3.88	3.87
CEMENT MANUFACTURE	Trinidad Cement Limited	0.21	0.26	0.24	0.28	0.27
OTHER LARGE CONSUMERS	T&T Methanol	1.01	1.02	1.18	1.30	1.18
	Caribbean Methanol					0.28
	Ispat	0.71	0.73	0.77	0.82	0.82
GAS PROCESSING	Phoenix Park			0.26	0.59	0.49
SMALL CONSUMERS		0.22	0.25	0.26	0.28	0.28
TOTAL		19.79	20.00	21.24	22.20	21.88

* - Includes re-compressed gas used for gas lifting.

APPENDIX XX

ANNUAL STATISTICS FOR NATURAL GAS PRODUCTION AND UTILIZATION 1989 - 1993

	1989		1990		1991		1992		1993	
	MMSCFD	%	MMSCFD	%	MMSCFD	%	MMSCFD	%	MMSCFD	%
PRODUCTION	701	100	643	100	716	100	715	100	685	100
GOR (M3/M3)	836		759		888		947		908	
A. USED AS FUEL:										
IN FIELDS	56	8.0	54	8.4	48	6.7	45	6.3	49	7.2
IN REFINERIES	26	3.7	38	6.0	45	6.3	47	6.6	46	6.7
BY NON OIL COMPANIES	268	38.2	264	41.1	298	41.6	323	45.2	310	45.3
SUB TOTAL	350	49.9	356	55.4	391	54.6	415	58.1	405	59.2
B. OTHER COMPLETE UTILIZATION:										
USED AS PROCESS GAS	145	20.7	154	24.0	161	22.5	160	22.4	163	23.8
INJECTED INTO FORMATION	0	0.0	0	0.0	0.0	0.0	0	0.0	0	
CONVERTED TO C.H.P.S.	0	0.0	0	0.0	0.0	0.0	0	0.0	0	
SUB TOTAL	145	20.7	154	24.0	161.0	22.5	160	22.4	163	23.8
C. VENTED										
AFTER USE OF PNEUMATIC ENERGY	142	20.3	103	16.0	117	16.3	107	14.9	112	16.3
WITHOUT USE	64	9.1	30	4.7	47	6.6	33	4.6	5	0.7
SUB TOTAL	206	29.4	133	20.7	164	22.9	140	19.5	117	17.0

APPENDIX XXI

THE FOLLOWING TABLE SHOWS FOR THE YEARS 1991,1992,1993 THE QUANTITY OF ASPHALT EXTRACTED FROM THE PITCH LAKE AND THE QUANTITY OF DERIVED PRODUCTS WHICH WERE EXPORTED AND CONSUMED LOCALLY.

NATURAL ASPHALT	METRIC TONS		
	1991	1992	1993
...EXTRACTED BY MINISTRY OF WORKS FOR LOCAL USE	3 712	3 712	6 368
...EXTRACTED BY TRINIDAD LAKE ASPHALT COMPANY	21 406	20 597	19 175
TOTAL	25 118	24 309	25 543
DERIVED PRODUCTS MANUFACTURED BY THE COMPANY			
EXPORTS :-			
...CRUDE ASPHALT	0	0	0
...DRIED ASPHALT	19 098	18 305	20 470
...CEMENT ASPHALT	0	0	0
TOTAL	19 098	18 305	20 470
LOCAL SALES :-			
...CRUDE ASPHALT	0	0	0
...DRIED ASPHALT	624	267	336
...CEMENT ASPHALT	1 121	1 695	717
TOTAL	1 745	1 962	1 053

APPENDIX XXII
DESTINATION OF EXPORTS OF CRUDE AND REFINED PRODUCTS FROM TRINIDAD AND TOBAGO - 1993
(all quantities in barrels)

COUNTRY	TOTAL REFINED PRODUCTS	% OF TOTAL EXPORTS	CRUDE PETROLEUM EXPORTS	L.P.G.	AVIATION GASOLENE	MOTOR GASOLENE	KEROSENE & AVIATION TURBINE FUEL	GAS & DIESEL OILS	FUEL OIL	PETRO-CHEMICALS	ASPHALT	LUBES & GREASES	OTHER
NORTH AMERICA -													
CANADA	267,728	0.94	0	0	0	0	0	7,587	260,141	0	0	0	0
USA	9,444,476	33.00	20,504,113	0	0	908,808	0	625,935	7,449,461	4,528	0	10,252	445,492
TOTAL N.A.	9,712,204	33.94	20,504,113	0	0	908,808	0	633,522	7,709,602	4,528	0	10,252	445,492
CENTRAL AMERICA -													
REPUBLIC OF PANAMA	189,292	0.66	0	0	0	0	0	0	189,292	0	0	0	0
GUATEMALA	0	0.00	0	0	0	0	0	0	0	0	0	0	0
OTHER C.A. (a)	228,404	0.80	0	0	0	219,745	0	0	0	0	0	8,659	0
TOTAL C.A.	417,696	1.46	0	0	0	219,745	0	0	189,292	0	0	8,659	0
SOUTH AMERICA -													
GUYANA	1,237,198	4.32	0	0	0	63,965	69,869	317,763	783,601	0	2,000	0	0
SURINAME	1,907,277	6.66	0	0	0	224,006	38,380	371,797	1,266,686	3,976	2,432	0	0
FRENCH GUIANA	2,083,371	7.28	0	17,570	1,061	275,223	141,296	1,015,332	341,673	0	291,216	0	0
OTHER S.A. (b)	1,483,587	5.18	0	0	0	1,483,587	0			0		0	0
TOTAL S.A.	6,711,433	23.44	0	17,570	1,061	2,046,781	249,545	1,704,892	2,391,960	3,976	295,648	0	0
WEST INDIES -													
BRITISH (c)	4,243,687	14.83	0	149,660	15,356	1,284,719	909,374	1,107,594	714,610	2,800	18,410	31,895	9,269
FRENCH (d)	1,354,056	4.73	0	30,311	5,255	334,143	184,989	525,837	251,587	0	16,955	0	4,979
NETHERLANDS (e)	673,692	2.35	0	0	0	0	0	247,929	425,763	0	0	0	0
HAITI	47,393	0.17	0	0	0	0	0	0	47,393	0	0	0	0
OTHER W.I. ISLANDS (f)	2,861,426	10.00	0	3,250	0	253,824	55,544	504,283	2,042,394	0	2,131	0	0
TOTAL W.I.	9,180,254	32.08	0	183,221	20,611	1,872,686	1,149,907	2,385,643	3,481,747	2,800	37,496	31,895	14,248
EUROPE -													
ITALY	0	0.00	0	0	0	0	0	0	0	0	0	0	0
ENGLAND	0	0.00	0	0	0	0	0	0	0	0	0	0	0
OTHER EUROPE (g)	72,655	0.25	0	0	0	0	0	0	0	0	0	72,655	0
TOTAL EUROPE	72,655	0.25	0	0	0	0	0	0	0	0	0	72,655	0
OTHERS													
JAPAN	2,798	0.01	0	0	0	0	0	0	0	2,798	0	0	0
OTHERS*	2,128,015	7.43	0	17,191	0	0	641,108	0	1,444,890	0	0	24,826	0
TOTAL OTHERS	2,130,813	7.44	0	17,191	0	0	641,108	0	1,444,890	2,798	0	24,826	0
TOTAL CARGOES	28,225,055	98.61	20,504,113	217,982	21,672	5,048,020	2,040,560	4,724,057	15,217,491	14,102	333,144	148,287	459,740
FOREIGN BUNKERS	396,789	1.39	0	0	0	0	9,367	91,699	272,408	158	23,157	0	0
TOTAL EXPORT	28,621,844	100	20,504,113	217,982	21,672	5,048,020	2,049,927	4,815,756	15,489,899	14,260	356,301	148,287	459,740

Note : These figures are only for Trintoc

* Countries not detailed

(a) Other C.A. : Ecuador, Nicaragua

(b) Other S.A. : Uraguay, Colombia

(c) British : Antigua, Anguilla, Barbados, Bequia, Carriacou, Dominica, Grenada, Jamaica, Montserrat, Nevis, St. Kitts, St. Lucia St. Vincent.

(d) French : Guadeloupe, Martinique, St.Barthelmy, St.Barths, St.Maarten.

(e) Netherlands : St. Eustatius, Aruba, Curacao

(f) Other W.I.Islands : Bahamas, Cuba, Tortola, Virgin Gorda Mustique, Puerto Rico, Dominican Republic

(g) Other Europe : Germany

Annual Report (Stats)

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APPENDIX XXIII
MOVEMENTS OF REFINED PRODUCTS - 1993
(all quantities in barrels)

PRODUCT	OPENING INVENTORY	PRODUCTION	PURCHASES FROM THE REFINERY	IMPORTS	OTHER RECEIPTS	TOTAL OPENING INVENTORY AND RECEIPTS
Lpg	8,777	795,604	0	0	0	804,381
Mogas - Premium	387,058	6,993,269	218,909	2,091	0	7,601,327
Mogas - Regular	26,369	635,773	220,464	0	0	882,606
Mogas - Unfinished	207,705	212,980	0	0	0	420,685
Naphtha	371,242	(509,542)	1,516,018	32,949	1,033,003	2,443,670
Aviation Gasoline	12,623	9,856	0	0	13,855	36,334
Av. Turbine Fuel/Kero	295,368	3,726,125	25,376	278,766	290,569	4,616,204
Marine Diesel	17,865	(13,330)	0	0	0	4,535
White Spirit	837	15,867	5,810	0	2,249	24,763
Gas oil	644,852	6,231,378	138,662	684,673	462,715	8,162,280
Petrochemicals	44,076	1,000	2,077	0	10,538	57,691
Lubes	96,176	238,922	0	0	32,768	367,866
Fuel oil	1,743,987	18,976,121	0	827,877	190,000	21,737,985
Asphaltic Products	6,935	146,449	0	0	0	153,384
Other Finished Products	4	(1)	0	0	0	3
Unfinished Products	1,713,049	(95,954)	988,825	183,010	3,244	2,792,174
TOTALS	5,576,923	37,364,517	3,116,141	2,009,366	2,038,941	50,105,888

APPENDIX XXIII continued

PRODUCT	LOCAL CONSUMPTION	SALES TO NPMC	SALES TO OTHER COMPANIES	EXPORTS			TRANSFERS REFINERY	OTHER DISBURSEMENT	ENDING INVENTORIES	TOTAL CLOSING INVENTORY & DISBURSEMENT
	OWN USE			CARGOES	MARAVEN	FOREIGN BUNKERS				
Lpg	224	573,833	0	217,950	0	0	0	0	12,374	804,381
Mogas - Premium	9,158	2,486,592	5,349	4,234,609	218,909	0	439,373	0	207,337	7,601,327
Mogas - Regular	14	116,712	0	532,604	220,464	0	0	0	12,812	882,606
Mogas - Unfinished	841	1,196	5	272,679	0	0	1,726	0	144,238	420,685
Naphtha	0	0	0	230,358	0	0	1,751,568	159,839	301,905	2,443,670
Aviation Gasoline	34	2,714	14	30,894	0	0	0	0	2,678	36,334
Av. Turbine Fuel/Kero	152,345	659,620	29,828	2,105,994	814,011	9,367	473,758	0	371,281	4,616,204
Marine Diesel	40	86	1,040	0	0	2,314	0	0	1,055	4,535
White Spirit	13	5,900	4,775	3,976	0	0	6,725	1,334	2,040	24,763
Gas oil	159,080	1,202,735	174,865	4,955,546	689,656	89,385	189,376	0	701,637	8,162,280
Petrochemicals	139	4,143	3,624	7,326	0	158	2,077	0	40,224	57,691
Lubes	23,739	47,379	0	113,890	90,939	0	0	0	91,919	367,866
Fuel oil	0	76,154	532,509	13,948,324	4,904,704	272,408	0	0	2,003,886	21,737,985
Asphaltic Products *	27,310	28,942	5,267	50,793	0	23,157	0	0	17,915	153,384
Other Finished Products	0	0	3	0	0	0	0	0	0	3
Unfinished Products	141	0	0	873,128	0	0	229,320	458,108	1,231,477	2,792,174
TOTALS	373,078	5,206,006	757,279	27,578,071	6,938,683	396,789	3,093,923	619,281	5,142,778	50,105,888

* 27310 bbls transferred to Lake Asphalt.

Note : These figures are for Trintoc

Appendix XXIV

SUMMARY OF CRUDE OIL ASSESSED FOR STATE ROYALTY WITH PRICES AND ANALYSES - 1993

(FOR HALF YEARLY ASSESSMENT PERIOD ENDING 30th JUNE)

COMPANY	NET ROYALTY PRODUCTION	FIELD STORAGE VALUE		ROYALTY PAYABLE	GASOLINE		LEAD
	(Barrels)	Per barrel	$	$	Barrel	%	MLS
TRINTOPEC (LAND)	2,137,958	67.35	143,989,436.41	14,398,943.64	211,230	9.88	471,585.60
GALEOTA	205,314	130.10	26,712,246.81	3,339,030.85	32,808	15.98	0.00
PCOL	23,006	56.89	1,308,811.34	130,881.13	2,071	9.00	10,731.00
TRINTOC (PF)	1,029,828	72.91	75,088,413.96	7,508,841.40	135,422	13.15	3,958,772.58
TRINTOC (PAP)	1,568,500	76.39	119,817,910.40	11,981,791.04	213,002	13.58	1,120,570.50
TNA	5,657,804	58.92	333,339,162.64	33,333,916.26	553,333	9.78	20,252,993.04
TRINTOMAR	408,515	80.29	32,799,767.91	4,099,970.99	90,486	22.15	0.00
AMOCO	10,003,330	94.65	946,800,434.38	118,350,054.30	1,342,447	13.42	13,974,626.81
TOTAL	21,034,255	79.86	1,679,856,183.85	195,924,062.87	2,580,799	12.27	39,789,279.53

continued

COMPANY	GAS OIL				TOTAL GAS OIL		FUEL OIL	
	53 - 57	48 - 52	43 - 47	#2 FUEL	Barrel	%	Barrel	%
TRINTOPEC (LAND)	0	140,463	118,229	305,941	0	0.00	1,362,521	63.73
GALEOTA	0	0	0	106,004	106,004	51.63	66,502	32.39
PCOL	0	0	0	5,521	5,521	24.00	15,414	67.00
TRINTOC (PF)	215,694	0	118,028	11,477	11,477	1.11	549,207	53.33
TRINTOC (PAP)	0	195,993	140,713	165,841	361,834	23.07	852,950	54.38
TNA	0	491,097	0	0	491,097	8.68	4,613,374	81.54
TRINTOMAR	0	160,220	0	0	160,220	39.22	157,809	38.63
AMOCO	0	0	7,395,462	0	0	0.00	1,265,421	12.65
TOTAL	215,694	847,310	7,762,432	288,843	1,136,153	5.40	8,883,198	42.23

continued

Appendix XXIV

SUMMARY OF CRUDE OIL ASSESSED FOR STATE ROYALTY WITH PRICES AND ANALYSES - 1993

(FOR HALF YEARLY ASSESSMENT PERIOD ENDING 31st DECEMBER)

COMPANY	NET ROYALTY PRODUCTION	FIELD STORAGE VALUE		ROYALTY PAYABLE	GASOLINE		LEAD mls
	(Barrels)	Per barrel	$	$	Barrel	%	
TRINTOPEC (LAND)	2,142,524	103.58	221,922,635.92	22,192,263.59	211,681	9.88	485,185.60
GALEOTA	308,472	49.34	15,219,430.10	1,902,428.76	49,294	15.98	0.00
PCOL	23,956	65.85	1,577,382.82	157,738.28	2,156	9.00	9,730.00
TRINTOC (PF)	1,032,061	39.18	40,432,566.48	4,043,256.65	135,716	13.15	3,598,772.58
TRINTOC (PAP)	1,540,837	189.84	292,515,435.88	29,251,543.59	209,246	13.58	1,120,570.50
TNA	5,560,146	57.38	319,041,177.48	31,904,117.75	543,782	9.78	22,378,041.87
TRINTOMAR	271,826	78.78	21,414,452.28	2,676,806.54	52,191	19.20	0.00
AMOCO	9,815,214	99.11	972,736,783.47	121,592,097.93	1,317,202	13.42	12,479,266.81
TOTAL	20,695,036	91.08	1,884,859,864.43	213,720,253.09	2,521,268	12.18	40,071,567.36

(Continued)

COMPANY	GAS OIL				TOTAL GAS OIL		FUEL OIL	
	53 - 57	48 - 52	43 - 47	#2 FUEL	Barrel	%	Barrel	%
TRINTOPEC (LAND)	0	140,634	118,929	305,849	565,412	26.39	1,365,431	63.73
GALEOTA	0	0	0	159,264	159,264	51.63	99,914	32.39
PCOL	0	0	0	5,749	5,749	24.00	16,051	67.00
TRINTOC (PF)	216,380	0	117,820	11,747	129,567	12.55	550,398	53.33
TRINTOC (PAP)	0	76,117	285,671	131,896	493,684	32.04	837,907	54.38
TNA	0	482,621	0	0	482,621	8.68	4,533,743	81.54
TRINTOMAR	0	101,989	0	0	101,989	37.52	117,646	43.28
AMOCO	0	0	7,256,387	0	7,256,387	73.93	1,241,625	12.65
TOTAL	216,380	801,361	7,778,807	614,505	9,194,673	44.43	8,762,715	42.34

Appendix XXV

THE ROYALTY ASSESSMENT ON CRUDE OIL, NATURAL GASOLINE AND NATURAL GAS PRODUCED ON STATE OIL MINING LEASES FOR EACH HALF-YEARLY PERIOD DURING 1991 - 1993

SOURCE OF REVENUE	UNITS	31-12-93	30-06-93	31-12-92	30-06-92	31-12-91	30-06-91
ROYALTY ON NATURAL GAS	($TT)	64,971,990.77	996,833.94	1,076,568.07	1,136,650.49	1,121,748.36	899,687.27
ROYALTY ON NATURAL GASOLINE	($TT)	0.00	0.00	0.00	0.00	0.00	0.00
MINIMUM RENT NET OFFSET BY ROYALTY ON CRUDE OIL	($TT)	7,744,959.23	7,475,389.74	5,392,854.30	5,359,853.44	5,283,721.91	5,245,559.20
ROYALTY ON CRUDE OIL	($TT)	213,720,253.09	192,304,499.53	195,924,062.87	189,080,570.39	213,539,411.53	212,248,311.10
HALF YEARLY TOTAL	($TT)	286,437,203.09	200,776,723.21	202,393,485.24	195,577,074.32	219,944,881.80	218,393,557.57
YEARLY TOTAL	($TT)	487,213,926.30		397,970,559.56		438,338,439.37	

THE VOLUMES UPON WHICH THE ABOVE ASSESSMENTS WERE MADE WERE AS FOLLOWS :

SUBSTANCE ASSESSED FOR ROYALTY	UNITS	31-12-93	30-06-93	31-12-92	30-06-92	31-12-91	30-06-91
NATURAL GAS	M.C.F.	126,421,937	104,593,482	71,771,205	75,780,488	74,786,863	59,982,150
NATURAL GASOLINE	I.G.	0	0	0	0	0	0
CRUDE OIL NET	BARREL	20,695,036	21,034,255	22,599,409	24,297,602	25,204,967	25,161,527
FIELD STORAGE VALUE PER BARREL	($TT)	85.38	79.69	74.79	66.80	72.94	72.23
ROYALTY PAYABLE PER BARREL	($TT)	10.33	9.14	8.67	7.78	8.47	8.44

DATA USED TO EVALUATE CRUDE OIL FOR STATE ROYALTY ASSESSMENTS :

PRODUCT	UNITS	31-12-93	30-06-93	31-12-92	30-06-92	31-12-91	30-06-91
3% Sulphur Grade Fuel	($TT)	52.244690	53.606132	55.365577	41.042045	42.950315	43.210302
No. 2 Fuel	($TT)	141.243972	64.454346	102.223858	94.900647	104.889488	102.327721
43- 47 D.I. Gas Oil	($TT)	901.515588	848.731651	102.949499	95.626283	105.615123	103.053356
48- 52 D.I. Gas Oil	($TT)	877.129487	114.476777	103.173455	95.850440	105.839085	103.277318
53- 57 D.I. Gas Oil	($TT)	25.206976	23.608657	103.621379	96.298167	106.287008	103.725241
70- 72 Oct. M Headed Motor Gas	($TT)	112.611250	100.375322	98.535795	100.573522	105.361754	114.116250
Average Middle Rate for Sight Draft on N.Y. / T.T. Currency for U.S. $1.00	($TT)	5.778773	4.989831	4.265935	4.265935	4.265935	4.265935
Value of Tetra Ethyl Lead in TT cents per Millilitre	cTT / m m	7.196275	8.726925	6.649325	7.007480	6.223606	53.029630

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