

**TRINIDAD AND TOBAGO**



**MINISTRY OF PETROLEUM AND MINES**

# **ANNUAL REPORT**

**FOR THE YEAR**

**1983**

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## FOREWORD

### ANNUAL ADMINISTRATIVE REPORT 1983

The depressed market for crude oil and its products continued to affect the International Oil Industry during 1983. In March OPEC cut the price of its Marker Crude from U.S. \$34 to \$29 per barrel. The local Oil Industry was affected by the decline in oil prices, drilling and workover activity and this was reflected by declining oil production.

In addition refinery activity continued to decline because of the unfavourable economics of the domestic refining industry.

However, by year end the Government introduced fiscal measures to improve the profitability of operating oil companies through the reduction of the Petroleum Production Levy and Supplemental Petroleum Tax rate for land-based crude oil production. In addition greater incentives were offered for the production of crude oil from land-based enhanced oil recovery projects.

On the brighter side, natural gas production and utilisation increased during the year. Among the significant developments in the Natural Gas Industry was the coming on stream of the Cassia Gas Field, the completion of the offshore section of the new 760mm gas transmission system and the commissioning of two new energy-based petrochemical plants.

In addition there was continued interest in joint venture arrangements with the Government to develop petrochemical plants utilising natural gas as a major feedstock.

The Ministry wishes to extend its thanks to the various organisations that contributed towards the preparation of this report and to workers in the Industries, including its own staff, whose dedication to duty has contributed greatly to the difficult task of managing the Natural Resources of the country.

## ANNUAL REVIEW 1983

### CRUDE OIL PRODUCTION

Trinidad and Tobago's crude oil production continued to decline in 1983 with an annual output of 9 276 000 m<sup>3</sup>. The average daily production was 25 414 m<sup>3</sup>, a decrease of 9.7% from the 1982 average. The average daily production varied from a maximum of 26 372 m<sup>3</sup> in January to a minimum of 24 916 m<sup>3</sup> in September, with production at the year's end being 25 169 m<sup>3</sup>.

Two companies registered increases in their production for 1983. These were Trinidad and Tobago Oil Company and Premier Consolidated Oilfields Limited whose increases were marginal. Trinidad-Tesoro Petroleum Company, Texaco Trinidad Incorporated, Amoco Trinidad Oil Company and Trinidad Northern Areas Limited experienced decreases in annual production.

The total annual production from marine fields was 7 085 620 m<sup>3</sup>, 9.4% less than last year's figure. The average daily production from marine fields was 19 413 m<sup>3</sup> and that from land fields was 6 001 m<sup>3</sup>. The marine fields accounted for 76.6% of the country's total production as compared with 76.3% for 1982.

Amoco Trinidad Oil Company, the country's largest producer, registered an average daily production of 12 999 m<sup>3</sup> which was a 12.0% drop from the previous year's figure. Production declined in the Teak, Poui and Samaan fields by 8.6%, 24.4% and 7.8% respectively. In the previous years, the natural reservoir decline was offset by new production from development drilling activity. However, in 1983, with the reduction of successful well completions, oil production continued its decline from the peak production year of 1978. Even though Amoco's Cassia field began producing in May, the condensate produced by that field could not offset the decline in production. In addition to the natural reservoir decline there were other factors which contributed to the falling production. Compressor problems experienced in 1982 on the Samaan platforms continued into 1983 and performance of those compressors was only improved in the latter half of the year.

These problems resulted in reduced available gas for gaslift. An increase in the producing water-cut was also experienced in the Samaan and Poui fields.

Trinidad Northern Areas had an average daily production of 5 904 m<sup>3</sup>, a decrease of 2.2% from the average of the previous year. The North Soldado field, one of the two fields in which drilling activity was concentrated during the year and where Platform 24 was being developed, had a 5.5% increase in production despite a fire on Platform 18 in March. The Southwest Soldado and the Point Fortin offshore fields, with 1.4% and 0.7% respectively of Trinidad Northern Areas total production correspondingly increased by 3804.7% and 58.2%. Although drilling activity was also concentrated in the East Soldado field production there declined by 11.3%. The decline in the Main field was 12.6%, the reasons for this decline being compressor downtime and electrical problems experienced by the power water system on Platform 20.

Trinidad-Tesoro Petroleum Company Limited produced a daily average of 3 401 m<sup>3</sup>, which was 5.7% less than in 1982. Land fields contributed 86.1% of the company's total. Production from the company's three offshore platforms at Galeota decreased by 19.9% to 466 m<sup>3</sup> per day due to high natural decline rates and water encroachment especially on Platform C. The land production decline was mainly due to a reduction of drilling and workover operations, which contributed to the decline rate of 6.6% for oil production and to frequent electrical outages. Production from thermal oil recovery projects averaged 35% of the company's overall producing rate.

Texaco Trinidad Incorporated had a daily average of 1 779 m<sup>3</sup>, which represented a decrease of 27.6% from last year's figure. New well production accounted for 0.2% of the company's output while secondary recovery schemes contributed 21.8%. The drastic decrease in production was due to natural decline; the absence of drilling and workover activity and frequent electrical outages both resulted in a large number of inactive wells.

In 1983 Trinidad and Tobago Oil Company achieved an average daily production of 1 279 m<sup>3</sup> which was 4.6% greater than that produced in the previous year. Oil from new wells was mainly responsible for the increased production.

Finally, Premier Consolidated Oilfields Limited had a daily average of 53 m<sup>3</sup>, an increase of 5.8% over the previous year's production rate.

### **DRILLING AND COMPLETIONS:**

In Trinidad and Tobago there was a decrease in drilling activity during 1983 as compared with the previous year. There was a decrease of 27.3% in the total annual depth drilled, with 183 797 m being completed in 1983. Exploratory or semi-appraisal drilling accounted for 7.4%, with 13 571 m penetrated, while the other 170 226 m represented development drilling for the year. In terms of rig activity, there was a decrease of 25.4% with a total of 114.7 rig months being achieved during the year. At the end of the year there were 10 rigs engaged in development drilling.

A total of 180 wells was completed, which represented a decrease of 16.3% from last year's figure. Of these, 9 were exploratory and the remaining 171 development. In 1982 there were 23 exploratory and 192 development wells. Of the 180 wells completed, 162 were producers, 14 were abandoned and 4 were injectors. Of the 152 land wells completed, 148 were drilled to develop existing fields and the other 4 were exploratory or semi-exploratory. Development land wells consisted of 135 producers, 4 injectors and 9 abandonments, while 2 of the exploratory (and semi-exploratory) wells were completed as producers with the other 2 being abandoned.

In the marine environment there were 28 completions of which 23 were development and 5 exploratory wells. All the development wells were producers. Of the exploratory wells, 2 were completed as producers with 3 being abandoned.

Trinidad-Tesoro Petroleum Company Limited had the highest number of completions made by any company during the year. A total of 91 completions was achieved. This number represented a 27.2% decrease from last year's figure. Two drilling rigs were actively engaged in development drilling in Trinidad-Tesoro Petroleum Company's land fields, These land rigs were responsible for 89 wells being drilled for a total depth of 60 486 m in 20.2 rig months. Seventeen of the land wells were non-thermal, representing a drilled depth of 16 954 m, while 72 wells were drilled primarily in the Palo Seco, Central Los Bajos, Apex-Quarry, Coora/Quarry and North Fyzabad Thermal Schemes. The total depth drilled for thermal oil recovery projects during 1983 amounted to 43 532 m.

In 1983, Trinidad-Tesoro Petroleum Company continued further outstep development of its Galeota marine field, with 8 development wells and 1 semi-exploratory drilled, for a total depth of 7 804 m, on the Trintes D Platform.

At Trinidad and Tobago Oil Company there was a 4.8% decrease in the number of wells spudded. There was an 8.3% decrease in the total depth penetrated which, for 1983 was 53 581 m, and a corresponding 3.1% decrease in rig activity to 42.14 rig months.

Development drilling accounted for 90.1% of the total depth drilled. Only 1 exploratory well was drilled. This well, SWP-1, was drilled in Trinidad and Tobago Oil Company's Southwest Peninsula lease and was plugged and abandoned.

There was a total of 55 completions for the year 1983 which represented an 83.3% increase when compared with the previous year's figure. Of these 46 were completed as oil producers, 1 as a gas producer and 8 were abandoned.

Texaco Trinidad Incorporated recorded a total drilled depth of 2 157 m, which was a 93.2% decrease from the corresponding figure for 1982. There was a 99.1% and a 73.5% decrease in development and exploratory drilling, respectively, the actual figures for 1983 being 228 m as development and 1 929 m as exploratory depth drilled. There was a decrease of 95.5% in the rig months achieved to 1.2. Only 1 well was started which was drilled in Texaco Trinidad Incorporated



Marine Block 1 lease. This well, Iguana II, was plugged and abandoned after testing gas.

Texaco Trinidad Incorporated performed a total of 3 completions in 1983 which was 82.4% lower than the number of wells completed in 1982. Of the 3, one was an oil producer and 2 were abandoned.

Amoco Trinidad Oil Company's drilling activity decreased during 1983, as indicated by a 27.5% drop in rig-months. The total number of rig-months was 12.9 as compared with 17.8 in 1982 while the total drilled depth was 15 853 m, an increase of 701 metres or 4.6%. No exploratory drilling was done by this company in 1983. Development depth increased by 64.3% over that drilled in 1982. Amoco Trinidad Oil Company drilled 6 development wells during 1983, 4 of these were on the Cassia platform. Three development wells were completed as gas producers on the Cassia platform.

In 1983, Trinidad Northern Areas realised a decrease in both the number of development and exploratory wells spudded, resulting in an overall 34.3% decrease in the total number of wells spudded. A total drilled depth of 42 179 m was recorded, of which 85.7% was development and 14.3% exploratory. The development and exploratory drilled depth decreased by 25.5% and 58.1% respectively when compared to the previous year's depths.

There was a total of 24 completions - 20 development and 4 exploratory wells as compared with 34 completions in 1982. Of the development wells all 20 were completed as producers.

In the case of the exploratory wells 2 were completed as oil producers while the other 2 were abandoned dry. There was a decrease in the number of wells which were abandoned, from 12 in 1982 to 2 in 1983 and no change in the number of producers completed.

During 1983, Premier Consolidated Oilfields Limited spudded 5 development wells as compared with 1 well in the previous year, However, the total depth penetrated decreased by 15.3% to register 872 m. Drilling, both in 1982 and 1983, was developmental in nature and was confined to January and June 1982, and June and September 1983. Four wells were completed in 1983, all of them oil producers. There were 2 completions in 1982.

**TABLE I**  
**SUMMARY OF STATISTICS FOR THE TRINIDAD AND TOBAGO INDUSTRY 1980 - 1983**

	UNIT	1980	1981	1982	1983
ANNUAL CRUDE OIL PRODUCTION	Cubic Metres	12 339 452	10 987 161	10 273 546	9 276 000
ANNUAL NATURAL GAS PRODUCTION	Cubic Metres	5 664 583 237	5 604 171 429	5 480 386 335	6 318 586 981
AVERAGE G.O.R.		459	510	568	681
ANNUAL C.H.P.S. (NATURAL GASOLINE) PRODUCTION	Cubic Metres	6 175	6 158	4 493	5 146
DAILY REFINERY CAPACITY	M <sup>3</sup> /DAY <sup>3</sup>	72 498	72 498	72 498	50 876
ANNUAL REFINERY THROUGHPUT	Cubic Metres	12 455 514	10 069 620	8 761 460	4 319 775
TOTAL WELLS COMPLETED DURING THE YEAR	NO.	185	210	215	180
AVERAGE DEPTH OF COMPLETED WELLS	Metres	1 084	1 128	1 083	1 051
TOTAL DEPTH DRILLED DURING THE YEAR	Metres	204 499	239 609	252 937	183 797
OIL AND GAS WELLS COMPLETED DURING THE YEAR	NO.	146	169	174	162
DRILLING SUCCESS RATIO	Percent	78.9	80.5	80.9	90.5
AVERAGE RIGGS RUNNING	NO.	13.1	14.1	12.8	9.5

**TABLE II**  
**SUMMARY OF EXPLORATORY AND SEMI-EXPLORATORY**  
**DRILLING IN 1983**

(NOTE: Be sure to include wildcat tests actively  
drilling as of December 31, 1983).

<u>Operator</u>	<u>Well Name</u>	<u>Location</u>	<u>Basis for Location</u>	<u>Kahe Exploratory Classification</u>	<u>Date Spudded</u>	<u>Date Completed</u>	<u>Total Depth</u> <u>Metres (Feet)</u>		<u>Name and/or Age of Deepest Formation</u>	<u>Result Remarks</u>
<u>TRINIDAD NORTHERN AREAS LIMITED</u>	<u>S 435</u>	<u>F11 ID-10</u>	<u>S &amp; SSG</u>	<u>C 2B</u>	<u>78. 7.22</u>	<u>83. 3.17</u>	<u>2 721</u>	<u>8,926</u>	<u>Lower Cruse</u>	<u>Abandoned-Mech- anical Reasons</u>
	<u>S 538ST</u>	<u>K15 PG-1</u>	<u>S &amp; SSG</u>	<u>B 1</u>	<u>82.12.28</u>	<u>83. 4. 1</u>	<u>3 545</u>	<u>11,629</u>	<u>Pre Cruse</u>	<u>Completed-Oil</u>
	<u>S 541</u>	<u>K20 MM 3</u>	<u>S &amp; SSG</u>	<u>C 1</u>	<u>83.02.23</u>	<u>83. 3.12</u>	<u>1 612</u>	<u>5,289</u>	<u>Pre Cruse</u>	<u>Abandoned-Dry</u>
	<u>S 541X</u>	<u>K20 MM-3</u>	<u>S &amp; SSG</u>	<u>B 1</u>	<u>83. 3.13</u>	<u>83. 3.31</u>	<u>2 408</u>	<u>7,900</u>	<u>Pre Cruse</u>	<u>Completed-Oil</u>
<u>TRINIDAD &amp; TOBAGO OIL COMPANY LTD.</u>	<u>CO-131</u>	<u>H11 HM-6</u>	<u>S &amp; SSG</u>	<u>B 1</u>	<u>81. 1.20</u>	<u>83. 2. 6</u>	<u>2 574</u>	<u>8,446</u>	<u>Herrera 'B'</u>	<u>Completed-Oil</u>
	<u>P-274</u>	<u>G13 MG-7 ME-3</u>	<u>S &amp; SSG</u>	<u>B 1</u>	<u>82.10.21</u>	<u>83. 4.25</u>	<u>3 505</u>	<u>11,500</u>	<u>Under Thrust Herrera</u>	<u>Completed-Oil</u>
	<u>P-277</u>	<u>G12 LG-16</u>	<u>S &amp; SSG</u>	<u>C 1</u>	<u>83. 4.17</u>	<u>83. 7.17</u>	<u>2 977</u>	<u>9,766</u>	<u>Level 11 under thrust Herrera</u>	<u>Abandoned-Dry</u>
	<u>P-279</u>	<u>G13 MG7 (2)</u>	<u>S &amp; SSG</u>	<u>B 1</u>	<u>83. 7.29</u>	<u>-</u>	<u>3 226</u>	<u>10,583</u>	<u>Under Thrust Herera</u>	<u>Completing - Repairing</u>
	<u>South West Peninsula-1</u>	<u>F18 NF-11</u>	<u>S &amp; SSG</u>	<u>C 3</u>	<u>83. 9.12</u>	<u>83.11.18</u>	<u>2 591</u>	<u>8,500</u>	<u>Pre-Cruse</u>	<u>Abandoned-Dry</u>
<u>TEXACO TRINIDAD INCORPORATED</u>	<u>Iguana-2</u>	<u>Block-1</u>	<u>S &amp; SSG</u>	<u>C 1</u>	<u>83. 5. 4</u>	<u>83. 5. 2</u>	<u>1 929</u>	<u>6,328</u>	<u>Manzanilla</u>	<u>Abandoned-After Testing</u>
<u>TRINIDAD-TESORO PETROLEUM COMP. LIMITED</u>	<u>Galeota D-16</u>	<u>P11 FK-13</u>	<u>S &amp; SSG</u>	<u>A 2B</u>	<u>83. 3.28</u>	<u>-</u>	<u>2 137</u>	<u>7,012</u>	<u>Upper Miocene 11</u>	<u>Completing - Testing</u>

**TABLE III**  
**SUMMARY OF DEVELOPMENT DRILLING IN TRINIDAD AND TOBAGO - 1983**

<u>Field, Area, or District</u>	<u>Number of Producers Completed Oil and Gas</u>	<u>Number of Abandoned Wells</u>	<u>Total Completions</u>	<u>Metres</u>	<u>Total Depth Drilled  (Feet)</u>	<u>Number of Rigs Activity Drilling or Testing Devel- opment wells on December 31, 1983</u>
1	20	-	20	36 131	118,540	1
2	37	5	42	26 506	86,960	-
4	28	3	31	18 368	60,264	1
5	39	-	39	30 467	99,956	2
6	27	-	27(a)	20 039	65,746(a)	-
8	4	-	4	6 781	22,247	1
9	4	1	5	5 078	16,660	-
11	3	-	3	21 519	70,602	2
Total	162	9	171	164 889	540,975	7

(a) Includes 4 S. INJ. Wells:

Depth Drilled - 3009 M (9871').

**TABLE IV**  
**OIL PRODUCTION BY FIELDS, AREAS, OR DISTRICTS**

(NOTE: Use whichever geographic Unit is the most useful or meaningful in your case. Delete the inappropriate terms).

COMPANY, FIELDS, AREA OR DISTRICT	DISCOVERY YEAR	TOTAL WELLS COMPLETED	ANNUAL PRODUCTION				CUMULATIVE PROD. THROUGH	
			1982		1983		December 1983 - '000	
			CUBIC METRES	BARRELS	CUBIC METRES	BARRELS	CUBIC METRES	BARRELS
<b>TRINIDAD AND TOBAGO OIL COMPANY</b>								
BALATA EAST AND WEST	1952	66	23 990	150,893	25 851	162,600	425	2,673
CATSHILL	1950	132	25 658	161,383	23 642	148,706	3 574	22,479
INNISS	1956	38	7 919	49,807	7 820	49,183	960	6,038
ROCK DOME	1962	3	0	0	0	0	3	16
PENAL	1936	278	63 032	396,458	70 913	446,031	9 592	60,332
NEW DOME	1928	31	436	2,742	777	4,883	494	3,112
POINT FORTIN EAST	1929	152	62 168	391,024	61 174	384,774	4 023	25,304
SAN FRANCISQUE	1929	27	1 693	10,651	1 707	10,738	945	5,944
AREA IV AND GUAPO	1963	192	69 340	436,139	69,596	437,748	5 854	36,825
PARRYLANDS 1-5	1913- 18	469	79 932	502,755	86 704	545,355	5 986	37,650
POINT FORTIN CENTRAL	1916	188	86 189	542,117	89 454	562,649	2 769	17,417
POINT FORTIN WEST	1907	314	25 800	162,279	29 245	183,947	3 130	19,686
LOS BAJOS	1918	29	0	0	0	0	87	546
ERIN	1963	4	0	0	0	0	113	710
<b>TOTAL:</b>		<b>1923</b>	<b>446 157</b>	<b>2,806,248</b>	<b>466,883</b>	<b>2,936,614</b>	<b>37 955</b>	<b>238,732</b>
<b>TRINIDAD-TESORO PETROLEUM COMPANY LIMITED</b>								
FYZABAD/APEX QUARRY	1920- 38	1011	210 517	1,324,114	225 852	1,420,568	26 181	164,673
GUAPO/BOODOOSINGH	1922	639	131 602	827,753	139 708	878,736	6 849	43,079
MORUGA EAST	1953	77	9 866	62,053	7 984	50,216	405	2,550
MORUGA NORTH	1956	23	1 477	9,289	853	5,367	163	1,023
MORUGA WEST	1957	129	8 426	53,004	6 423	40,401	1 435	9,026
COORA/QUARRY	1936	685	116 834	734,865	123 809	778,737	13 993	88,017
PALO SECO/ERIN/MC KENZIE	1926	1408	539 970	3,396,315	486 350	3,059,057	16 626	104,577
NORTH MARINE	1956	19	0	0	0	0	202	1,269
GALEOTA	1963	89	212 389	1,335,886	19 348	1,068,941	1 596	10,038
CENTRAL LOS BAJOS	1973	156	81 709	513,937	76 537	481,405	831	5,230
OROPOUCHE	1975	3	1 870	11,761	1 725	10,852	38	236
BARRACKPORE	1977	4	1 484	9,336	2 205	13,868	14	85
<b>TOTAL:</b>		<b>4243</b>	<b>1 316 144</b>	<b>8,278,313</b>	<b>1 241 394</b>	<b>7,808,148</b>	<b>68 333</b>	<b>429,803</b>
<b>TEXACO TRINIDAD INCORPORATED</b>								
GUAYAGUAYARE	1902	698	129 508	814,584	80 180	504,320	13,393	84,239
TRINITY	1956	95	23 798	149,684	16 837	105,901	2 349*	14,777
BARRACKPORE	1911	334	70 928	446,124	63 826	401,453	4 494	28,266
OROPOUCHE	1944	128	23 105	145,329	16 617	104,515	1 008	6,339
MORNE DIABLO/QUINAM	1926	91	4 491	28,248	2 439	15,345	1 209	7,602 <sup>a</sup>
FOREST RESERVE	1913	2032	350 314	2,203,415	266 817	1,678,232	40 172	252,674
PALO SECO	1929	36	201 212	1,265,586	137 769	866,540	14 328 <sup>a</sup>	90,124 <sup>a</sup>
BRIGHTON	1903	615	62 498	393,102	44 255	278,355	11 417	71,809
ERIN	1963	23	5 338	33,577	3 317	20,864	366	2,304
COUVA MARINE	1963	6	0	0	0	0	48	301
CRUSE	1913	150	7 287	45,833	4 433	27,883	4 104	25,814
WILSON	1936	80	15 236	95,829	10 897	68,540	3 133	19,705
TABAQUITE	1911	225	2 699	16,974	1 867	11,742	272	1 714
BALATA CENTRAL	1949	6	0	0	0	0	59	371
MAYARO		9	0	0	0	0	0	0
<b>TOTAL:</b>		<b>4429</b>	<b>896 414</b>	<b>5,638,285</b>	<b>649 254</b>	<b>4,083,690</b>	<b>96 352<sup>a</sup></b>	<b>606,039<sup>a</sup></b>
<b>TRINIDAD NORTHERN AREAS</b>								
FOS/FT	1954	35	9 975	62,744	15 779	99,247	1 038	6,528
SOLDADO	1955	576	2 193 291	13,795,412	2 139 040	13,454,180	64 798	407,567
<b>TOTAL:</b>		<b>611</b>	<b>2 203 266</b>	<b>13,858,156</b>	<b>2 154 819</b>	<b>13,553,427</b>	<b>65 836</b>	<b>414,095</b>
<b>PREMIER CONSOLIDATED OILFIELDS LIMITED</b>								
SIPARIA	1957	5	1 538	9,672	1 546	9,722	133	837
SAN FRANCISQUE	1929	79	4 156	26,140	5 342	33,597	491	3,089
FYZABAD/ROODAL	1918	254	8 974	56,444	8 642	54,359	1 934	12,165
PALO SECO	1915	83	652	4,101	675	4,248	260	1,634
BARRACKPORE	1970	4	1 999	12,574	1 944	12,227	24	153
ICACOS	1955	11	823	5,179	1 039	6,536	75	470
DEFUNCT FIELDS	1954	19	0	0	0	0	51	323
<b>TOTAL:</b>		<b>455</b>	<b>18 142</b>	<b>114,110</b>	<b>19 188</b>	<b>120,689</b>	<b>2 968<sup>a</sup></b>	<b>18 671<sup>a</sup></b>
<b>AMOCO TRINIDAD OIL COMPANY</b>								
TEAK	1971	80	1 974 196	12,417,344	1 803 922	11,346,349	27 089	170,384*
SAMAAN	1971	46	1 550 326	9,751,275	1 428 797	8,986,880	23 842*	149,965*
POUI	1974	43	1 868 901	11,755,056	1 412 469	8,884,182	18 461*	116,117*
CASSIA	1973	3	-	-	99 274	624,417	99	624
<b>TOTAL:</b>		<b>172</b>	<b>5 393 423</b>	<b>33,923,675</b>	<b>4 744 462</b>	<b>29,841,828</b>	<b>69 491</b>	<b>437,090</b>
<b>GRAND TOTAL:</b>		<b>11,833</b>	<b>10 273 546</b>	<b>64,618,787</b>	<b>9 276 000</b>	<b>58,344,396</b>	<b>340 935</b>	<b>2,144,430</b>

\* Correction to 1981 DATA  
(a) Correction to 1982 DATA

TABLE III A 1983

KEY TO AREA - NUMBER ON MAP (FIGURE II) ON TABLES IV AND IN TEXT

AREA NUMBER	DESCRIPTION
1.	Soldado, North Marine, Couva Marine, Manicou, (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.
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, Innis, Trinity, Catshill, Balata, Bovallius.
10.	Guayaguayare, Moruga East.
11.	Galeota, Teak, Samaan, Poui, Dolphin (Block 6) Diamond Prospect, East Coast, Reverse 'L' East, Reverse 'L' West.
12.	South Marine (South Coast).
13.	Tabaquite, Pointe-a-Pierre.
14.	Icacos, South West Peninsula.
15.	North Coast Marine area.

## OVERVIEW OF THE PETROLEUM SECTOR IN 1983

During 1983 the world economy showed the first signs of recovery from the worst economic recession since the depression years of the early 1930's. The first signs appeared in the United States and to lesser extent in other Industrialised countries. The United States Commerce Department announced an estimated growth in GDP of 4.5% in the fourth quarter and increased net corporate profits of 13.3% or \$17 billion during the third quarter of 1983.

But the insipient world recovery had little or no impact on the world petroleum industry during 1983. Conservation, and the utilization of alternative sources of energy, increased energy efficiency and the declining importance of heavy manufacturing industry to the United States economy all continued to contribute to a downward pressure on oil demand.

OPEC's historic decision in March of 1983 to cut its marker crude price from (US) \$34.00 to \$29.00 per barrel and to hold its members to a production ceiling of 17.5 million barrels per day was the single most important event in a tumultuous year for oil exporting developing countries.

By mid-year, the OPEC accord appeared to have achieved its goal of bringing some measure of stability to oil prices, but thereafter there were recurrent reports of rule-breaking by OPEC members both with respect to quotas and prices. This posed a threat of a return to price cutting despite calls by OPEC's market monitoring committee to avoid over-production.

During 1983 also many oil-exporting countries suffered from a severe reduction in growth rates with the fall in oil prices and many resorted to import restrictions in order to contain their growing balance-of-payments deficits and to conserve foreign exchange. Many had incurred high levels of debt from large borrowings - contracted when oil prices were increasing to finance ambitious industrialisation programmes.

In Trinidad and Tobago the primary impact of the weakened market for oil has been felt mainly in the industry itself: falling employment and production levels, cut backs in such activities as well work-overs, drilling and further exploration and development.

Employment in the oil service industry which had already fallen by some 600 persons in 1982 fell further in 1983.

The fall in the price of the OPEC marker crude meant a loss of some TT\$500 million in oil revenue for Trinidad and Tobago. It also meant that the domestic oil industry was now experiencing falling production and falling revenues arising from lower oil prices. As a consequence, the Government saw the need to provide incentives for the oil companies to increase exploration and development activity and decided to reduce the rate of Supplemental Petroleum Tax (SPT) for land production from 35% to 15%. This resulted in a further revenue loss of approximately (TT.) \$160 million.

During 1982 Government appointed a Ministerial team to commence negotiations with Tesoro Petroleum Corporation pursuant to an offer by the Corporation to sell its minority shareholding to Government. No agreement was reached and the issue was referred to joint auditors for a determination of the fair market value of Tesoro's shareholding in Trinidad and Tobago. The issue remained outstanding by the end of 1983.

During 1982 also Government appointed a Ministerial team to commence discussions with Texaco on its future role in Trinidad and Tobago.

Towards the end of 1982 the refinery throughput of the Texaco refinery had fallen to some 7 949 m<sup>3</sup>/day partly as a result of Texaco International curtailing its use of the refinery facilities of Texaco Trinidad (Textrin). Furthermore Textrin cut back its expenditure on exploration, drilling and workovers and offered to sell or invite participation in its refinery to the Government of Trinidad and Tobago.

The crisis situation which threatened the closure of the Texaco refinery caused the Government to devise an interim arrangement (for January to March 1983) whereby refinery throughput would

remain at a minimum of 10 334 cubic metres a day of which Trintoc would supply 5 883 cubic metres a day and Texaco 4 452 cubic metres a day. By the end of 1983 however, this arrangement continued, though Texaco's indigenous production had been reduced to 3 657 cubic metres a day.

Another significant development in 1983 was the reduction of subsidies on the retail prices of petroleum products for domestic consumption thereby increasing the market prices of these products. As a result the overall subsidy on petroleum products was reduced by (TT.) \$191,138,998.73.

During 1983 the Government through the Ministry of Energy and Natural Resources initiated moves towards closer co-operation in energy matters with the Governments of Venezuela, Mexico and Ecuador.

The Minister and officials of the Ministry of Energy and Natural Resources paid several visits to Venezuela which resulted in arrangements for the processing of 3 180 cubic metres per day of Venezuelan crude in Trinidad and Tobago by Trintoc and the actual training of technical staff of the Ministry of Energy and Trintoc in the Venezuelan Ministry, PDVSA and other state agencies in Venezuela.

The Minister of Energy and Natural Resources of Trinidad and Tobago also visited the Minister of Energy, Mines and State Industry of Mexico and agreed on possible areas of bilateral co-operation between both countries which was formalised in a Memorandum of Understanding.

These areas included training programmes for personnel of the respective Energy Ministries and State-controlled enterprises; the exchange of up-to-date information on the international petroleum market; the marketing of ammonia, urea and methanol and the possibility of processing 4 770 cubic metres a day of Mexican crude in Trinidad and Tobago.

During 1983 also, the Ministry of Energy and Natural Resources initiated a new type of seismic survey of the vibroseis techniques covering 50km of seismic lines as a first phase in a possible three hundred line kilometre survey to delineate any prospect which may be generated out of a Mesozoic study done in 1982.

One of the objectives for initiating the survey, that of encouraging additional exploratory work by the oil companies, was realised when Trintoc ran similar experimental lines over part of its land acreage and Texaco subsequently expressed interest in doing similar work.

Finally, during 1983 some five foreign companies showed an interest in undertaking joint ventures with the Government to expand the existing ammonia production facilities in Trinidad and Tobago.

Since 1982 the Government agreed in principle that proposals from W.R. Grace and U.S. Steel (Agri-Chemicals Division) be considered with this end in view.

During 1983 three additional companies proposed similar joint ventures for ammonia expansion in Trinidad and Tobago. A number of discussions were held and studies undertaken during the year to evaluate the marketing prospects for ammonia, and most were in general agreement that the prospects appeared to be good by the late eighties. By the year end this optimistic view prevailed and efforts continued with a view to the expansion of ammonia facilities in Trinidad and Tobago.



## GEOPHYSICAL ANNUAL REPORT FOR 1983.

### Ministry of Energy and Natural Resources:

The interpretation of the Northern and Eastern offshore areas of Trinidad and Tobago, surveyed in 1980/81 for the Government by Western Geophysical Company, was completed in August 1983.

The interpretation and the report were prepared by the Houston office of Western Geophysical Company. It utilised 11,910km of data. Three time horizon maps were constructed for this area. A water depth map was also submitted.

The interpretations of "Manzanilla Area", "North Post Area" and "Drew Bank Area", also prepared by Western Geophysical, were submitted in 1982. Submitted in 1982 was also the infill Northern area, previously held by Amerada-Hess Company. This interpretation was done by the Ministry's geophysical section.

In the Northern and Eastern offshore surveyed areas 31 anomalies were delineated. Apart from anomalous structures, potential does exist in pinchouts and stratigraphic traps.

A settlement was achieved between the Ministry and Western Geophysical Company about the lines shot short of the agreed depth of 6 sec. below the sea bed. The resume of the Western Geophysical report of the surveyed area and a statement of the whole expenditure for the said survey were prepared by the Ministry's geophysical section. recommendation as to the advisable course of action, including a proposed price for the package deal of the surveyed in 1980/81 marine areas was also submitted.

The vibroseis test lines were shot in October-November 1983. On the Solomon Hochoy Highway 20.55 km. and in the Valencia-Cumuto area 16.2 km were recorded. The contract to carry on the vibroseis survey was awarded to Western Geophysical Company. The processing was done in Western Geophysical Maracaibo's office. The quality of the data is very good. The vibroseis method seems to be superior to the dynamite survey for the following reasons:—

1. the data quality is good;
2. there is more control of the signal source that is put into the earth;
3. it is less expensive than dynamite survey;
4. it is less time consuming;
5. less likely to cause any damage to the surroundings; and
6. less labour problems: less labour employed and less opportunities for damaging the equipment (e.g. no dynamite stealing).

A report on the vibroseis survey has been submitted by this section of the Ministry.

A schematic programme for a vibroseis survey on the Northern Basin and an approximate cost of such a survey were submitted.

At the request to the Society of Exploration Geophysicists, and with the consent of Chief Petroleum Engineer, all the magnetic surveys done in Trinidad were compiled and sent to the above mentioned society.

Routine work as appraisal of program map and well site were carried on.

### Trintoc

Vibroseis test line, 12.5 km in length, along Catshill Road was shot. Interpretation of block 9 and south of Gulf of Paria area were carried on but no data were yet submitted to this Ministry.

### Amoco

Amoco seismically surveyed 1180 km. The survey was done over the flanks of EMZ - Darien trend, Galeota - Samaan trend and the area north of Dolphin. Out of 1180 km, 723 was a shallow survey done with 1200m long streamer, 457km was a deep survey done with 1800m. long streamer.

The other companies operating in Trinidad carried out no surveys.

## FLUID INJECTION OPERATIONS 1983

Secondary Oil Recovery operations in Trinidad and Tobago produced approximately 1.23 million cubic metres of oil at an average rate of 3 379 m<sup>3</sup>/day during 1983. This figure represents 13.3% of the total oil production of 9.3 million cubic metres. At year's end the 33 schemes that were in operation were three more than in 1982. All three new schemes were water injection projects, two initiated by Trinidad Tesoro and one by Trinidad and Tobago Oil Company. In spite of this, however, water injection declined by 3% below the 1982 figure. During the year also, Trinidad Tesoro, and Trinidad and Tobago Oil Company intensified steam injection and by year's end the quantity of steam injected was up by 22% above the 1982 figure. Fluid injection operation for the period 1979 to 1983 are summarised in Table V.

### Water Injection

Although the number of water injection projects increased from 19 to 23 in 1983, total injection dropped by 3% to 1.6 million cubic metres. Oil production from the projects also declined 23% to a rate of 1 670 m<sup>3</sup>/day.

A summary of water injection projects, by company, is presented in Table VII.

Amoco's Teak A/C/E Waterflood produced at an average rate of 1 251 m<sup>3</sup>/day in 1983, which was 18% less than the previous year's producing rate. This decrease was due to the reduced volume of water injected into the reservoir in both 1982 and 1983, following the fire of May 1982 which affected injection capability. Average injection rates for 1983 were 1 266 m<sup>3</sup>/day. A planned expansion of the project to the MM-01 Middle and Upper sands began late 1983.

Texaco Trinidad Inc. injected water into six of its 11 waterflood schemes. A total of 0.44 million cubic metres of water was injected, an increase of 10% on the previous year's figure. Production averaged 256 m<sup>3</sup>/day a decrease of 47% below the corresponding 1982 figure.

The decrease in production was due in part to the reduced level of workover activity pursued by the company during the year and, in part, to the reduced volume of water injected in 1982.

There was no water injection in any of the Forest Reserve and Palo Seco waterflood schemes during 1983 because of an unserviceable water supply line and the high cost of repairing/replacing same. At Trinity, the waterflood project experienced mechanical problems at the pumping station.

Trinidad Tesoro operated seven waterflood projects during 1983, two more than the amount in 1982. However, in spite of this, the total amount of water injected declined to 72 thousand cubic metres 41.5% below the 1982 figure. Production from waterflood schemes, some of which are cyclic injector/producer, averaged 15 m<sup>3</sup>/day.

Electrical and mechanical problems at the Coora waterflood station were chiefly responsible for the reduction in water injection.

During April 1983, water injection started in the FM/UF/172 waterflood scheme at Fyzabad. By the end of the year, a total of 14 005 cubic metres of water was injected. During October 1983 injection started into MK/UC/48 waterflood scheme at Mackenzie and by year's end 11 959 cubic metres of water were injected.

In December, injection into the PS/UF/500 waterflood scheme was restarted after a break of two years.

Trinidad Northern Area's Main Field waterflood had approximately 598.3 thousand cubic metres of water injected into it, an increase of 4% above 1982 figures. Production, however, declined 7.4% to an average of 125 m<sup>3</sup>/day in 1983.

A shortage of gas lift gas was the chief contributor to the production drop. Downtime on the injection plant due to mechanical and electrical problems also contributed to the shortfall in production.

Trinidad and Tobago Oil Co. Ltd. operated two water injection projects during 1983. A total of 29 550 cubic metres of water was injected in the Catshill 30 and 'N' sand waterflood schemes, a decrease of 50% below the 1982 figure. Production remained level, however, at approximately 17 m<sup>3</sup>/day. The decrease in water injection resulted from a nine-month curtailment in injection into the Catshill 30 sand, due to mechanical problems experienced with electrical submersible pumps in the water supply wells. The Catshill 'N' sand waterflood was initiated in May 1983.

### **Thermal Injection**

In 1983, nine thermal injection projects were in operation, the same number as in 1982. Overall injection of steam increased 22.3% to 1.88 million cubic metres. At the same time, overall production from the schemes climbed by 5% to 1 665 m<sup>3</sup>/day. Thermal injection statistics are summarised in Table VI.

Trinidad Tesoro Petroleum Company Ltd. operated five steam injection schemes during 1983 and injected 1.5 million cubic metres steam, which was 50% greater than in 1982. The company's average oil production rate from these schemes increased by 17.9% to 1 377 m<sup>3</sup>/day.

All schemes, with the exception of Palo Seco, showed oil production increases over the previous year's. There was a step-up in activities in the Apex Quarry and Fyzabad thermal schemes. A total of 40 thermal wells was drilled in Apex Quarry. The quantity of steam injected accordingly doubled during 1983.

In Fyzabad, a total of 17 thermal wells was drilled during 1983. At year's end steam injected amounted to 128 354 cubic metres, almost double the figure for 1982. Both schemes were plagued with power failures, low gas supply, steam breakouts and the closing in of injectors to facilitate drilling and workover activities, all of which limited the quantity of steam injected. A steam generator was commissioned in Fyzabad in March 1983. Steam injection was increased 76% in Guapo and production rates rose 17% to 298 m<sup>3</sup>/day. In Palo Seco however, production dropped 7% to 515 m<sup>3</sup>/day although steam injection increased by 13%.

The drop in production at Palo Seco is attributed to the reduced performance of a few patterns which are approaching the limit of their economic life.

The Central Los Bajos steam injection scheme showed a reduction of 22% in steam injected during 1983. However, average oil production rate was not affected remaining at 161 m<sup>3</sup>/day, 1 m<sup>3</sup>/day higher than in the previous year. The reduction in steam injection was caused by low feed water supply to the steam generators.

Texaco Trinidad Inc. injected steam in only one of its three active thermal injection schemes during 1983, that is, the Project III Forest Steam Injection project. As a result, only 332.2 thousand cubic metres of steam were injected, which was 35% lower than in the previous year. Oil production from the schemes decreased 31% below the 1982 figure to an average of 303 m<sup>3</sup>/day. The reduced production was due partly to the reduced level of workover activity, and partly to the reduced quantity of steam injected during the first half of 1983.

Trinidad and Tobago Oil Company's Parrylands 'E' project, a cyclic steam injection scheme, had 48 774 cubic metres of steam injected in it during 1983, which was 78% greater than the amount injected in 1982. As a result, the production from the project increased by 81% to an average daily rate of 29 m<sup>3</sup>/day. The increased injection is directly attributable to repairs carried out on the steam generator and the boiler feed pump. Two injection cycles have been completed for all wells in the project.

### **Carbon Dioxide Injection**

Texaco Trinidad Inc., carried out injection operations in one of its two carbon dioxide injection schemes during 1983, the Forest Sands Zone 5 project. During the year, a total of 8.1 million cubic metres of gas was injected, which was 52% below the amount injected in 1982. Production from the project averaged 37 m<sup>3</sup>/day, 9% below production of the previous year.

**TABLE V**  
**SUMMARY OF FLUID INJECTION OPERATION IN TRINIDAD AND TOBAGO 1979 – 1983**

NO. OF PROJECTS IN OPERATION AT END OF YEAR					INJECTION VOLUMES			CRUDE OIL PRODUCTION				OIL EXPRESSED AS A PERCENTAGE OF COUNTRY'S TOTAL PRODUCTION
YEAR	GAS	WATER	STEAM	CARBON DIOXIDE	NATURAL GAS (CUBIC METRES)	WATER AND OTHER FLUIDS (CUBIC METRES)	STEAM (CUBIC METRES)	OIL PRODUCED BY WELLS UNDER PROJ. INFLUENCE (CUBIC METRES)				
								WATER INJECTION PROJECTS	THERMAL RECOVERY PROJECTS	CARBON DIOXIDE PROJECTS	ALL PROJECTS	
1979	-	17	10	3	30 182 766* 544 092	3 617 883	1 173 057	627 547	481 680	18 073	1 127 300	9.1
1980	-	19	10	2	18 384 569* 144 546	3 039 235	1 267 536	849 748	455 673	6 837	1 312 258	10.6
1981	-	19	12	2	-	3 159 553	1 388 815	893 722	533 715	4 238	1 431 675	13.0
1982	-	19	9	2	16 866 840*	1 672 559	1 541 248	793 618	592 994	2 187	1 388 799	13.5
1983	-	22	9	2	8 142 789*	1 606 478	1 885 050	609 662	623 720	2 000	1 233 382	13.3

\* CO2 INJECTED IN FOREST RESERVE PROJECTS

**TABLE VI**  
**FLUID INJECTION OPERATIONS - 1983**

**WATER INJECTION**

COMPANY	NO. OF ACTIVE PROJECTS	WATER INCREASED (CUBIC METRES)	OIL PRODUCED (CUBIC METRES)	WATER PRODUCED (CUBIC METRES)	GAS PRODUCED (CUBIC METRES)	WATER CUT %
AMOCO	1	462 286	456 447	149 000	58 779 991	25
TRINMAR	1	598 300	45 758	39 227	17 850 623	46
TEXACO	11	443 995	93 486	171 115	39 665 566	65
TRINIDAD-TESORO	7	72 347	5 624	2 288	779 025	29
TRINTOC	2	29 550	8 347	4 155	428 171	33
ALL COS	22	1 606 478	609 662	365 785	116 980 467	37

**STEAM INJECTION**

COMPANY	NO. OF ACTIVE PROJECTS	STEAM INJECTED (CUBIC METRES)	OIL PRODUCED (CUBIC METRES)	WATER PRODUCED (CUBIC METRES)	GAS PRODUCED (CUBIC METRES)	OIL/STEAM PROD. RATIO
TRINIDAD-TESORO	5	1 504 107	502 618	431 201	6 841 981	0.33
TEXACO	3	332 169	110 563	265 191	12 536 443	0.33
TRINTOC	1	48 774	10 539	9 417	708 837	0.22
ALL COS	9	1 885 050	623 720	705 809	20 087 261	0.33

**CARBON DIOXIDE INJECTION**

COMPANY	NO. OF ACTIVE PROJECTS	GAS INJECTED (CUBIC METRES)	OIL PRODUCED (CUBIC METRES)	WATER PRODUCED (CUBIC METRES)	GAS PRODUCED (CUBIC METRES)	GOR M <sup>3</sup> /M <sup>3</sup>
TEXACO	2	8 142 789	2 000	400	5 448 046	2 725
ALL COS	2	8 142 789	2 000	400	5 448 046	2 725

**TABLE VII**  
**WATER INJECTION SUMMARY BY PROJECTS - 1983**  
 (All quantities in Cubic Metres)

COMPANY	FIELD	PROJECT	WATER INJECTED	OIL PRODUCED	WATER PRODUCED	GAS PRODUCED	WATER CUT %
ATOC	TEAK	MM/O/(m) (L) Waterflood	462 286	456 447	149 000	58 779 991	25
		All	462 286	456 447	149 000	58 779 991	25
TNA	SOLDADO	8011 Waterflood	598 300	45 758	39 227	17 350 623	46
		All	598 300	45 758	39 227	17 350 545	46
TESORO	PALO SECO COORA	Ps/uf/500/1	5 116	910	31	126 172	3
		Co/uc/317/1	6 732	1 665	1 091	230 953	40
		Co/uc/314/1	8 645	188	163	26 145	46
		Co/uc/110/1	7 314				
	FYZABAD MACKENZIE	Co/uc/100/1	18 576	147	459	19 415	76
		FM/uf/172/1	14 005	2 714	545	376 340	17
	Mackenzie	11 959					
	All	All	72 247 †	5 624	2 288	779 025	29
TEXACO	FOREST RESERVE	Uc 645		9 640	9 800	10 209 907	50
		Bernstein UMC		2 388	943	486 160	28
		UCWE Middlefield		4 011	2 270	709 095	36
		UCRA		3 307	932	5 432 411	22
	PALO SECO GUAYAGUAYARE	Rancho Quemado		7 188	206	1 670 247	3
		Navette 410	96 075	17 781	76 341	3 806 866	81
		410 Extension	34 786	2 490	10 532	517 717	81
		307	66 515	17 118	23 412	3 594 269	58
		307 Extension	15 572	2 135	810	449 906	28
	TRINITY	Navette 007	117 204	10 591	13 341	12 215 143	56
		Shallow Herrera	113 842	16 837	32 528	573 845	65
		All	All	443 995	93 486	171 115	39 665 566
	TRINTOC	CATSHILL	CO-24 Block	4 991	6 313	2 115	286 450
Catshill 'NE' N-SD			24 559		2 040	141 721	33
	All	All	29 550	8 347	4 155	428 171	37
All CO'S	ALL FIELDS	All Projects	1 606 478	609 662	365 785	116 920 467	37

**TABLE VIII**  
**STEAM INJECTION SUMMARY BY PROJECTS - 1983**

COMPANY	FIELD	PROJECT	STEAM INJECTED (CUBIC METRES)	OIL PRODUCED (CUBIC METRES)	WATER PRODUCED (CUBIC METRES)	GAS PRODUCED (CUBIC METRES)	OIL/STEAM PROD/RATIO
TEXACO	Forest Reserve	Project III Forest SDS	332 169	93 718	252 126	9 964 780	0.28
		Project IV Hot Water	-	1 602	3 252	123 652	-
		Phase I Expansion	-	15 243	9 812	2 448 011	-
TEXACO	All	All	332 169	110 563	265 191	12 536 443	0.33
TRINIDAD TESORO	Fyzabad Palo Seco	All Patterns	128 354	82 956	72 513	-	0.65
		Main/UF	1 996	3 947	3 137	-	1.9
		Patterns 1-24	455 068	168 948	140 543	3 859 242	0.38
		Huff-N-Puff	-	1 798	24	-	-
	Guapo	Exp. Gen-3	-	1 670	358	-	-
		Other Than 3 Areas 1 and 2	354 703 354 700	1 935 105 303	983 137 380	- 1 509 281	0.31 -
	Apex Quarry Central Los Bajos	Patterns 1-14	500 803	77 420	60 349	1 364 754	0.15
Main Project Pattern 1		63 186 -	47 336 11 311	12 943 2 972	108 704 -	0.75 -	
TRINIDAD TESORO	All	All	1 504 107	502 618	431 201	6 841 981	0.33
TRINTOC	Parrylands	Parrylands "E" Project 2	48 774	10 539	9 417	708 837	0.22
TRINTOC	All	All	48 774	10 539	9 417	708 837	0.22
ALL COS	All Fields	All Project	1 885 050	623 720	705 809	20 087 261	0.33

**CARBON DIOXIDE INJECTION**

COMPANY	FIELD	PROJECT	CO 2 INJECTED (CUBIC METRES)	OIL PRODUCED (CUBIC METRES)	WATER PRODUCED (CUBIC METRES)	GAS PRODUCED (CUBIC METRES)	GGR M <sup>3</sup> /M <sup>3</sup>
TEXACO	Forest Reserve	Forest SDS	-	171	72	78 807	461
		Forest SDS Zone 5	8 142 789	1 829	328	5 369 239	2 937
TEXACO	All	All	8 142 789	2 000	400	5 448 046	2 725



## REFINING AND PETROCHEMICAL INDUSTRY 1983

### REFINING

Trinidad's refining activity declined considerably in 1983 mainly because no crude oil was imported for refining and to a lesser extent because of the reduced production of the indigenous crudes. Refinery throughput of crude showed an overall decline of 50.7% compared to 1982, with a total daily average of 11 835 m<sup>3</sup>/day (74,440 bbl/day).

The following table lists the daily average throughputs for Texaco Trinidad Incorporated and Trinidad Oil Company (Trintoc) refineries for the last decade.

#### Average Daily Throughput

YEAR	TRINTOC		TEXACO		TOTAL	
	M3/day	bbl/day	M3/day	bbl/day	M3/day	bbl/day
1974	9 001	56,613	47 976	301,759	56 977	358,372
1975	7 438	46,782	29 868	187,866	37 306	234,648
1976	8 743	54,994	42 334	266,274	51 007	321,268
1977	8 764	55,124	34 588	217,555	43 352	272,679
1978	8 172	51,398	29 232	183,866	37 404	235,264
1979	8 210	51,638	27 881	175,367	36 091	227,005
1980	8 001	50,325	26 027	163,703	34 028	214,028
1981	6 297	39,628	21 291	133,917	27 588	173,545
1982	7 959	50,061	16 042	100,897	24 004	150,975
1983	1 995	12,550	9 840	61,890	11 835	74,440

The reduced throughput at the Texaco refinery was due to the lack of imported crude for refining by Texaco. Texaco maintained a daily average throughput of 9 840 m<sup>3</sup>/day (61,890 bbl/day) or a total of 3 591 505 m<sup>3</sup> (22,589,850 bbls) . This represents a decrease of 38.7% compared to 1982's figure.

In 1983 Trintoc supplied 2 193 319 m<sup>3</sup> (13,795,540 bbl) of crude to Texaco for processing, averaging 6 009 m<sup>3</sup>/day (37,796 bbl/day) following the agreement between the companies which took effect in the last quarter of 1982.

Trintoc's reduced throughput was a direct result of the transfer of crude to Texaco for processing. The refinery processed 1 995 m<sup>3</sup>/day (12,550 bbl/day) of crude, or a total of 728 282 m<sup>3</sup> (4,580,750 bbl), which is 75% less than the throughput for 1982.

Refinery output showed a reduction of 48% corresponding with the reduced throughput. A breakdown of the main refinery products is listed below.

**REFINERY OUTPUT - 1983**

PRODUCTS	1983		1982		% Change from 1982 to 1983
	million m3	million bbls	million m3	million bbls	
Fuel oil	2.31	14.54	4.35	27.38	-46.9
Motor Gasoline	1.33	8.39	1.77	11.45	-26.7
Gas/Diesel Oil	0.72	4.52	1.51	9.50	-52.4
Aviation Turbine Fuel	0.32	2.01	0.40	2.51	-19.9
Kerosine	0.17	1.08	0.24	1.49	-27.5
L.P.G.	0.11	0.66	0.12	0.77	-14.3
Petrochemicals	0.06	0.39	0.12	0.75	-48.0

**REFINED PRODUCT BALANCE 1983**

Availability	Million m3	Million bbls	Disposal	Million m3	Million bbls
Stock at 1st January	0.83	5.24	Exports	4.73	29.74
Imports	1.42	8.92	Local consumption	1.52	9.56
Refined Products	4.54	28.54	Stock at 31st Dec.	0.55	3.47
Adjustments	0.01	0.07			
Total	6.80	42.77	Total	6.80	42.77

In 1983 due to the reduction in refining activities the following products were imported.

**IMPORTS OF REFINED PRODUCTS**

PRODUCTS	IMPORTS	
	m <sup>3</sup>	bbls
L.P.G.	10 555	66 389
Motor Gasoline	230 234	1,448,101
Naphtha	152 533	959,389
Kero/Avjet	290 673	1,828,249
Gas Oil	411 582	2,588,728
Lubricants	18 147	114,142
Vacuum Bottoms	18 429	115,912
Bunker C Fuel Oil	286 058	1,799,218
<b>TOTAL</b>	<b>1 418 211</b>	<b>8,920,128</b>

**CRUDE OIL BALANCE - 1983**

Availability	Million m3	Million bbls	Disposal	Million m3	Million bbls
Stock at 1st January	0.56	3.50	Export	4.94	31.06
Production	9.28	58.38	Delivery & Refinery	4.32	27.18
Imports	—	—	Loss from Production	0.01	0.07
			Stock at 31st Dec.	0.57	3.57
<b>Total</b>	<b>9.84</b>	<b>61.88</b>	<b>Total</b>	<b>9.84</b>	<b>61.88</b>

## PETROCHEMICALS

Petrochemical intermediates production from the Texaco refinery was 67 268 m<sup>3</sup> (423,103 bbls) which represents a decline of 49.2% from 1982's production.

Low crude throughputs resulted in low charge stock for several units, causing shut downs for long periods or reduced activity on these units.

The following table lists the main petrochemical intermediates, production and exports.

### PRODUCTION AND EXPORTS OF PETROCHEMICAL INTERMEDIATES

(Quantities in Cubic Metres)

PRODUCTS	1983		1982	
	PRODUCTION	EXPORT	PRODUCTION	EXPORT
Benzene	3 739	3 750*	9 095	12 349
Toluene	15 428	17 167*	37 612	38 284
Xylene	5 505	5 228	11 809	12 249*
Nonene	5 741	6 014*	7 642	7 494
Tetramer	1 928	2 527*	2 993	4 676
Normal Paraffins	31 483	29 076	49 168	76 938*
Naphthenic Oil Residues	2 627	406	14 114	1 401

\*Excess of exports over production made up from stocks.

## SUMMARY OF NATURAL GAS PRODUCTION AND UTILIZATION FOR 1983

### Production

Natural Gas production for the year 1983 averaged 17.3 million cubic metres per day (604.5 mmscfd). This was an increase of 8.1% above the 1982 figure. A total of 6.3 billion cubic metres (220.6 bcf) of gas was produced during the year.

Amoco Trinidad Oil Company, the country's largest gas producer, accounted for 80% of the total production. The company produced at a daily average rate of 13.8 million cubic metres (482.9 mmscfd) which was 13.1% higher than the rate for previous year. A very significant event for the company, and the natural gas industry as a whole, was the commissioning of the Cassia Platform and first production from the Cassia Gas Field, which is located off the south-east coast of Trinidad. Prior to this, Amoco produced sales gas only from the Teak gas field.

Trinidad Northern Areas (T.N.A.) produced associated gas at a daily average rate of 1.6 million cubic metres per day (57.2 mmscfd). This company thus produced 9% of the country's total production. Gas production from Trinidad-Tesoro Petroleum Company, Texaco (T'dad.) Inc., Trinidad and Tobago National Oil Company and Premier Consolidated Oilfields Limited accounted for the remaining 11% of total gas produced.

By year-end 1983, the country's productive capacity surpassed natural gas demand as three prolific Cassia wells were completed by that time.

### Conservation

Large volumes of associated gas from the Poui and Teak Oilfields were flared in the past. In a bid to reduce the flaring of this resource, the National Gas Company installed compressor platforms at these fields in 1982 to compress low pressure associated gas and pipe this gas to the sales gas network on land. During 1983, these platforms delivered high pressure gas to the sales line at an average rate of 1.7 million cubic metres per day (61.0 mmscfd) in spite of operational problems experienced by the company.

### Utilization

Overall gas utilization rate was 14.0 million cubic metres per day (489.6 mmscfd) or 81% of total gas produced for the year under review. Although utilization as a percentage of total production increased by 4.2%, the actual volume of gas used increased by 14.0%. The utilization split was as outlined below.

### Oil Companies

Gas utilized by the oil companies amounted to 5.3 million cubic metres per day (194.5 mmscfd) or 32% of the total production. This was 9% more than the previous year's figure and most of this increase was a result of greater gas-lift usage. The oil companies also used natural gas as a fuel at a rate of 2.5 million cubic metres per day (87.3 mmscfd).

### Power Generation

The largest non-oil consumer of natural gas was the Trinidad and Tobago Electricity Commission (T&TEC) which utilized 17.6% of total production. This represented an average daily rate of 3.0 million standard cubic metres per day (106.4 mmscfd), that is an increase of 6% over the previous year's rate of consumption.

### **Fertilizer Industry**

Gas used by the fertilizer manufacturers amounted to 4.8 million cubic metres per day (169.1 mmscfd) compared to last year's figure at 3.9 million cubic metres per day (137.0 mmscfd). This was a 23% increment. Fertrin, Tringen and Fedchem all showed an increase in gas intake.

### **Iron and Steel Manufacture**

The Iron and Steel Company of Trinidad and Tobago (Iscott) utilized gas at a rate of 0.3 million cubic metres per day (12.0 mmscfd). This was a 23% increase over the previous year's rate. Both Direct Reduction Plants were operated during the latter half of 1983.

### **Others**

Cement manufacture and small industries accounted for the rest of the natural gas utilized during 1983, which was 1.9% of total gas utilized.

### **Events of Interest**

1. The Cassia gas field came on stream in May 1983. By year-end, three wells were completed in the area.
2. Despite the gas production from Cassia 1 well, the country experienced a gas supply shortfall during the first week of September 1983. This was a direct result of the shutting-in of Teak wells for repairs and/or corrosion treatment.
3. During 1983, the offshore section of the new 760 mm (30 inch) pipeline was completed and put into service via a Poui Field to the NGC sales line.
4. Work continued on the onshore portion of the 760 mm (30 inch) pipeline and the main section from Point Lisas to Beachfield was completed.
5. During the fourth quarter of 1983, two new energy-based plants were in the process of being commissioned. One is a Urea Plant expected to consume 0.2 million cubic metres per day (8.0 mmscfd) and the other is a Methanol plant with an intake capacity of 1.0 million cubic metres per day (35.0 mmscfd).
6. The gas transmission network was expanded by the National Gas Company to meet the demand of small consumers.

The tables which follow show natural gas production by companies.

**TABLE IX**  
**ANNUAL STATISTICS FOR NATURAL GAS PRODUCTION AND UTILIZATION 1979 – 1983**

	1979		1980		1981		1982		1983	
	MILLION M <sup>3</sup>	%	MILLION M <sup>3</sup>	%	MILLION M <sup>3</sup>	%	MILLION M <sup>3</sup>	%	MILLION M <sup>3</sup>	%
PRODUCTION	4 861	100	5 665	100	5 604	100	5 841	100	6 319	100
GOR (M3/M3)	391	—	459	—	510	—	569	—	681	—
A. USED AS FUEL: IN FIELDS	293	6.0	277	4.9	273	4.9	301	5.2	360	5.7
IN REFINERIES	598	12.3	769	13.6	667	11.9	595	10.1	552	8.7
IN OTHER INDUSTRIES	1 171	24.1	1 264	22.3	1 579	28.2	1 947	33.2	2 171	34.4
SUB-TOTAL	2 062	42.4	2 310	40.8	2 519	45.0	2 842	48.5	3 083	48.8
B. OTHER COMPLETE UTILIZATION:										
USED AS PROCESS GAS	442	9.1	454	8.0	346	6.1	689	11.9	919	14.5
INJECTED INTO FORMATION	—	—	—	—	—	—	—	—	—	—
CONVERTED TO C.H.P.S.	2	—	1	—	1	—	—	—	1	—
SUB-TOTAL	444	9.1	455	8.0	347	6.1	689	11.9	920	14.5
C. VENTED:										
AFTER USE OF PNEUMATIC ENERGY	732	15.1	925	16.3	1 056	18.8	958	16.4	1 121	17.7
WITHOUT USE	1 623	33.4	1 975	34.9	1 682	30.1	1 350	23.2	1 195	19.0
SUB-TOTAL	2 355	48.5	2 900	51.2	2 738	48.9	2 308	39.6	2 316	36.7

**NATURAL GAS PRODUCTION – BY COMPANIES****1980 – 1983****Units – Thousand Cubic Metres per day**

<b>COMPANY</b>	<b>1980</b>	<b>1981</b>	<b>1982</b>	<b>1983</b>
AMOCO	11,785 (411,556)	11,479 (400,846)	12,210 (426,376)	13,828 (482,899)
TRINMAR	1,771 ( 61,854)	1,827 ( 63,802)	1,698 ( 59,312)	1,637 ( 57,179)
TTPCL	808 ( 28,223)	781 ( 27,263)	746 ( 26,046)	705 ( 24,623)
TEXACO	587 ( 20,488)	838 ( 29,252)	895 ( 31,243)	643 ( 22,454)
TRINTOC	521 ( 18,177)	426 ( 14,887)	450 ( 15,727)	494 ( 17,236)
PCOL	5 ( 168)	3 ( 117)	3 ( 107)	4 ( 126)
<b>TOTAL</b>	<b>15,477</b> <b>(540,466)</b>	<b>15,354</b> <b>(536,167)</b>	<b>16,002</b> <b>(558,811)</b>	<b>17,311</b> <b>(604,517)</b>

NB. Figures in parentheses are in MMscfd



**NATURAL GAS UTILIZATION**  
**1980 - 1983**  
**UNITS - MILLION CUBIC FEET PER DAY**

		1980	1981	1982	1983
REFINERY	TEXACO	59	54	47	44
FUEL	TRINTOC	14	10	10	9
	SUB-TOTAL	73	64	57	53
FERTILIZER	FEDCHEM	43	26	38	39
MANUFACTURE	FERTRIN	-	17	59	88
	TRINGEN	43	42	40	42
	SUB-TOTAL	86	85	137	169
POWER	T&TEC	67	85	100	106
GENERATION					
CEMENT	TRINIDAD				
MANUFACTURE	CEMENT				
	LIMITED	4	3	3	3
SMALL USERS	SUB-TOTAL	6	6	6	6
OTHER					
LARGE USERS	ISCOTT	1	8	10	12
FIELD USE					
FUEL	SUB-TOTAL	26	26	29	35
PRODUCTION USE	SUB-TOTAL	89	101	92	107
TOTAL		352	378	434	491
% Utilization		65	71	78	81

**GAS UTILIZED BY NON-OIL COMPANIES****1980 – 1983****Units – Thousands Cubic Metres per day\*\***

<b><u>COMPANY</u></b>	<b><u>1980</u></b>	<b><u>1981</u></b>	<b><u>1982</u></b>	<b><u>1983</u></b>
T.T.E.C.	1912 ( 67)	2435 ( 85)	2871 (100)	3047 (106)
FERTRIN	—	495 ( 17)	1688 ( 59)	2528 ( 88)
TRINGEN	1252 ( 43)	1200 ( 42)	1148 ( 40)	1189 ( 42)
FEDCHEM	1233 ( 43)	739 ( 26)	1074 ( 38)	1128 ( 39)
ISCOTT	37 ( 1)	227 ( 8)	227 ( 10)	347 ( 12)
TRINIDAD CEMENT LIMITED	106 ( 4)	85 ( 3)	97 ( 3)	94 ( 3)
OTHERS	161 ( 6)	163 ( 6)	172 ( 6)	172 ( 6)
	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL	4701 (164)	5344 (187)	7327 (256)	8505 (297)

**\*\* Figures in Parenthesis are in MMSCF/D**

**OVERALL GAS UTILIZATION****1983**

units – MMCF/D

<b>OIL COMPANIES</b>	<b>JAN. – JUN.</b>	<b>JULY – DEC.</b>	<b>YEAR AV.</b>
(i) REFINERY	51.9	53.7	52.8
(ii) FIELD USE	33.6	35.3	34.5
(iii) PRODUCTION USE	89.5	124.7	107.2
SUB-TOTAL	175.0	213.7	194.5
<b>NON-OIL COMPANIES</b>			
(i) POWER GENERATION	105.7	107.0	106.4
(ii) FERTILIZER MANUFACTURE	170.9	167.4	169.1
(iii) IRON AND STEEL MANUFACTURE	9.9	14.4	12.1
(iv) CEMENT MANUFACTURE	3.2	3.4	3.3
(v) SMALL USERS	7.2	4.7	6.0
SUB-TOTAL	296.9	296.9	296.9
GRAND TOTAL	471.9	510.6	491.4
% UTILIZATION	81.4	81.2	81.3

## NITROGENOUS FERTILIZERS

Total production of anhydrous ammonia during 1983 was 1,202,016 tonnes, representing an increase of 40.1% over the 1982 production. The primary reason for this increase was the production of Fertrin's '02' unit during 1983.

At Federation Chemicals Ltd., the Braun plant produced a total of 176,450 tonnes of ammonia, a rise of 3% over the 1982 production. The Braun plant had experienced leaking tubes in the primary reformer during the first quarter. Also during the last quarter the plant underwent a turnaround for about 7 weeks. Tringen produced 313,560 tonnes of ammonia during 1983, a rise of 2% over the 1982 production. Operations were generally steady during 1983 with a 4 weeks turnaround being carried during June. The urea plant produced 33,356 tonnes during 1983 a drop of 27.1% over the 1982 production. The once Thru' plant was shut down permanently on 83-07-25 whilst the total recycle plant was shutdown permanently on 83-08-12. The ammonia sulphate plant produced 32,929 tonnes during 1983, a drop of 14.5% over the 1982 production. This plant was shutdown permanently on 83-11-14.

At Fertrin, the '01' unit produced 268,517 tonnes of ammonia during 1983, a rise of 42.7% over the 1982 production. This unit underwent a turnaround for about 2 weeks during July and operations during the year were generally steady. The '02' unit produced 343,489 tonnes of ammonia during 1983, a rise of 200% over the 1982 production. This unit underwent a turnaround for about 2 weeks during April. Operations during 1983 were generally steady.

The New Urea plant at Point Lisas was commissioned on 83-12-02 and produced 10,797 tonnes of urea during 1983 at a rate of 360 tonnes/day. During 1983, total exports from the urea plant was 7,179 tonnes. Exports from the New Urea Plant are handled by Agrico Chemicals Ltd.

TABLE X

PRODUCTION AND EXPORT OF NITROGENOUS FERTILIZER IN TRINIDAD AND TOBAGO

1983

(TONNES)

	FEDCHEM (Braun)				TRINGEN				FERTRIN				TOTAL			
	NET PROD.		EXPORT		NET PROD.		EXPORT		NET PROD.		EXPORT		NET PROD.		TOTAL	
	1982	1983	1982	1983	1982	1983	1982	1983	1982	1983	1982	1983	1982	1983	1982	1983
ANNYDROUS AMMONIA	172 641	176 450	92 840	164 696	309 604	313 560	268 229	237 550	375 742	712 006	356 559	696 016	857 987	1 202 016	717 628	1 098 262
AMMONIUM SULPHATE	37 901	32 928	28 492	26 622									37 901	32 928	28 492	26 622
Urea	46 137	33 356	46 518	34 858						10 797		7 179	46 137	44 153	46 518	34 858

**REPORT ON THE DEVELOPMENT PROGRAMME 1983 -  
GEOLOGICAL SECTION**

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The Development Programme was continued in 1983 with emphasis being placed on the evaluation of new areas for sand and gravel and the identification of material in the Southern Range suitable for the production of aggregates for the construction and road building industries.

Exploration for sand and gravel was concentrated in the Tapaná area, Valencia. 128 auger holes were drilled to an average depth of 20 feet. This was significantly less than the 168 holes drilled in 1982 but for approximately two months, this activity was suspended to enable the field crew to work on the completion of a land seismic survey. Also, 49,670ft. of survey lines were run in the same exploration programme.

The results of this survey have been fairly good. Eighty acres of land with estimated reserves of 1.3 million cubic yards of sand and gravel have been located. These have been valued in excess of \$25,000,000.00. Forty acres of these lands have been allocated to quarry operations. A project to evaluate a further 200 acres of land in the same area was started in November.

Two areas in the Southern Range (one each in Moruga and Morne Diablo) have been investigated to determine their potential as aggregate sources. Engineering tests have indicated that material from these areas would be suitable for certain types of concrete works and road surfaces but because there was a wide range in quality and also the deposits were neither continuous nor extensive, the potential for use as a major quarry was low.

In geo-technical work, the Engineering Geologist has been working on a project to assist the state owned oil company, Trintoc, to identify solutions to a problem of land movement in the Parrylands area. Evaluation of other slides at Lady Hailes Avenue, San Fernando and Lady Young Road, Morvant have been undertaken. In addition, a project to investigate and record all landslides in Trinidad has been initiated and the first phase of a project to prepare geo-technical maps of the Port of Spain area has been started in the Lady Young Road, Morvant area.

## ACCIDENT REPORT 1983

In 1983 the total number of accidents in the petroleum industry numbered 500, showing a decrease of 58 from last year's figure of 558.

Refinery accidents, which do not fall under the jurisdiction of the Ministry of Energy and Natural Resources, accounted for 279 of the total number of accidents. This figure shows a slight decrease of 11 from last year's figure.

Accidents occurring during drilling and production operations totalled 154, showing a marked decrease of 114 from last year's figures. Amoco Trinidad Oil Company again this year had the highest percentage of accidents in this area of activity:

Accidents were classified as 'serious' and 'non-serious' depending on the injuries sustained. Serious accidents amounted to 77, which was an increase over last year's figure of 63. Injuries consisted mainly of crushed body parts, low back strain, contusions, laceration features, orthopaedic problems and partial amputation of fingers. Non-serious accidents totalled 139, a decrease of 66 compared to the 1982 figures. Accidents consisted mostly of cuts, strains, bruises, fractures and superficial burns. Of the total number of accidents reported 6 were fatal, of which 3 occurred at Trinmar, two at Amoco's Samaan 'A' Platform and 1 at Trinidad Tesoro. This figure shows an increase over last year's figure of 1.

The first fatal accident occurred when a rigger/driver employed with Trinmar drowned while attaching anodes to a new pipeline in the North Soldado field. The valve of his cylinder snarled unto a rope thus preventing him ascending.

A second fatal accident occurred when fire erupted on the TG 145 Barge, while a welder, assisted by a roustabout, was engaged in welding operations in Trinmar's East Soldado field.

An employee of Skinner Marine Operations Ltd., was involved in rigging up operations on the Skinner VI drilling rig on the Samaan 'A' platform when a stabbing board fell on him. As a result, he fell 12.8 metres and was fatally injured.

The other fatality on the Samaan 'A' platform occurred during an operation in which a crane was moving a welding rack causing an oxygen tank to sway out of control and fall on the victim who was in an area beneath the suspended load.

The last fatality occurred on Trinidad Tesoro well Guapo 949.

A summary of accident statistics is given in Table XI.

**TABLE XI**  
**ACCIDENT STATISTICS - 1983**

COMPANY	FIELD	TOTAL	FATALITY	SERIOUS				MINOR			
				D	P	E	O	D	P	E	O
TEXACO	Guayaguayare	8	—	1	1	1	—	1	3	—	1
	Barrackpore	8	—	—	1	—	—	—	1	1	5
	Forest Reserve	14	—	2	3	6	—	1	2	—	—
	Brighton	1	—	—	—	1	—	—	—	—	—
	Contractors	6	—	3	1	—	—	2	—	—	—
	Pointe-a-Pierre	279*	—	—	—	—	—	—	—	—	—
	SUB-TOTAL	37	—	6	6	8	—	4	6	1	6
National Gas Co.	All	3	—	—	—	—	1	1	—	1	—
TRINMAR	All	42	3	3	2	1	4	7	14	5	3
TRINTOC	All	17	—	7	—	—	—	10	—	—	—
TESORO	All	37	1	1	18	—	2	7	6	1	1
AMOCO	All	86	2	15	—	—	4	31	10	7	17
	TOTAL	222	6	32	26	9	11	60	36	15	27

D — Drilling      P — Production      E — Engineering      O — Others

\* Refinery accidents under the jurisdiction of the Inspectorate Division (not included in totals).



## ROYALTY ASSESSMENT 1983

Appendix VIII presents a summary of Crude Oil assessed for State Royalty by company. It shows the estimated field storage value of the production and the royalty calculated thereon.

The rate of royalty is normally ten per cent(10%) of the field storage value, except for Amoco Trinidad Oil Company's Licences, and the Galeota field of Trinidad-Tesoro Petroleum Company Limited, where it is 12½% of field storage value. The net production for Royalty purposes for the first half of 1983 was 4,443,312 cubic metres while in 1982 it was 5,032,805 cubic metres; for the second half of 1983 it was 4,431,795 cubic metres as against 4,852,169 cubic metres for the similar period in 1982. The total net production for royalty purposes has decreased by 10.2% against 1982 figures and 16.2% against 1981 figures.

Prices of petroleum products also decreased during 1983. During the earlier half of 1983 the decrease was greater than in the latter. As a result, the Total Royalty on crude for the year 1983 (\$413,852,932) was lower than in 1982 (\$508,481,711) and 1981 (\$592,032,146).

Appendix IX presents a summary of Royalty assessed for Crude Oil, Natural Gasoline and Natural Gas produced, and minimum rents on State Owned Oil mining leases.

In contrast to the decrease in Royalty on Crude, there has been an increase in Royalty on Natural Gas. This is due mainly to increased Natural Gas production. The increase in Minimum Rents is caused by changes in the applicable rates as laid out in the individual contracts.

Total Royalty during 1983 is estimated at \$422,016,774. This is a decrease of 18.1% against 1982 figures and 29.3% against 1981 figures. This decrease may be attributed to the decrease in Royalty on Crude, consequent to the decrease in production and falling oil prices.

## REPORT RE LEGAL DIVISION 1983

### Evaluation of Performance in 1983

1983 was a lean year as far as the achievement of goals was concerned. The Division prepared Orders which were necessary to increase the price of petroleum products and to fix the ex-refinery price of those products.

Further, since the completion of the 24" Natural Gas Pipeline in 1977, persons had not yet been compensated for the acquisition of their lands. A Committee was set up to study the problems relating to the Natural Gas Industry and the legal input in this regard was based on the problems involved in determining ownership of way-leaves etc. in relation to the lands acquired for the construction of the line. The division is not yet aware of the decisions taken at a higher level with respect to the contents of that report.

Texaco T'dad. Inc. sought the consent of the Ministry to assign 20% and 15% of its interest in the Production Sharing Contract over Block I, Gulf of Paria to LL&E (T'dad) Inc. and Aminoil T&T Inc. This request was granted.

Staff of the Division also sought to comment on the Consumer Protection and Safety Bill 1982.

Western Geophysical of America made a successful tender for an experimental seismic land line and the draft contract prepared was settled by the Chief State Solicitor and executed by the Permanent Secretary and a representative of Western. This endeavour was completed satisfactorily and the cost of certain expenses was shared with Trintoc who had taken the opportunity to use Western's equipment to conduct their own seismic survey.

Contracts for the establishment of the Computerised Data Bank System were also prepared.

Supplemental Petroleum Tax for land operations was reduced from 35% to 15%. The relevant order was signed by the Minister of Finance. However, the instrument which expanded the Schedule of items eligible for the Enhanced Recovery 140% Allowance was prepared by this Ministry.

The question whether the Petroleum Taxes Act provided for the treatment of workovers constituting repair and maintenance activity as expensable items for tax purposes posed a lot of difficulty due to the varying interpretations of the relevant section of the Act. However, the Attorney General has come to the conclusion that such activity is not covered under the law and the relevant Act will have to be amended. Preparation of the amendment will come under the purview of the Chief Parliamentary Counsel.

The Division also commented on the valuation engagement contract from Dominion Securities Ames Ltd. with respect to the proposed valuation of T'dad Tesoro's shares.

Matters which were not completed at the end of 1983 are as follows:

1. Oil and water.
2. Mahaica & S.W. Peninsula licences — Actual licence completed but Schedule & description of acreage still to be drafted.
3. Renewal of Trinmar's Lease.
4. Quarry Laws.
5. Any other matters which may be passed on to the division for handling.
6. Changing filing system for legal documents.

## ANNUAL REPORT - 1983

### STAFF

After several attempts were made to have certain sections of the Ministry expanded, the Ministry's proposals were finally accepted and Cabinet agreed to the creation of posts under the Ministry's technical as well as administrative services. These included:-

#### Technical

- 1 Geologist III
- 1 Geologist Assistant
- 24 Quarries Checkers
- 1 Chief Mechanical Engineer
- 1 Petroleum Inspector III
- 1 Petroleum Inspector II
- 4 Petroleum Inspector I
- 3 Petroleum Engineering Assistant III - 19 Petroleum Engineering Assistant posts to be abolished when vacant.
- 7 Petroleum Engineering Assistant II
- 10 Petroleum Engineering Assistant I

#### Administrative, Clerical, etc.

- 1 Administrative Officer IV
- 1 Administrative Officer II
- 1 Administrative Assistant
- 3 Accounting Assistants
- 2 Clerk Stenographer III
- 2 Clerk Stenographer II
- 2 Clerk Typist I
- 1 Library Assistant II
- 1 Messenger II
- 1 Cleaner I

## TRAINING

In keeping with the Ministry's policy of training staff in order to achieve maximum productivity, efficiency and effectiveness, several officers participated in courses put on by the Central Training Unit of the Personnel Department and other agencies.

### Central Training Unit Courses

<u>Names of Participants</u>	<u>Names of Courses</u>
Mr. Stephen Cupid	– Course in Performance Appraisal and Staff Reporting
Miss Heidi Wong	– Course in Finance and Budgeting
Miss Wendy Bennyman	– Reception Training Programme
Miss Marium Abdool	– 1st National Insurance Workshop
Mr. Leslie Kennedy	– Orientation Seminar for Professional, Technical and Administrative Officers
Mr. Richard Jeremie	– Orientation Seminar for Professional, Technical and Administrative Officers
Mr. Rueben Beharry	– Orientation Seminar for Professional, Technical and Administrative Officers
Mr. Baajnath Sirnath	– Orientation Seminar for Professional, Technical and Administrative Officers
Mr. Ronald Chung	– Orientation Seminar for Professional, Technical and Administrative Officers
Miss Gillian Gibson Serrette	– Reception Training Programme
Mrs. Patricia Bartholomew	– 2nd National Insurance Workshop
Mrs. Angela Romeo	– Secretarial Practice
Miss Eastlyn Grant	– Secretarial Practice
Mrs. Angela Romeo	– Post Graduate Evaluation Seminar
Miss Eastlyn Grant	– Post Graduate Evaluation Seminar
Miss Valerie Bailey	– Secretarial Practice
Mr. Praimdash Seetaram	– Reception Training Programme
Mr. Jamal Sookoor	– Reception Training Course
Mr. Peter M. Jacob	– Reception Training Course
Mr. Stephen Cupid	– Post Course Evaluation Seminar re: Performance Appraisal and Staff Reporting
Miss Marium Abdool	– Post Course Evaluation Seminar re: National Insurance Workshop
Mrs. Patricia Bartholomew	– Post Course Evaluation Seminar re: National Insurance Workshop
Miss Suzan Jairam	– Seminar for Payroll Officers

## Courses - Other Agencies

### Names of Participants

Mr. Hugh Hinds  
Mr. Frank Look Kin  
Mrs. Claudia Shadrack  
Mrs. Althea Mc Intosh  
Mrs. Claudia Shadrack  
Mr. Winston De Govia

### Names of Courses

- Seminar on "Office System Productivity in the Eighties".
- Seminar on "Office System Productivity in the Eighties".
- Seminar on "Office System Productivity in the Eighties".
- Seminar on "Office System Productivity in the Eighties".
- Seminar on "Facilitating Worker Productivity".
- Seminar on "Facilitating Worker Productivity".

The Following officer who had been awarded a scholarship under the 1979/1980 Scholarship Programme proceeded on his studies:-

Mr. Selwyn Lashley

- M.Sc. degree in Natural Gas Engineering, Illinois Institute of Technology, U.S.A.

### Names of Participants

Mr. Oswald Adams  
Mr. Richard Martin  
Mr. Kenrick Haynes  
Mr. Rupert Mends  
Mr. Hugh Hinds  
Mr. Hayden Toney  
Mr. Patrick Manning  
Mr. Trevor Boopsingh  
Mr. Hayden Toney  
Mr. Frank Look Kin

### Conferences/Seminars/Visits

- Eighth Conference on the Prevention, Behaviour, Control and Clean-up of Oil Spills - San Antonio, Texas, U.S.A.
- Review on the design and construction of fixed platforms - Houston, Texas.
- First Meeting of the Preparatory Commission for the International Seabed Authority and the International Tribunal for the Law of the Sea - Kingston, Jamaica.
- Second Meeting of the CARICOM Technical Group on Petroleum Exploration - Georgetown, Guyana.
- Combating of Oil Spills Meeting - Colombia.
- Second Workshop of CARICOM Energy Officials - Jamaica.
- First informal consultative meeting of Latin American Oil Exporting Countries - Venezuela.
- First informal consultative meeting of Latin American Oil Exporting Countries - Venezuela.
- First informal consultative meeting of Latin American Oil Exporting Countries - Venezuela.
- Twelfth Congress of World Energy Conference - New Delhi, India.

- Mr. Kenrick Haynes
  - Resumed Session of the First Meeting on the Preparatory Commission for the International Seabed Authority and the International Tribunal for the Law of the Sea - Kingston, Jamaica.
- Mr. Rupert Mends
  - Technical Co-ordinating Committee Meeting of Energy Ministers - Mexico.
- Mr. Patrick Manning
  - 1983 Miami Conference of Caribbean Central American Action and CBI Exploration - Miami, U.S.A.
- Mr. Trevor Boopsingh
  - 1983 Miami Conference of Caribbean Central American Action and CBI Exploration - Miami, U.S.A.
- Mr. Rodney Appleton
  - 11th World Petroleum Congress - London

**APPENDIX I**

**ANNUAL STATISTICS OF PRODUCTION, DRILLING, REFINING, EXPORT AND IMPORTS 1973 - 1983**

ITEM	UNIT (1)	PERCENTAGE DIFFERENCE 1983-1982	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	UNIT (2)
1. CRUDE OIL	'000 M3	- 9.73	9 276	10 274	10 987	77,613	78,249	83,778	83,619	77,673	78,621	68,136	60,670	'000 bbls
2. CASING HEAD GASOLINE (C.H.P.S.)	'000 M3	+ 50.00	6	4	6	37	44	60	61	53	61	69	79	'000 bbls
3. TOTAL CRUDE OIL AND NATURAL GASOLINE (1+2)	'000 M3	- 9.69	9 282	10 278	10 993	77,650	78,293	83,838	83,680	77,726	78,682	68,205	60,749	'000 bbls
4. CRUDE OIL PRODUCTION - CROWN OIL RIGHTS	'000 M3	- 10.00	8 901	9 891	10 589	74,879	75,399	80,701	80,612	74,704	76,018	65,078	57,736	'000 bbls
5. CRUDE OIL PRODUCTION PRIVATE OIL RIGHTS	'000 M3	- 2.09	375	383	398	2,734	2,850	3,077	3,007	2,969	2,603	3,058	2,934	'000 bbls
6. TOTAL IMPORTS	'000 M3	- 69.93	1 293	4 300	6 208	55,309	51,631	56,817	67,441	87,459	58,796	95,636	103,977	'000 bbls
7. IMPORTS OF REFINED PRODUCTS	'000 M3	-122.55	1 293	581	70	-	-	-	1 681	2,503	260	46	21	'000 bbls
8. IMPORTS OF CRUDE OIL FOR REFINING	'000 M3			3 719	6 138	55,309	51,631	56,817	65,760	84,784	58,144	95,472	103,624	'000 bbls
9. IMPORTS OF OTHER OILS FOR REFINING AND BLENDING	'000 M3								0	172	392	118	332	'000 bbls
10. TOTAL EXPORTS	'000 M3	- 34.17	9 176	13 938	15 185	113,493	113,105	126,604	140,753	147,896	139,714	153,297	155,998	'000 bbls
11. EXPORT OF CRUDE OIL	'000 M3	- 17.08	4 939	5 956	6 760	46,075	46,282	54,008	50,936	44,408	48,307	31,870	23,614	'000 bbls
12. EXPORTS OF REFINED PRODUCTS	'000 M3	- 88.39	4 237	7 982	8 425	67,418	66,823	72,596	89,817	103,488	91,407	121,427	132,384	'000 bbls
13. RUNS TO STILL	'000 M3	- 50.68	4 321	8 761	10 071	78,343	82,857	85,882	99,536	117,595	85,660	130,819	141,687	'000 bbls
14. NUMBER OF WELLS STARTED	AS STATED	- 25.00	174	232	206	156	190	236	235	224	182	219	205	AS STATED
15. TOTAL NUMBER OF WELLS COMPLETED	AS STATED	- 16.74	179	215	206	183	184	215	217	207	189	212	212	AS STATED
16. NUMBER OF DRILLING WELLS COMPLETED AS OIL WELLS	AS STATED	- 4.14	162	169	161	140	144	170	170	153	150	176	181	AS STATED
17. NUMBER OF DRILLING WELLS ABANDONED	AS STATED	- 50.00	13	26	14	19	40	45	47	54	24	21	31	AS STATED
18. TOTAL DEPTH DRILLED	METRE	- 27.33	183 797	252 936	239 609	670,928	787,132	895,098	922,295	919,705	839,649	909,980	955,185	FEET
19. DEPTH DRILLED ON CROWN OIL RIGHTS	METRE	- 25.92	163 539	220 747	220 806	623,384	1,228,181	863,989	882,023	879,132	772,279	766,787	874,867	FEET
20. DEPTH DRILLED ON PRIVATE OIL RIGHTS	METRE	- 37.07	20 258	32 189	18 803	51,258	20,479	31,109	40,272	40,573	67,370	143,193	80,318	FEET
21. AVERAGE DEPTH OF COMPLETED WELLS (15)	METRE	- 2.95	1 051	1 083	1 132	3,557	6,786	3,868	4,196	4,443	4,442	4,509	4,505	FEET
22. TOTAL NUMBER OF WELLS PRODUCING (AV. DURING YEAR)	AS STATED	- 6.88	3 140	3 372	3 408	3,351	3,399	3,275	3,148	2,997	2,777	2,981	2,894	AS STATED
23. NO. OF WELLS PRODUCED BY FLOWING (AV. DURING YEAR)	AS STATED	- 12.24	344	392	392	397	516	507	428	438	438	498	506	AS STATED
24. NO. OF WELLS PRODUCED ARTIFICIAL LIFT (AV. DURING YEAR)	AS STATED	- 6.17	2 796	2 980	3 016	2,954	2,883	2,768	2,720	2,559	2,339	2,483	2,388	AS STATED
25. AVERAGE DAILY PRODUCTION PER PRODUCING WELL	M3	- 2.41	8.1	8.3	8.8	63.3	63.0	70.1	72.8	71.0	77.6	62.6	57.4	BARREL
26. AVERAGE DAILY PRODUCTION PER FLOWING WELL	M3	- 18.57	19.3	23.7	28.9	248.9	215.4	271.4	335.7	328.5	358.7	248.0	204.4	BARREL
27. AVERAGE DAILY PRODUCTION PER ARTIFICIAL LIFT WELL	M3	+ 7.94	6.7	6.3	6.2	42.1	35.8	33.2	31.4	25.5	24.9	25.4	26.3	BARREL
28. TOTAL VALUE OF DOMESTIC EXPORTS	BILLION \$	- 26.69	5 431 684	7 118 368	9 025 898	9,715,719	6,175,213	4,810,025	5,188,987	5,331,557	3,939,970	3,934,151	1 052,476	BILLION \$
29. TOTAL VALUE OF PETROLEUM PRODUCTS (ITEM 28)	BILLION \$	- 27.71	4 692 967	6 491 617	8 051 501	9,127,773	5,715,496	4,379,188	4,787,280	4,960,604	1,925,785	2,532,081	831,496	BILLION \$
30. TOTAL VALUE OF LAKE ASPHALT PRODUCTS	MILLION \$	- 0.66	6 737	6 782	1 134	3,253	3,355	360	3,051	4,426	4,240	4,657	3,876	MILLION \$
31. TOTAL NATURAL GAS PRODUCED	MILLION M3	+ 8.17	6 318	5 841	5 604	197,811	169,740	157,920	149,589	137,959	126,434	128,293	119,979	MMCF
32. USED AS FUEL	MILLION M3	+ 9.15	3 102	2 842	941	80,624	71,990	69,209	62,968	52,931	46,618	50,599	54,700	MMCF
33. REPLACED IN FORMATION	MILLION M3					4	19	114	333	1,699	2,017	5,706	6,381	MMCF
34. LOSSES, NOT COLLECTED	MILLION M3	- 27.95	214	297	356	12,607	82,236	73,381	8,518	76,095	70,890	63,760	49,213	MMCF

(1) Metric Units from 1981 - 1983

(2) Imperial Units from 1973 - 1980

**APPENDIX 11**  
**MONTHLY ANALYSIS OF DRILLING AND WORKOVER WELLS, 1983**

**TRINIDAD AND TOBAGO**

**(DEPTH IN METRES)**

MONTH	RIG/MONTHS	NEW WELLS STARTED	DRILLING WELLS COMPLETED											CLOSED IN		MONTHLY DEPTH DRILLED			AVERAGE DEPTH DRILLED		OLD WELLS			
			OIL AND GAS PRODUCERS		INJECTION AND OBSERVATION WELLS		ABANDONED			TOTAL	AGGREGATE DEPTH	AVERAGE DEPTH	NO.	AGGREGATE DEPTH	CROWN	PRIVATE	TOTAL	/DAY	/PIG/DAY	RECOMPLETED	ABANDONED			
			NO.	AGGREGATE DEPTH	NO.	AGGREGATE DEPTH	AFTER TESTING		DRY HOLES													TECHNICAL CAUSES		
							NO.	AGGREGATE DEPTH	NO.	AGGREGATE DEPTH	NO.	AGGREGATE DEPTH	NO.	AGGREGATE DEPTH										
JANUARY	11.91	18	9	10 532	-	-	-	-	-	-	3	3 005	12	13 538	1 128	-	-	21 563	-	21 563	695.58	58.40	19	2
FEBRUARY	9.89	12	25	22 598	-	-	-	-	1	1 021	-	-	26	23 619	908	-	-	13 432	1 829	15 261	545.04	55.11	12	-
MARCH	11.32	22	11	10 990	-	-	-	-	1	1 612	1	2 721	13	15 322	1 179	-	-	15 667	2 512	18 179	586.42	51.80	8	-
APRIL	11.22	15	19	23 199	-	-	-	-	-	-	-	-	19	23 199	1 221	-	-	11 697	3 649	15 346	511.53	45.59	7	-
MAY	9.43	16	15	15 360	-	-	2	2 692	-	-	-	-	17	18 052	1 962	-	-	13 184	3 866	17 050	550.00	58.32	3	-
JUNE	9.10	12	11	10 358	-	-	-	-	-	-	-	-	11	10 358	942	-	-	12 022	1 484	13 506	450.20	49.47	13	-
JULY	8.26	15	8	6 227	-	-	-	-	1	2 977	-	-	9	9 204	1 023	-	-	12 556	652	13 208	426.06	51.58	9	-
AUGUST	8.33	15	18	16 102	1	785	-	-	1	914	-	-	20	17 801	890	-	-	13 095	1 947	15 042	485.23	58.25	10	-
SEPTEMBER	8.83	14	11	11 722	2	1 527	-	-	1	1 219	-	-	14	14 468	1 033	-	-	12 721	1 344	14 065	468.83	53.10	21	1
OCTOBER	8.42	11	8	8 946	1	697	-	-	-	-	-	-	9	9 643	1 071	-	-	11 860	55	11 915	384.35	45.65	17	1
NOVEMBER	8.90	13	14	13 112	-	-	-	-	2	3 124	-	-	16	16 237	1 015	-	-	12 992	2 554	15 546	518.20	58.22	10	-
DECEMBER	8.91	11	13	17 479	-	-	-	-	-	-	1	293	14	17 772	1 269	-	-	12 750	366	13 116	423.10	47.49	19	-
TOTAL - 1983	114.52	174	162	166 625	4	3 009	2	2 692	7	10 867	5	6 019	180	189 213	1 051	-	-	163 539	20 258	185 797	509.03	53.36	148	4
TOTAL - 1982	153.77	232	174	174 861	15	10 532	3	8 860	18	33 553	5	5 113	215	232 920	1 083	0	0	220 746	32 189	252 935	710.49	54.06	152	1
INCREASE 1983-1982	-39.25	-58	-12	-8 236	-11	-7 523	-1	-6 168	-11	-22 686	-	+906	-35	43 707	32	-	-	-57 207	-11 931	-67 138	-201.46	-0.70	-4	+3
AVERAGES 1983	9.54	14.5	13.5	13 885.4	0.3	251	0.2	224.3	0.6	905.6	0.4	501.6	15.0	15 767.6	-	-	-	13 628	1 688	15 483	-	-	-	-
AVERAGES 1982	12.80	19.3	14.5	1 004.9	1.2	702	0.3	2 953.4	1.5	1 864.1	0.4	1 022.7	17.9	19 410.0	-	-	-	18 396	2 682	21 078	-	-	-	-



**APPENDIX IIA**  
**LAND AND MARINE DEPTH DRILLED, 1983**  
**(IN METERS)**

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
LAND	11 491	9 719	11 998	8 625	12 252	8 179	9 537	11 070	9 926	6 059	9 381	7 795	116 032
MARINE	10 073	5 542	6 181	6 721	4 798	5 328	3 670	3 972	4 139	5 856	6 165	5 321	67 766
TOTAL	21 564	15 261	18 179	15 346	17 050	13 507	13 207	15 042	14 065	11 915	15 546	13 116	183 798
DAILY AVERAGE DEPTH	696	545	586	511	550	450	426	485	469	384	518	423	504
DAILY AVERAGE DEPTH/RIG	58.4	55.0	51.8	45.6	58.3	49.5	51.6	58.3	53.1	45.6	58.2	47.5	
MARINE % TOTAL	46.7	36.3	34.0	43.8	28.1	39.4	27.8	26.4	29.4	49.1	39.7	40.6	36.9

**APPENDIX III**  
**ANALYSIS OF MONTHLY PRODUCTION FOR THE YEAR ENDING 31ST DECEMBER 1983**

MONTH	FLOWING				GAS/AIR LIFT				PUMPING				OTHER METHODS				SALT WATER				NO. OF WELLS PRODUCED	NO. OF WELLS IDLE	NO. OF WELLS ABANDONED	NO. OF WELLS DRILLING AT MONTH END	TOTAL NO. OF WELLS STARTED CUMULATIVE	DAILY AV. PER PRODUCING WELL	TOTAL OIL PRODUCTION	BREAKDOWN OF TOTAL PRODUCTION					AVERAGE B.O.P.D.	CROWN C.H.P.S.	PRIVATE C.H.P.S.	TOTAL		
	NO. OF WELLS	QUANTITY M3	% OF TOTAL OIL	DAILY AV. PER WELL M3	NO. OF WELLS	QUANTITY M3	% OF TOTAL OIL	DAILY AV. PER WELL M3	NO. OF WELLS	QUANTITY M3	% OF TOTAL OIL	DAILY AV. PER WELL M3	NO. OF WELLS	QUANTITY M3	% OF TOTAL OIL	DAILY AV. PER WELL M3	NO. OF WELLS	QUANTITY M3	% OF TOTAL LIQUID	DAILY AV. PER WELL M3								CROWN		PRIVATE								
																												DAILY AV. PER WELL	NO. OF WELLS	QUANTITY PRODUCED M3	DAILY AV. PER WELL	NO. OF WELLS					QUANTITY PRODUCED M3	
JANUARY	377	241 953	29.6	20.7	536	396 671	48.5	23.9	2374	178 859	21.9	2.4	11	33		0.1	2134	597 245	42.2	9.0	3,298	8,791	3	9	12,100	8.0	817 518	9.5	2647	783 453	1.7	651	34 063	26 372	383	6	389	
FEBRUARY	386	216 114	30.0	20.0	537	338 022	46.9	22.5	2387	166 270	23.1	2.5	10	27		0.1	2096	510 774	41.5	8.7	3,320	8,781	1	10	12,112	7.7	720 433	9.2	2672	689 599	1.7	648	30 833	25 729	340	6	346	
MARCH	355	225 888	28.4	20.5	518	385 902	48.5	24.0	2351	183 276	23.1	2.5	6	23		0.1	1983	619 468	43.8	10.1	3,230	8,895	2	7	12,134	7.9	795 089	9.4	2612	762 142	1.7	618	32 947	25 648	345	6	351	
APRIL	347	211 225	27.3	20.3	493	390 295	50.4	26.4	2268	172 816	22.3	2.5	8	24		0.1	2054	600 753	43.7	9.7	3,116	9,024	0	9	12,149	8.3	774 360	9.8	2523	742 004	1.8	593	32 356	25 812	368	6	374	
MAY	353	199 726	25.6	18.3	500	409 568	52.5	26.4	2221	170 661	21.9	2.5	7	47		0.2	2031	606 114	43.7	9.6	3,081	9,073	2	9	12,165	8.2	780 001	9.8	2476	749 613	1.6	605	30 389	25 161	395	7	402	
JUNE	344	192 115	25.3	18.6	504	401 235	52.7	26.5	2218	167 176	22.0	2.5	7	50		0.2	1978	610 468	44.5	10.3	3,073	9,100	0	4	12,177	8.3	760 576	9.8	2471	729 770	1.7	602	30 805	25 353	350	6	356	
PRODUCTION TOTAL: 1ST JANUARY - 30TH JUNE	360	1 287 021	27.7	19.8	515	2 321 693	50.0	24.9	2303	1 039 058	22.3	2.5	8	203		0.1	2046	3 544 824	43.3	9.6	3,186	-	-	-	-	-	8.1	4 647 975	9.6	2567	4 456 581	1.7	620	191 394	25 679	2181	37	2218
JULY	333	198 428	25.6	19.2	496	407 081	52.5	26.5	2237	170 164	21.9	2.5	2	17		0.3	1965	600 819	43.6	9.9	3,068	9,118	1	5	12,192	8.2	775 691	9.6	2460	743 944	1.7	608	31 747	25 022	406	7	413	
AUGUST	318	185 176	23.8	18.8	489	422 049	54.4	27.8	2257	168 960	21.8	2.4	10	46		0.1	2033	627 044	44.7	9.9	3,074	9,125	1	7	12,207	8.1	776 182	9.7	2464	744 484	1.7	610	31 698	25 038	511	8	519	
SEPTEMBER	334	178 580	23.9	17.8	479	402 087	53.8	28.0	2279	166 729	22.3	2.4	10	72		0.2	2057	631 020	45.8	10.2	3,102	9,112	1	6	12,221	8.0	747 468	9.6	2482	717 701	1.6	620	29 767	24 916	451	8	459	
OCTOBER	326	185 530	23.7	18.3	479	420 348	53.6	28.3	2317	178 316	22.7	2.5	8	28		0.1	2085	636 880	44.8	9.9	3,130	9,095	0	7	12,232	8.1	784 222	9.7	2501	753 922	1.6	629	30 300	25 297	651	12	663	
NOVEMBER	325	192 379	25.2	19.7	469	402 186	52.6	28.6	2290	169 635	22.2	2.5	10	22		0.1	2087	615 263	44.6	9.8	3,094	9,141	2	8	12,245	8.2	764 222	9.9	2480	735 363	1.6	614	28 859	25 474	538	9	547	
DECEMBER	329	195 323	25.0	19.2	449	414 329	53.1	29.8	2309	170 579	21.9	2.4	3	11		0.1	2189	626 999	44.6	9.2	3,090	9,159	1	6	12,256	8.1	780 241	9.8	2472	748 877	1.6	618	31 364	25 169	537	8	545	
PRODUCTION TOTAL: 1ST JULY - 31ST DECEMBER	328	1 135 365	24.6	18.8	477	2 468 081	53.3	28.1	2282	1 024 382	22.1	2.4	7	197		0.2	2069	3 741 204	44.7	9.8	3,093	-	-	-	-	8.1	4 628 025	9.8	2477	4 444 290	1.6	617	183 735	25 152	3 095	52	3147	
YEAR'S PRODUCTION TOTAL		2 422 387				789 774				2 063 440				400				7 286 028								8.1	9 276 000		8 900 871			375 129	25 414	5 275	89	5364		
DAILY AVERAGES		6 637				13 123				5 653				1.1				19 962									25 414		24 366			1 028	70	14	0.2	14.2		
AVERAGES DURING YEAR	344			19.3	496			26.5	2292			2.5	8			0.2	2057			9.7	3,139					8.1		9.7	2522		1.7	619						

**APPENDIX IIIA**  
**ANALYSIS OF PRODUCTION BY OPERATING COMPANIES 1983**  
(All quantities in Cubic Metres)

COMPANY	FLOWING				GAS LIFT				PUMPING				OTHER METHODS				SALT WATER				DAILY AV. PER WELL	AV. NO. OF WELLS PRODUCED	DAILY AV. PRODUCING WELL	TOTAL OIL PRODUCED (CUBIC METRES)	CROWN PROD. AS A % OF TOTAL PROD.	CROWN PRODUCTION		PRIVATE PRODUCTION				
	AV. NO. OF WELLS	PRODUCTION (CUBIC METRES)	% OF TOTAL OIL	DAILY AV. PER WELLS	AV. NO. OF WELLS	PRODUCTION (CUBIC METRES)	% OF TOTAL OIL	DAILY AV. PER WELL	AV. NO. OF WELLS	PRODUCTION (CUBIC METRES)	% OF TOTAL OIL	DAILY AV. PER WELL	AV. NO. OF WELLS	PRODUCTION (CUBIC METRES)	% OF TOTAL OIL	DAILY AV. PER WELL	AV. NO. OF WELLS	PRODUCTION (CUBIC METRES)	% OF TOTAL OIL	DAILY AV. PER WELL						AV. NO. OF WELLS	PRODUCTION (CUBIC METRES)	% OF TOTAL PRODUCTION	PRODUCTION (CUBIC METRES)	% OF TOTAL PRODUCTION	PRODUCTION (CUBIC METRES)	% OF TOTAL PRODUCTION
TRINIDAD TESORO PETROLEUM COMPANY LIMITED	70	113 591	9.2	4.4	18	18 126	1.5	3.1	1311	1 109 677	89.4	2.3	-	-	-	-	1117	540 422	30.3	1.3	1397	2.4	1 241 394	13.38	985 599	79.4	255 795	20.6				
TEXACO TRINIDAD INC.	45	90 232	13.9	5.5	212	164 826	25.4	2.1	487	394 196	60.7	2.2	-	-	-	-	332	623 539	49.0	5.1	744	2.4	649 254	7.00	587 717	90.5	61 536	9.5				
PREMIER CONSOLIDATED OIL FIELDS LIMITED	2	672	3.5	0.9	-	-	-	-	76	18 116	94.4	0.7	8	400	2.1	0.1	27	8 463	30.6	0.9	86	0.6	19 188	0.21	4 576	23.8	14 612	76.2				
TRINIDAD NORTHERN AREAS	75	583 956	27.1	21.3	180	1 309 601	60.8	19.9	54	261 261	12.1	13.3	-	-	-	-	223	428 380	16.6	5.3	309	19.1	2 154 819	23.23	2 154 819	100.0	-	-				
AMOCO TRINIDAD OIL COMPANY	42	1 459 816	30.8	95.2	78	3 284 646	69.2	115.4	-	-	-	-	-	-	-	-	96	5 511 931	53.7	157.3	120	108.3	4 744 463	51.15	4 744 463	100.0	-	-				
TRINIDAD AND TOBAGO OIL COMPANY	110	174 139	37.3	4.3	10	12 579	2.7	3.4	385	280 165	60.0	2.1	-	-	-	-	263	173 292	27.1	1.8	485	2.6	468 883	5.03	424 196	90.9	42 687	9.1				
TOTAL 1983	344	2 422 406	26.1	19.3	496	4 789 778	51.6	26.5	2292	2 063 416	22.2	2.5	8	400	-	0.1	2058	7 286 028	44.0	9.7	3140	8.1	9 276 000	100.0	8 901 370	36.0	374 631	4.0				
TOTAL 1982	392	3 395 092	33.0	23.7	552	4 671 525	45.5	23.2	2420	2 206 544	21.5	2.5	9	386	-	0.1	2041	7 142 642	41.0	9.6	3373	8.3	10 273 547	100.0	9 891 385	96.3	3 821 162	3.7				

**NATURAL GASOLINE C.H.P.S. PRODUCTION**

COMPANY	CROWN OIL RIGHTS (CUBIC METRES)	PRIVATE OIL RIGHTS (CUBIC METRES)	TOTAL (CUBIC METRES)
TRINIDAD TESORO PETROLEUM CO. L.T.O.	5 275	88	5 363
TOTAL 1983	4 448	45	4 493

FACTOR USED TO CONVERT BARRELS TO CUBIC METRES IS - .1589873

**APPENDIX IIB**  
**DAILY AVERAGE PRODUCTION BY MONTHS FOR ALL COMPANIES - 1983**  
 (All quantities in cubic metres)

COMPANY	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL CRUDE	TOTAL C.M.P.D.
TRINIDAD TESORO PETROLEUM COMPANY LIMITED	107 593	97 593	108 699	103 089	103 586	101 177	105 140	104 873	100 843	103 833	101 281	103 460	1 241 396	—
C.M.P.D.	3 471	3 494	3 506	3 436	3 341	3 373	3 392	3 383	3 361	3 349	3 376	3 337	—	3 401
PRIMIER CONSOLIDATED OILFIELDS LIMITED	1 631	1 228	1 342	1 276	1 508	1 446	1 697	1 797	1 734	2 104	1 722	1 704	19 188	—
C.M.P.D.	53	44	43	43	49	48	55	58	58	68	57	55	—	53
TRINIDAD AND TOBAGO OIL COMPANY	38 671	34 868	38 585	36 972	39 623	38 843	39 391	39 669	38 019	41 462	40 320	40 459	466 884	—
C.M.P.D.	1 247	1 245	1 245	1 232	1 278	1 295	1 271	1 280	1 267	1 337	1 344	1 305	—	1 279
TEXACO TRINIDAD INC.	66 840	60 494	60 597	60 430	54 130	51 229	46 941	49 554	49 513	53 034	48 152	48 341	649 255	—
C.M.P.D.	2 156	2 160	1 955	2 014	1 746	1 708	1 514	1 599	1 650	1 711	1 605	1 559	—	1 779
TRINIDAD NORTHERN AREAS	186 502	171 786	183 257	171 530	169 896	181 139	184 115	178 991	173 350	187 522	180 800	185 926	2 154 823	—
C.M.P.D.	6 016	6 135	5 912	5 719	5 481	6 038	5 939	5 774	5 778	6 049	6 027	5 998	—	5 904
AMOCO TRINIDAD OIL COMPANY	416 281	354 236	402 611	401 057	411 259	386 744	398 408	401 299	384 010	396 267	391 948	400 352	4 744 472	—
C.M.P.D.	13 428	12 651	12 987	13 369	13 266	12 891	12 852	12 945	12 800	12 783	13 065	12 915	—	12 999
TOTAL 1983	817 518	720 434	795 091	774 361	780 003	760 577	775 692	776 184	747 469	784 223	764 223	780 243	9 276 018	—
C.M.P.D.	26 372	25 730	25 648	25 812	25 161	25 353	25 022	25 038	24 916	25 298	25 474	25 169	—	25 414
TOTAL 1982	914 056	814 503	858 760	870 928	882 424	848 048	888 280	862 610	826 730	827 080	810 448	829 700	10 273 566	—
C.M.P.D.	29 486	29 089	28 992	29 031	28 465	28 268	28 654	27 826	27 558	26 680	27 015	26 765	—	28 147

FACTOR USED TO CONVERT BARRELS TO CUBIC METRES - 0.1589873

**APPENDIX III  
LAND AND MARINE PRODUCTION - 1983**  
(All quantities in Cubic Metres)

TYPE OF WELL	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	WELLS	PRODUCTION	WELLS	PRODUCTION	WELLS	PRODUCTION	WELLS	PRODUCTION	WELLS	PRODUCTION	WELLS	PRODUCTION	WELLS	PRODUCTION	WELLS	PRODUCTION	WELLS	PRODUCTION	WELLS	PRODUCTION	WELLS	PRODUCTION	WELLS	PRODUCTION
MARINE																								
TNA SOLDADO	296	185 266	299	170 257	294	181 747	299	169 835	283	168 534	293	179 914	288	182 802	290	177 906	291	172 070	297	186 282	297	179 552	298	184 880
TTI - A.B.M.	61	3 610	58	3 046	52	2 785	48	3 052	51	2 001	52	3 029	50	2 147	47	2 210	42	2 865	41	2 772	40	2 163	37	2 491
TTI - COUVA MARINE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TTI - A.L.M.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TESORO - NORTH MARINE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TESORO - GALEOTA	40	16 489	41	14 439	41	14 697	42	14 846	42	15 546	40	14 641	39	14 217	41	13 704	40	12 348	40	12 619	39	12 642	36	13 759
TESORO - G.B. WELLS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AMOCO	118	416 281	119	354 236	118	402 611	117	401 057	121	411 259	119	386 744	120	398 408	119	401 299	120	384 010	126	396 267	126	391 948	123	400 352
SUB-TOTAL	515	621 647	517	541 978	505	601 839	506	588 789	497	597 339	504	584 327	497	597 575	497	595 119	493	571 293	504	597 941	502	586 304	494	601 481
DEVIATED FROM SHDRE																								
TNA - F.O.S.	18	1 236	18	1 528	18	1 510	15	1 704	17	1 363	13	1 225	15	1 312	15	1 085	15	1 280	12	1 240	11	1 248	10	1 047
TTI - A.S.	35	429	36	477	35	411	31	311	33	224	34	394	20	251	16	201	17	251	8	318	11	267	8	385
TTI - A.L.S.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TESORO - GUAPO MARINE 1151/53	8	251	8	230	8	245	7	213	8	196	8	202	8	164	8	193	9	161	7	154	8	162	8	221
SUB-TOTAL	61	1 916	62	2 235	61	2 166	53	2 227	58	1 783	55	1 321	43	1 727	39	1 479	41	1 692	27	1 711	30	1 678	26	1 653
MARINE & DEVIATED	576	623 562	579	544 213	566	604 005	559	591 017	555	599 122	559	586 148	540	599 302	536	596 599	534	572 985	531	599 652	532	587 982	520	603 135
LAND	2722	198 562	2 741	176 221	2 664	191 085	2557	183 345	2526	180 881	2514	174 429	2528	176 390	2538	179 585	2568	174 484	2599	184 571	2562	176 242	2570	177 108
TOTAL PRODUCTION	3298	817 518	3 320	720 434	3 230	795 091	3116	774 361	3081	780 003	3073	760 577	3068	775 692	3074	776 184	3102	747 469	3130	784 223	3094	764 223	3090	780 243

NB. CONVERSION FACTOR USED FROM BARRELS TO CUBIC METRES - 0.1589873

**APPENDIX IV**  
**PRODUCTION AND DISPOSAL OF NATURAL GAS - 1983**  
 (All figures of Gas in Cubic Metres)

	NATURAL GAS PRODUCTION	SALES TO OTHER COMPANIES	NATURAL GAS DISPOSAL								NATURAL GAS RECOVERY			INTER-OIL COMPANY SALES	USE FOR THE MANUF. OF PETRO-CHEMICALS	
			REPLACED INTO FORM.	CONVERTED TO C.H.P.S.	USED AS FUEL		VENTED TO ATMOSPHERE			PIPELINE LOSSES UNACCOUNTED FOR	NOT COLLECTED	NATURAL GAS TREATED	AV. PLANT RECOVERY L/M <sup>3</sup>			NATURAL GASOLINE PRODUCED
					IN FIELDS	IN REFINERY	AFTER UTILIZATION	WITHOUT UTILIZATION	TOTAL							
JANUARY	500 407 803	248 791 124	-	73 538	28 632 821	46 249 418	73 276 023	69 556 642	142 832 664	7 183 727	26 644 509	5 280 753	0.073	389	60 663 149	80 261 585
FEBRUARY	444 813 096	236 661 633	-	62 971	27 678 512	39 554 142	59 375 113	52 811 249	112 186 362	3 807 839	24 861 636	5 343 438	0.065	346	58 256 289	56 670 432
MARCH	527 818 966	269 484 217	-	66 350	30 510 824	50 818 127	79 244 049	69 053 614	148 297 664	2 235 959	26 485 825	5 470 440	0.064	351	55 434 830	85 641 822
APRIL	484 181 788	253 356 740	-	70 646	28 722 452	34 964 099	73 593 916	67 784 249	141 378 164	2 855 622	22 834 064	5 246 131	0.071	374	59 371 848	76 092 470
MAY	543 972 415	273 824 006	-	75 428	30 568 670	49 243 554	85 441 252	76 495 556	161 936 809	2 262 132	26 061 816	7 546 694	0.053	402	56 536 472	85 298 500
JUNE	503 742 254	237 182 644	-	67 210	28 348 060	48 167 542	92 908 538	73 042 894	165 951 432	3 091 500	21 506 595	4 949 200	0.188	932	50 944 098	67 151 985
HALF-YEARLY TOTAL	3 004 936 322	1 519 300 364	-	416 173	174 461 339	268 996 882	463 838 891	408 744 204	872 583 095	21 436 779	148 314 445	33 835 656	0.083	2 794	341 206 686	450 830 434
JULY	536 204 276	261 977 270	-	78 063	30 294 934	50 335 661	99 097 579	80 452 792	179 550 371	2 461 528	11 506 449	5 053 322	0.079	398	54 774 045	74 063 323
AUGUST	568 886 312	278 357 062	-	95 817	30 435 711	46 345 579	105 205 695	91 322 482	196 528 177	3 850 708	13 273 258	5 532 352	0.088	489	44 383 728	87 546 057
SEPTEMBER	533 653 088	258 631 451	-	86 625	29 915 330	38 590 642	106 935 391	80 887 177	187 822 568	4 232 832	14 373 640	7 183 956	0.064	458	50 097 949	73 177 857
OCTOBER	564 214 771	261 822 233	-	125 170	30 639 058	48 129 369	114 957 248	79 624 913	194 582 162	7 116 718	21 800 061	9 074 016	0.073	658	49 282 013	79 973 733
NOVEMBER	523 680 319	231 383 057	-	103 349	30 704 922	48 483 229	111 726 031	77 029 797	188 755 828	3 241 811	20 908 123	10 537 279	0.051	547	43 987 658	66 961 897
DECEMBER	587 011 894	278 383 007	-	101 258	33 839 233	51 281 578	118 904 032	77 507 624	196 411 655	3 369 130	23 626 032	9 892 903	0.055	545	39 643 000	86 674 336
HALF-YEARLY TOTAL	3 313 650 660	1 570 554 080	-	590 282	185 829 188	283 166 058	656 825 976	486 824 785	1 143 650 761	24 372 727	105 487 563	47 273 828	0.065	3 095	282 168 453	468 397 204
YEARS TOTAL	6 318 586 982	3 099 854 444	-	1 006 455	360 290 527	552 162 940	1 120 664 867	895 568 989	2 016 233 856	45 809 506	253 502 008	81 110 844	0.073	5 889	623 375 139	919 227 638
% DISPOSAL FOR YEAR	-	48.9	-	-	5.7	8.7	17.7	14.2	31.9	0.8	4.0					

**APPENDIX V**  
**DESTINATION OF EXPORTS OF CRUDE AND REFINED PRODUCTS FOR TRINIDAD AND TOBAGO - 1983**  
(In Cubic Metres)

COUNTRY	TOTALS REFINED PRODUCTS	% OF TOTAL EXPORTS	CRUDE PETROLEUM EXPORTS	L.P.G.	AVIATION GASOLINE	MDTOR GASOLINE	KEROSINE	GAS AND DIESEL OILS	FUEL OILS	LUBES AND GREASES	PETRO-CHEMICALS	OTHER REFINED PRODUCTS
<b>NORTH AMERICA</b>												
CANADA	35 001	0.647						35 001				
U.S.A.	788 040	14.570	4 775 472					107 427	663 094	4 429	13 090	
<b>TOTAL : NORTH AMERICA</b>	<b>823 041</b>	<b>15.217</b>	<b>4 775 472</b>					<b>142 428</b>	<b>663 094</b>	<b>4 429</b>	<b>13 090</b>	
<b>CENTRAL AMERICA</b>												
REPUBLIC OF PANAMA	27 133	0.502		1 068	3 051	7 953		15 015			46	
COSTA RICA	361	0.007									361	
GUATEMALA	2 520	0.047			2 520							
HONDURAS	113 287	2.094			2 586	39 396	13 489	57 816				
OTHER C.A. (1)	4 083	0.075				1 564				2 519		
<b>TOTAL : CENTRAL AMERICA</b>	<b>147 384</b>	<b>2.725</b>		<b>1 068</b>	<b>8 157</b>	<b>48 913</b>	<b>13 489</b>	<b>72 831</b>		<b>2 519</b>	<b>407</b>	
<b>SOUTH AMERICA</b>												
GUYANA	312 335	5.775		17 785	2 392	65 513	28 340	131 446	76 981		(10 122)	
SURINAME	427 618	7.906		725	1 879	48 085	17 579	119 681	239 590		79	
FRENCH GUIANA	113 754	2.103		1 879	420	26 757	25 599	43 553	17 620		( 2 074 )	
OTHER S.A.	33 775	0.624				12 774		15 908		1 351	3 742	
<b>TOTAL : SOUTH AMERICA</b>	<b>887 482</b>	<b>16.408</b>		<b>20 389</b>	<b>4 691</b>	<b>153 129</b>	<b>71 518</b>	<b>310 588</b>	<b>334 191</b>	<b>1 351</b>	<b>( 8 375 )</b>	
<b>WST INDIAN ISLANDS</b>												
BRITISH (3)	565 051	10.447		35 863	3 846	84 259	191 790	47 455	185 851		(15 566)	31 553
FRENCH (4)	138 171	2.555		3 629	370	40 883	44 550	26 936	22 385		( 582 )	
NETHERLANDS (5)	1 208	0.022				453		755				
VIRGIN ISLANDS	68 292	1.263			2 036	8 946	41	1 158	56 111			
HAITI	71 310	1.318			1 254	16 346	18 638	18 834	16 238			
OTHER W.I. ISLANDS (6)	359 322	6.643		594	4 126	316 607	118	13 480	4 790		3 769	15 838
<b>TOTAL : W.I. ISLANDS</b>	<b>1 203 354</b>	<b>22.248</b>		<b>40 086</b>	<b>11 632</b>	<b>467 494</b>	<b>255 137</b>	<b>108 618</b>	<b>285 375</b>		<b>(12 379)</b>	<b>47 391</b>
<b>EUROPE</b>												
ITALY	43 155	0.798	163 189						43 155			
ENGLAND	267 112	4.938							264 746		2 366	
OTHER EUROPE (7)	404 035	7.470						35 816	323 228		21 561	23 430
<b>TOTAL : EUROPE</b>	<b>714 302</b>	<b>13.206</b>	<b>163 189</b>					<b>35 816</b>	<b>631 129</b>		<b>23 927</b>	<b>23 430</b>
<b>OTHERS</b>												
TAHITI	86 386	1.597			1 072	24 688	37 722	20 062	2 842			
NOUMEA	9 504	0.176				4 100	2 300	3 104				
AFRICA (8)	302 531	5.593				33 871	77 712	40 912	149 380	174	482	
OTHERS (9)	62 699	1.159				4 659		(27 575)	81 317		4 298	
<b>TOTAL : OTHERS</b>	<b>461 120</b>	<b>8.525</b>			<b>1 072</b>	<b>67 318</b>	<b>117 734</b>	<b>36 503</b>	<b>233 539</b>	<b>174</b>	<b>4 780</b>	
<b>TOTAL : CARGOES</b>	<b>4 236 683</b>	<b>78.329</b>	<b>4 938 661</b>	<b>61 543</b>	<b>25 552</b>	<b>736 854</b>	<b>457 878</b>	<b>706 784</b>	<b>2 147 328</b>	<b>8 473</b>	<b>21 450</b>	<b>70 821</b>
<b>FOREIGN BUNKERS</b>	<b>1 172 123</b>	<b>21.671</b>		<b>404</b>	<b>159</b>	<b>59 483</b>	<b>61 774</b>	<b>320 343</b>	<b>728 976</b>	<b>287</b>		<b>697</b>
<b>TOTAL EXPORT</b>	<b>5 408 806</b>	<b>100</b>	<b>4 938 661</b>	<b>61 947</b>	<b>25 711</b>	<b>796 337</b>	<b>519 652</b>	<b>1 027 127</b>	<b>2 380 867</b>	<b>8 760</b>	<b>21 450</b>	<b>70 518</b>

\* TOTAL EXPORTS OF REFINED PRODUCTS

**COUNTRIES NOT DETAILED**

- (1) OTHER CENTRAL AMERICA : BELIZE, ECUADOR.  
(2) OTHER SOUTH AMERICA : CHILE, PERU, BRAZIL, COLUMBIA.  
(3) BRITISH : ANTIGUA, ANGUILLA, BARBADOS, BAHAMAS, BEQUIA, CARRIACOU, DOMINICA, GRAND CAYMAN, GRENADA, JAMAICA, MONTSERRAT, NEVIS, ST. KITTS, ST. LUCIA, ST. VINCENT.  
(4) FRENCH : GUADELOUPE, MARTINIQUE, ST. BARTHELEMY, ST' BARTHS, ST' MAARTEN.

- (5) NETHERLANDS : SABA, ST. EUSTATIUS.  
(6) OTHER W.I. ISLANDS : PUERTO RICO, DOMINICAN REPUBLIC, TORTOLA, ARUBA.  
(7) OTHER EUROPE : NETHERLANDS, COPENHAGEN, FRANCE, GIBRALTER.  
(8) AFRICA : DAKAR, GAMBIA, IVORY COAST, NIGERIA, REPUBLIC OF GUINEA, SENEGAL, TOGO.  
(9) OTHER : CANARY ISLANDS, JAPAN.

**APPENDIX VI**  
**MOVEMENT OF REFINERY PRODUCTS - 1983**  
 (All quantities in Cubic Metres)

INVENTORY NAME	OPENING INVENTORIES	PRODUCTION	IMPORTS	OTHER RECEIPTS	PURCHASES FROM OTHER PETROLEUM MARKETS	TOTAL	SALES TO OTHER MARKETS	LOCAL CONSUMPTION				EXPORTS		GAIN AND LOSSES	CLOSING INVENTORIES	TOTAL
								OWN USE	RETAILER	LOCAL BUNKERS	TOTAL	CARGOES	FOREIGN BUNKERS			
LIQUID PETROLEUM GAS	8 644	112 690	6 022	49 033	141 856	318 245	128 581	71	119 271	—	119 342	55 579	404	2 567	11 772	318 245
AVIATION GASOLINE	2 197	24 916	—	160	15 092	42 365	705	—	1 248	—	1 248	38 491	159	374	1 388	42 365
MOTOR GASOLINE	65 401	1 170 786	28 611	373 482	1 263 504	2 901 784	791 782	1 083	734 463	—	735 546	1 218 456	59 483	1 243	95 274	2 901 784
AVIATION TURBINE FUEL	29 252	327 703	20 374	25 039	154 835	557 203	63 744	18	91 383	7	91 408	339 680	694	2 010	59 667	557 203
NAPHTHA	83 217	(79 732)	80 165	320 535	72 366	476 551	50 746	—	—	—	—	202 221	—	116 646	106 938	476 551
KEROSINE	26 803	163 694	7 888	132	179 032	377 549	58 130	865	33 751	—	34 616	204 232	61 774	751	18 046	377 549
WHITE SPIRITS	696	1 840	—	—	1 874	4 410	1 720	37	1 787	—	1 824	172	1	165	528	4 410
GAS OIL	54 095	694 209	89 485	341 481	975 309	2 154 579	248 606	5 413	287 986	65 610	359 009	1 207 872	309 079	1 407	28 606	2 154 579
MARINE DIESEL	6 529	27 506	—	564	13 973	48 572	12 158	—	1 667	4 802	6 469	10 420	11 263	409	7 853	48 572
FUEL OILS	361 113	2 393 078	—	838 173	689 803	4 282 167	52 724	1 156	35 141	72 739	109 036	3 147 196	728 976	7 302	236 933	4 282 167
LUBES AND GREASES	12 734	20 647	5 643	201	19 774	58 999	14 921	2 710	4 457	77	7 244	26 928	287	1 057	8 562	58 999
ASPHALTIC PRODUCTS	3 879	31 758	—	—	23 417	59 054	23 683	—	23 940	—	23 940	—	3	7 425	4 003	59 054
UNFINISHED OILS	189 827	(582 137)	139 169	—	366 332	113 191	—	324	—	—	324	—	—	33	112 835	113 191
PETROCHEMICALS	12 803	64 728	10	15 120	13 469	106 130	12 693	55	13 788	—	13 843	65 595	—	69	13 930	106 130
OTHER FINISHED PRODUCTS	14	80	—	66	2 615	2 775	78	—	86	9	95	2 450	—	137	15	2 775
TOTAL	857 204	4 371 766	377 367	1 963 986	3 933 251	11 503 574	1 460 271	11 732	1 348 968	143 244	1 503 944	6 519 292	1 172 122	141 595	706 350	11 503 574

**APPENDIX VII**  
**MOVEMENT OF CRUDE AND C.H.P.S. YEAR ENDING 31ST, DECEMBER, 1983**  
**(All quantities in Cubic Metres)**

MONTH	PRODUCTION	IMPORTS	DECREASE IN INVENTORIES	TOTAL	PURCHASES AND EXCHANGES FROM OTHER COMPANIES	SALES AND EXCHANGES TO OTHER COMPANIES	OWN USE	TO REFINERY	EXPORTS	GAIN AND LOSSES	TOTAL
JANUARY	817 906		70 370	1 374 640	540 404	540 404	278	410 086	478 968	( 1 056)	1 374 640
FEBRUARY	720 779		11 407	1 207 143	479 137	479 137	76	355 040	372 481	4 588	1 207 143
MARCH	795 410		(3 869)	1 270 491	464 079	464 079	213	401 918	388 387	1 023	1 270 491
APRIL	774 570		8 435	1 253 557	505 616	505 616	301	349 583	432 296	824	1 253 557
MAY	780 403		52 467	1 250 956	535 357	535 357	141	382 701	445 978	4 050	1 250 956
JUNE	760 931		(70 826)	1 179 017	481 403	481 403	177	326 206	365 787	(2 064)	1 179 016
JULY	776 081		30 175	1 264 992	539 498	539 498	148	377 271	429 654	818	1 264 992
AUGUST	776 701		(3 222)	1 235 438	545 927	545 924	145	340 526	431 230	1 581	1 235 440
SEPTEMBER	747 926		(58 270)	1 209 884	508 849	508 853	147	330 541	361 847	(2 883)	1 209 881
OCTOBER	784 884		21 178	1 305 113	543 784	543 798	165	374 314	429 896	1 674	1 305 099
NOVEMBER	764 769		(98 594)	1 263 819	460 406	460 406	188	301 352	363 169	1 465	1 263 819
DECEMBER	780 786		29 756	1 377 536	545 653	545 668	86	371 467	438 967	22	1 377 536
TOTAL:-	9 281 146		(10 993)	15 192 586	6 150 113	6 150 143	2 065	4 321 005	4 938 660	10 042	15 192 570



**APPENDIX VIII**

**SUMMARY OF CRUDE OIL ASSESSED FOR CROWN ROYALTY WITH PRICES AND ANALYSES - 1983  
(FOR HALF YEARLY ASSESSMENT PERIODS ENDING 30th JUNE AND 31ST DECEMBER)**

COMPANY	NET ROYALTY PRODUCTION (CUBIC METRES)	FIELD STORAGE VALUE		ROYALTY PAYABLE \$	SUB-DIVISION OF (ROYALTY) CRUDE INTO PRODUCTS AS PER R.L.E. 1 ANALYSIS										CRUDE OIL WEIGHED AV. GRAVITY A.P.I		
		TOTAL	PER		LIGHT-FRACTIONS			GAS OIL					FUEL OIL				
					QUANTITY CUBIC METRES	%	TETRA ETHYLE LEAD 70/72 OCT. GASOLINE M/S (MLS).	53-57-D.I. (CUBIC METRES)	48-52-D.I. (CUBIC METRES)	43-47-D.I. (CUBIC METRES)	NO.2 FUEL (CUBIC METRES)	TOTAL GAS OIL M3	%	QUANTITY (CUBIC METRES)		%	
TRINIDAD TESORO PETROLEUM COMPANY LTD.	401 061	139 707 473	348.34	13,970,747	27 770	6.9	859 792	--	37	26 956	38 930	65 923	16.4	307 368	76.7	21.22	
TESORO GALEOTA	90 658	36 736 481	405.22	4,592,060	14 917	16.4	--	--	--	42 777	42 777	42 777	47.2	32 964	36.4		
PREMIER CONSOLIDATED OILFIELDS LTD.	2 034	749 223	368.35	74 922	158	7.79	9 951	--	--	230	443	673	33.09	1 203	59.12		
ESTATE OF TIMOTHY ROODAL	11	3 881	352.82	388	32	2.91	--	--	--	--	3.18	3.18	28.91	7.5	68.18		
TRINIDAD AND TOBAGO OIL COMPANY	193 095	69 324 951	359.02	6,932 495	20 423	10.6	3 804 724	14 493	--	23 286	1 770	39 549	20.5	133 123	68.9		22.58
TRINIDAD NORTHERN AREAS LTD.	1 064 116	376 273 714	353.60	37,627,371	134 570	12.65	24 935 032	--	149 603	--	--	149 603	14.06	779 943	73.29		
TEXACO TRINIDAD INC.	320 154	117 145 963	365.91	11,714,596	35 340	11.04	2 661 679	7 699	18 982	45 582	11 238	83 501	26.08	201 313	62.88		23.32
AMOCO TRINIDAD OIL COMPANY	2 372 183	1 081 912 056	456.08	127 364 007	279 320	11.8	24 613 693	--	1 772 242	--	--	1 772 242	74.7	320 621	13.5		
<b>TOTAL AND AVERAGES JANUARY - JUNE</b>	<b>4 443 312</b>	<b>1 821 853 742</b>	<b>410.02</b>	<b>202,276,586</b>	<b>512 498.32</b>	<b>11.54</b>	<b>56 884 871</b>	<b>22 192</b>	<b>1 940 864</b>	<b>96 054</b>	<b>95 161.18</b>	<b>2 154 271.18</b>	<b>48.48</b>	<b>1 776 542.5</b>	<b>39.98</b>		
TRINIDAD TESORO PETROLEUM COMPANY LTD.	413 998	155 210 644	374.91	15,521,064	28 708	6.9	1 486 185	--	--	7 902	62 003	69 905	16.9	315 385	76.2	21.19	
TESORO GALEOTA	79 290	33 704 042	425.07	4,213,005	13 072	16.5	--	--	--	--	38 178	38 178	48.1	28 040	35.4		
PREMIER CONSOLIDATED OILFIELDS LTD.	2 517	1 000 012	397.30	100,001	225	8.95	20 185	--	--	451	432	883	35.05	1 409	56.00		
ESTATE OF TIMOTHY ROODAL	6.52	2 490	381.90	249	16	2.44	--	--	--	--	1.91	1.91	29.27	4.45	68.29		
TRINIDAD AND TOBAGO OIL COMPANY	206 533	79 171 331	383.33	7,917,133	23 034	11.2	4 512 395	15 685	--	12 911	14 411	43 008	20.8	140 492	68.0		22.58
TRINIDAD NORTHERN AREAS LTD.	1 090 702	413 122 479	378.77	41,312,248	144 932	13.29	27 394 075	--	158 144	--	--	158 144	14.50	787 626	72.21		
TEXACO TRINIDAD INC.	266 468	103 774 108	389.44	10,377,411	29 181	10.95	2 657 700	3 478	19 728	37 497	9 659	70 362	26.41	166 925	62.64		23.27
AMOCO TRINIDAD OIL COMPANY	2 372 279	1 057 081 881	445.59	132,135,235	271 476	11.4	25 291 596	--	1 788 633	--	--	1 788 633	75.4	312 170	13.2		
<b>TOTAL AND AVERAGES JULY - DECEMBER</b>	<b>4 431 793.52</b>	<b>1 843 066 988</b>	<b>415.87</b>	<b>211 576 346</b>	<b>510 628.16</b>	<b>11.52</b>	<b>61 362 136</b>	<b>19 163</b>	<b>1 966 505</b>	<b>58 761</b>	<b>124 684.91</b>	<b>2 169 113.91</b>	<b>48.95</b>	<b>1 752 051.45</b>	<b>39.53</b>		
<b>YEAR'S TOTALS AND AVERAGES</b>	<b>8 875 105.52</b>	<b>3 664 920 730</b>	<b>412.94</b>	<b>413,852,932</b>	<b>1 023 126.48</b>	<b>11.53</b>	<b>118 247 007</b>	<b>41 355</b>	<b>3 907 369</b>	<b>154 815</b>	<b>219 846.09</b>	<b>4 323 385.09</b>	<b>48.71</b>	<b>3 528 593.95</b>	<b>39.76</b>		

**APPENDIX IX****ROYALTY ASSESSMENT**

THE ROYALTY ASSESSED ON THE CRUDE OIL, NATURAL GASOLINE AND NATURAL GAS PRODUCED ON CROWN OIL MINING LEASES FOR EACH HALF YEARLY PERIOD DURING 1981, 1982, 1983 IS SHOWN IN THE FOLLOWING TABLE:-

SOURCE OF REVENUE	ASSESSMENT FOR HALF YEARLY PERIODS ENDING:-					
	31-12-83	30-6-83	31-12-82	30-6-82	31-12-81	30-6-81
	\$	\$	\$	\$	\$	\$
ROYALTY ON NATURAL GAS	828,007	743,815	750,715	739,908	695,554	594,462
ROYALTY ON NATURAL GASOLINE	143,895	102,278	146,353	85,000	175,810	176,830
MINIMUM RENT NET OFFSET BY ROYALTY ON CRUDE OIL	3,288,315	3,057,532	2,761,180	2,055,040	1,734,239	1,528,386
ROYALTY ON CRUDE OIL	211,576,346	202,276,586	253,194,455	255,287,256	286,829,933	305,202,213
HALF YEARLY TOTAL	215,836,563	206,180,211	256,852,703	258,167,204	289,435,536	307,501,891
YEARLY TOTAL	422,016,774		515,019,907		596,937,427	

THE VOLUME UPON WHICH THE ABOVE ASSESSMENTS WERE MADE ARE AS FOLLOWS:-

SUBSTANCE ASSESSED FOR ROYALTY	UNIT	HALF YEARLY PERIOD ENDING:-					
		31-12-83	30-6-83	31-12-82	30-6-82	31-12-81	30-6-81
NATURAL GAS	CUBIC METRES	1 580 743 713	1 420 012 926	1 433 184 467	1 412 553 716	1 327 877 113	1 134 884 071
NATURAL GASOLINE	LITRES	2 922 607	2 004 955	2 626 733	1 551 841	2 899 558	2 949 473
CRUDE OIL NET	CUBIC METRES	4 431 795	4 443 312	4 852 169	5 032 805	5 250 774	5 335 198
FIELD STORAGE VALUE PER BARREL	\$TT	66.12	65.19	72.69	70.59	75.564	79.122
ROYALTY PAYABLE PER BARREL		6.61	6.52	7.27	7.06	7.56	7.91

THE DATE USED TO EVALUATE CRUDE OIL FOR CROWN ROYALTY ASSESSMENT FOR EACH OF THE LAST SIX-HALF YEARLY PERIODS TOGETHER WITH THE ROYALTY RATES ON CASING HEAD PETROLEUM SPIRIT FOR EACH OF THESE PERIODS ARE SHOWN IN THE FOLLOWING TABLE:-

PRODUCT	31-12-83	30-6-83	31-12-82	30-6-82	31-12-81	30-6-81
BUNKER C GRADE FUEL	61.123137	55.613890	58.667006	56.874645	57.527968	64.358354
NO. 2 FUEL	79.800023	76.768345	90.427838	87.539030	95.369888	96.392503
43-47 D.I. GAS OIL	80.209794	77.178116	90.837608	87.948800	95.779659	96.407680
48-52 O.I. GAS OIL	80.336266	77.304588	90.964408	88.075273	95.906126	96.534153
53-57 O.I. GAS OIL	80.589211	77.557533	91.217026	88.328218	96.159076	96.787093
70-72 OCT. N HEADED MOTOR GAS	78.733255	81.820368	88.430396	87.518878	96.307435	96.136056
AVERAGE MIDDLE RATE FOR SIGHT DRAFT ON N.Y.) T&T CURRENCY FOR U.S. \$1.00	2.409	2.409	2.409	2.409	2.409	2.409
VALUE OF TETRA ETHYL LEAD IN T&T CENTS) PER MILLIMETRE)	1.610931	1.783142	1.779835	1.975430	1.852028	2.273106
ROYALTY IN T&T CENTS PER GALLON ON) NATURAL GASOLINE (C.H.P.S.)	22.514110	23.191681	25.290037	24.995778	27.548672	27.636829

THE HALF YEARLY VOLUME OF PRODUCTS TO WHICH THE ABOVE PRICES FOR 1983 WERE APPLIED RESPECTIVELY IN CALCULATING ROYALTY ON CRUDE OIL WILL BE FOUND IN APPENDIX VIII.

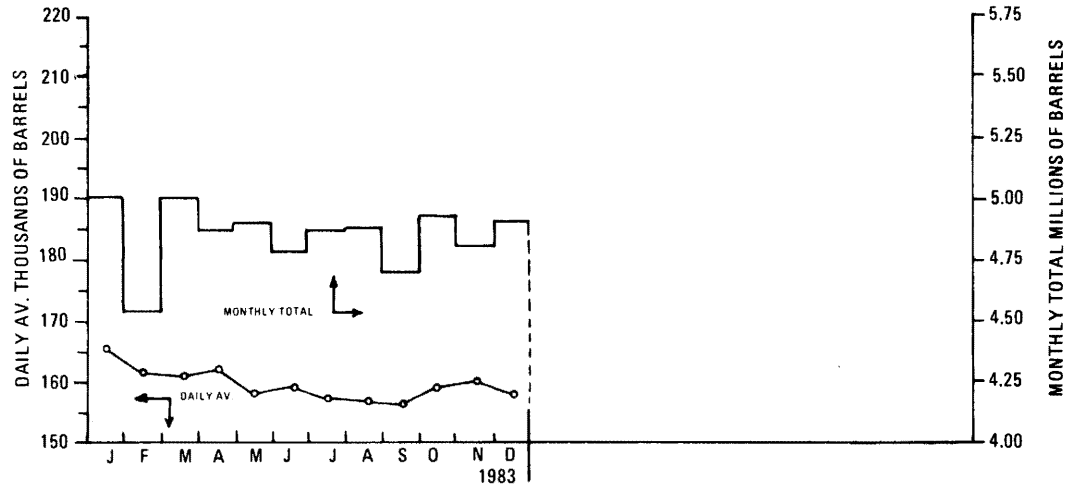
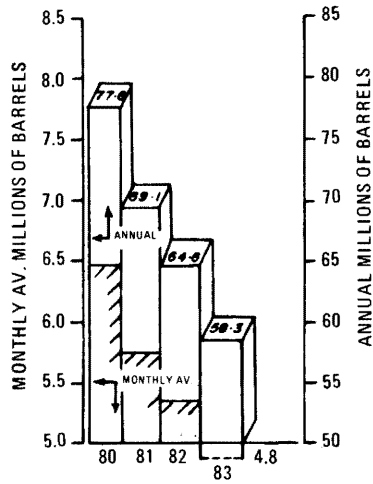
**APPENDIX X**

**THE FOLLOWING TABLE SHOWS FOR THE YEARS 1981, 1982, 1983, 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		
	1981	1982	1983
EXTRACTED BY THE MINISTRY OF WORKS FOR LOCAL USE	6 725	2 400	6 218
EXTRACTED BY TRINIDAD LAKE ASPHALT COMPANY	22 975	26 182	36 980
TOTAL	29 700	28 582	43 198
DERIVED PRODUCTS MANUFACTURED BY THE COMPANY EXPORTS:			
CRUDE ASPHALT	—	—	—
DRIED ASPHALT	16 886	16 986	22 424
ASPHALT CEMENT	1 175	2 427	1 649
TOTAL:	18 061	19 413	24 073
LOCAL SALES			
CRUDE ASPHALT	8	—	3
DRIED ASPHALT	431	949	955
ASPHALT CEMENT	968	8 766	10 556
TOTAL:	1 407	9 715	11 514

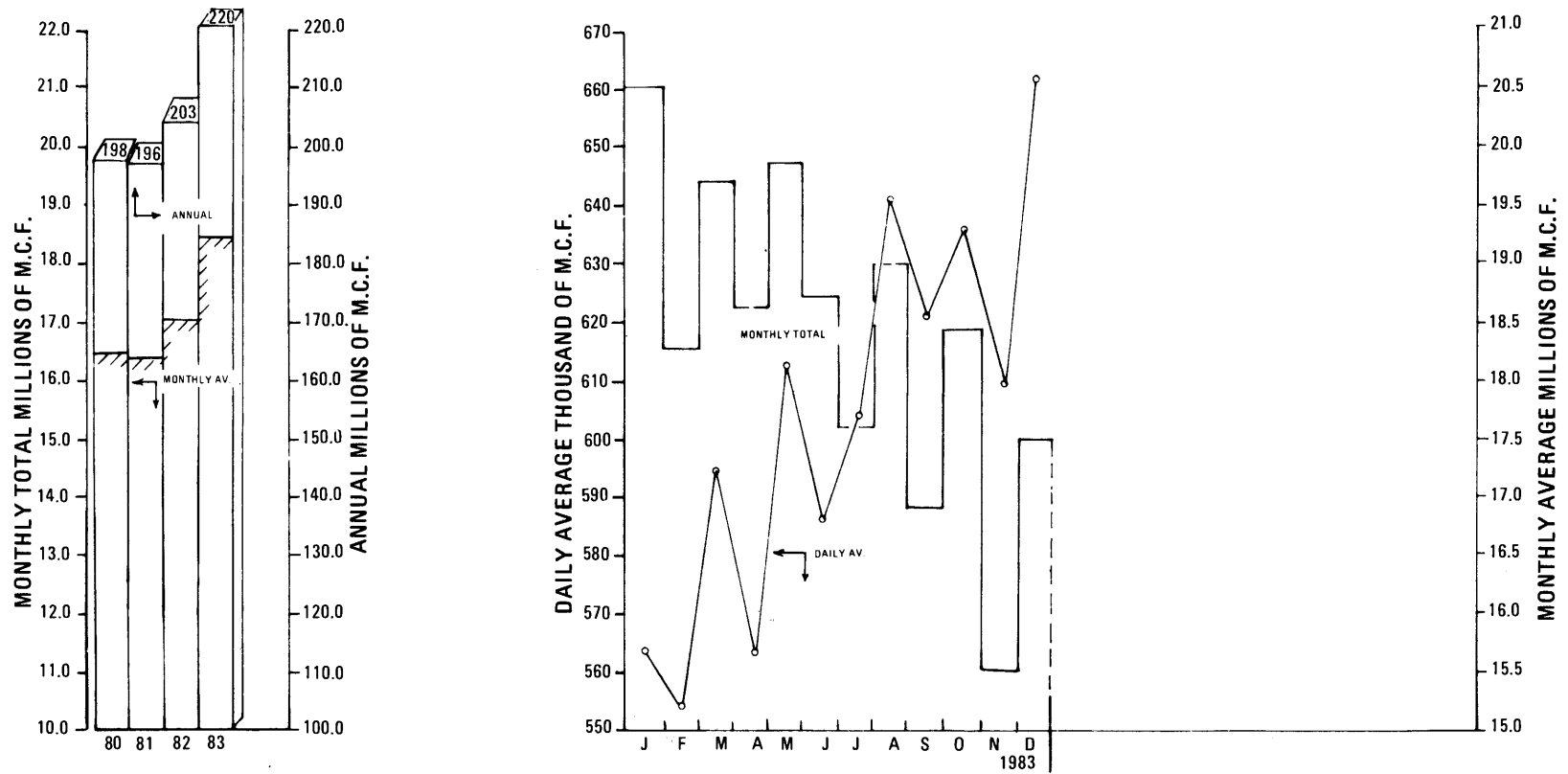
STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD & TOBAGO

CRUDE OIL PRODUCTION



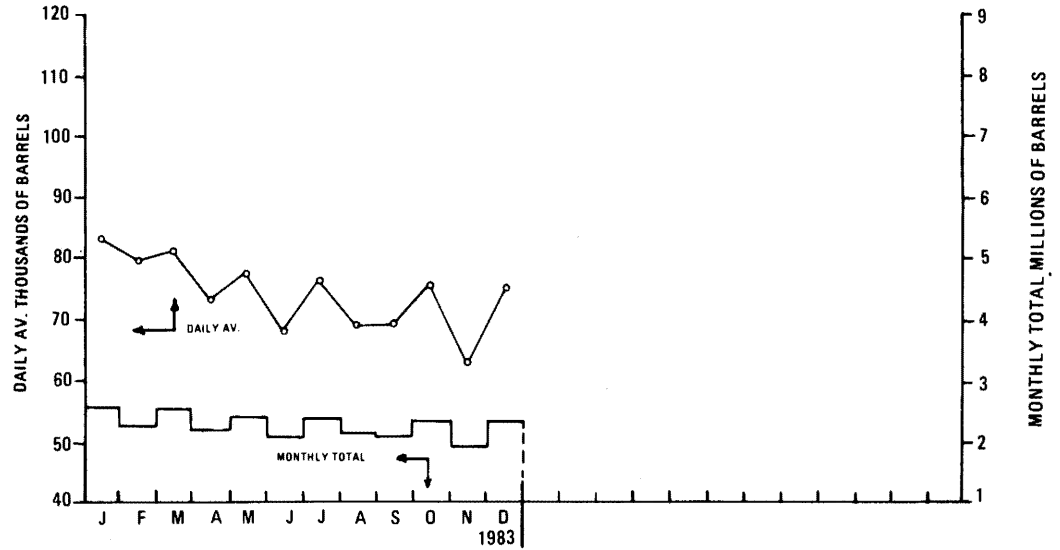
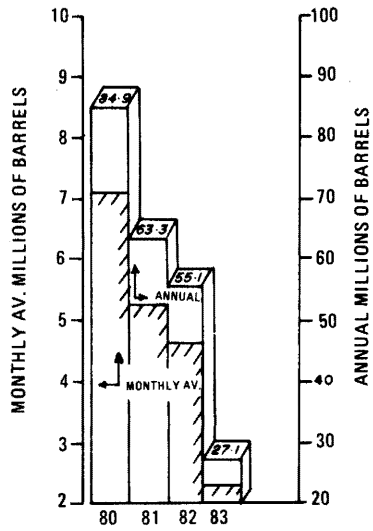
STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD & TOBAGO

NATURAL GAS PRODUCTION



STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD & TOBAGO

REFINERY THROUGHPUT



STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD & TOBAGO

DRILLING

