



TRINIDAD AND TOBAGO



MINISTRY OF PETROLEUM AND MINES

ANNUAL REPORT

FOR THE YEAR

1979

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LIST OF CONTENTS

	Page
LIST OF TABLES	iv
LIST OF FIGURES	iv
LIST OF APPENDICES	v
FOREWORD	vii
OVERVIEW OF THE PETROLEUM SECTOR	1
A SYNOPSIS OF THE ACTIVITIES OF THE GEOPHYSICAL SECTION	3
MINISTRY OF ENERGY AND ENERGY BASED INDUSTRIES – 1979	3
ANNUAL REVIEW 1979	4
DRILLING	5
EXPLORATORY DRILLING	6
DEVELOPMENT DRILLING	7
REVIEW OF FLUID INJECTION OPERATIONS IN TRINIDAD AND TOBAGO – 1979	
WATER INJECTION	15
STEAM INJECTION	16
GAS INJECTION	17
REFINING AND PETROCHEMICAL MANUFACTURE 1979	22
NITROGENOUS FERTILIZERS	25
NATURAL GAS REPORT – 1979	26
SUMMARY OF ACCIDENTS OCCURRING IN THE PETROLEUM INDUSTRY - 1979	28
ROYALTY ASSESSMENTS	30
LEGAL DEVELOPMENTS – 1979	30
STAFF	32
COURSE ON SAFETY IN THE PETROLEUM INDUSTRY	33

LIST OF TABLES

TABLE	Page
I. SUMMARY OF STATISTICS FOR THE TRINIDAD AND TOBAGO PETROLEUM INDUSTRY, 1976 – 1979	2
III. SUMMARY OF WILDCAT DRILLING IN TRINIDAD AND TOBAGO – 1979	8
IV. SUMMARY OF DEVELOPMENT DRILLING IN TRINIDAD AND TOBAGO – 1979.	9
IVA. KEY TO AREAS.	10
V. CRUDE OIL PRODUCTION IN TRINIDAD AND TOBAGO – 1979	11
VI. SUMMARY OF FLUID INJECTION OPERATIONS IN TRINIDAD AND TOBAGO – 1975 – 1979	18
VII. FLUID INJECTION OPERATIONS IN 1979	19
VIII. WATER INJECTION SUMMARY BY PROJECTS – 1979	20
IX. STEAM INJECTION SUMMARY BY PROJECTS – 1979.	21
X. CARBON DIOXIDE INJECTION	21
XI. ANNUAL STATISTICS FOR NATURAL GAS PRODUCTION AND UTILIZATION 1975 – 1979	27
XII. ACCIDENT STATISTICS FOR 1979	29

LIST OF FIGURES

FIGURE

- I. CRUDE OIL PRODUCTION RATE BY MONTHS JULY 1976 – DECEMBER 1979
- II. TRINIDAD AND TOBAGO CRUDE OIL 1979 DAILY AVERAGE BY MONTHS, COMPLETIONS, RECOMPLETIONS AND OTHER WELLS
- III. STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD AND TOBAGO CRUDE OIL PRODUCTION
- IV. STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD AND TOBAGO DRILLING
- V. STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD AND TOBAGO NATURAL GAS PRODUCTION
- VI. STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD AND TOBAGO REFINERY THROUGHPUT
- VII. STATISTICS ON THE PETROLEUM INDUSTRY TRINIDAD AND TOBAGO CRUDE OIL IMPORTS

LIST OF APPENDICES

Appendix

- I. Annual Statistics of Production, Drilling, Refining – Exports and Imports, 1969 – 1979
- II. Monthly Analysis of Drilling and Workover Wells, 1979
- IIA. Monthly Analysis of Footage Drilled, Land and Marine, 1979
- III. Analysis of Monthly Production for the year ended 31st December, 1979
- IIIA. Analysis of Production by Operating Companies, 1979
- IIIB. Daily Average Production by Months for all Companies, 1979
- IIIC. Marine Offshore and Land Production, 1979
- IV. Production and Disposal of Natural Gas, 1979
- V. Export of Refined Products by Destination of Country, 1979
- VI. Movement of Refined Products, 1979
- VII. Movement of Crude and C.H.P.S. – year ended 31st December, 1979
- VIII. Summary of Crude Oil Assessed for Crown Royalty with Prices and Analyses 1979 (for half-yearly Assessment Periods ending 30th June – 31st December)
- IX. Royalty Assessment
- X. The Asphalt Industry

FOREWORD

ANNUAL ADMINISTRATION REPORT 1979

For the first time since the upward production trend which began in 1971, crude oil production in Trinidad and Tobago showed a drop.

On the other hand natural gas production and utilisation continued to increase with most of the additional usage being as a result of the coming on stream of new energy-based industries.

The National Gas Company continued the expansion of the gas transmission system as they completed the installation of the loop line between Picton and Pt. Lisas.

Our refineries continued to suffer from the protectionist approach of the U.S. Government with regards to their "local-based" refineries and consequently our refineries continued to operate at about 50% of their nominal capacity.

Texaco Trinidad Inc. came under heavy criticism from the OWTU with respect to their attitude towards the safety of the workers in the industry, their level of pollution prevention awareness, and their method of producing their fields. As a result of these criticisms being brought forcefully to the attention of the Government, the Government established a Commission of Enquiry into the operations of Texaco Trinidad Inc. Mr. Frank Rampersad was made Chairman of the Commission of Enquiry.

During the year eight (8) blocks in the marine areas off shore Trinidad were put up for competitive bidding. The licences which were being offered were the Production Sharing type (exploration and production licences).

The responsibility of the Ministry were increased, during the latter part of the year, as was reflected by the change in name to the Ministry of Energy and Energy-based Industries. The Ministry's technical staff is thus expected to supervise the operations of these Industries.

The National Energy Corporation, NEC, was formerly established as the supervisory Company for various state investments in the petroleum and energy-based industries.

The Petroleum Taxes Act of 1975 was modified to reflect changes in the taxation policy for production and refining operations in Trinidad and Tobago.

Increases in the prices of certain petroleum products were announced by the Minister of Finance in the 1980 Budget Speech.

The Ministry wishes to express its appreciation of the work done during the year by all workers in the industry and to its staff, whose devotion to duty has helped in promoting a more efficient management of the petroleum sector of the Economy.

MINISTRY OF ENERGY—AND ENERGY-BASED INDUSTRIES

OVERVIEW OF THE PETROLEUM SECTOR 1979

For the first time since the upward production trend in 1979, crude oil production fell by 6 percent. The average daily production stood at 6113 cubic metres or (215,890 barrels).

There was also a decline in drilling activity with an 11 percent decrease in the total drilled depth of 242,981 metres (797,182 feet) and a 15 percent decline in the number of well completions – some 184 for 1979.

Gas production continued its upward trend, with a 7 percent increase in output. Annual production stood at 4.8 billion cubic metres (170 BCF). The increasing consumption by the energy-based industries is partly responsible for this increase. To facilitate the trend in both consumption and production a 14' mile, 20" gas pipeline (loop line) was installed between Picton and Pt. Lisas.

In the refining sector, the refineries continue to operate at 50 percent of their nominal capacity. Refinery throughput dropped by 5 percent from the 1978 level, to 85,9 million barrels per year, in 1979. The protectionist approach of the U.S. Government to their 'local-based' refineries is partly responsible for the decline in refining activity.

In pursuit of increasing output of Crude and Natural Gas, in the future, some eight (8) blocks in the marine offshore areas were put up for competitive bidding. The licences being offered were of the Production Sharing type (exploration and production licenses).

During the year the name of the Ministry was changed from the Ministry of Petroleum and Mines to the Ministry of Energy and Energy-based Industries. The new name reflects the added responsibilities of the Ministry, which now includes the supervision of existing, as well as future, energy-based industries. The National Energy Corporation, NEC was also formally established as the Supervisory Company for various State investments in the Petroleum and Energy-based Sector.

The Budget (1980 Budget) by the Minister of Finance included increases in the prices of certain petroleum products. The Petroleum Taxes Act of 1975 was modified to cater for changes in taxation policy on production and refinery operations in the country.

In the Industry itself, Texaco Trinidad Inc. was accused by the Oil Field Workers Trade Union (O.W.T.U.) of bad safety practises, invironmental pollution, using attrition to reduce the labour force and of deliberately underutilizing production capacity in the fields as well as at the refinery. These allegations led to the Governments establishing a Commission of Enquiry into the operations of Texaco Inc. Mr. Frank Rampersad was made Chairman of the Commission of Enquiry. The Commission began its sitting in April of this year.

TABLE 1

SUMMARY OF STATISTICS FOR THE TRINIDAD AND TOBAGO PETROLEUM INDUSTRY 1976 - 1979

	UNIT	1976	1977	1978	1979
ANNUAL CRUDE OIL PRODUCTION	BBLs	77,672,635	83,619,077	83,777,503	78,249,474
ANNUAL NATURAL GAS PRODUCTION	MSCF	137,959,327	149,588,976	157,919,827	169,740,204
AVERAGE G.O.R.	SCF/BBL	1,776	1,789	1,885	2,169
ANNUAL C.H.P.S. (NATURAL GASOLINE) PRODUCTION	BBLs	50,920	61,091	60,247	47,859
DAILY REFINERY CAPACITY	BBLs/DAY	45,600	456,000	456,000	456,000
ANNUAL REFINERY THROUGHPUT	BBLs	117,594,982	99,536,480	85,881,842	82,856,825
TOTAL WELLS COMPLETED DURING THE YEAR	NO.	207	217	215	184
AVERAGE DEPTH OF COMPLETED WELLS	FEET	4,443	4,250	3,868	4,252
TOTAL FOOTAGE DRILLED DURING THE YEAR	FEET	919,705	922,295	895,098	797,182
OIL AND GAS WELLS COMPLETED DURING THE YEAR	NO.	153	170	170	156
DRILLING SUCCESS - RATIO	PERCENT	73.9	78.3	79.1	84.8
AVERAGE RIGS RUNNING	NO.	14.7	14.7	15.4	13.0

A SYNOPSIS OF THE ACTIVITIES OF THE GEOPHYSICAL SECTION –
MINISTRY OF ENERGY AND ENERGY-BASED INDUSTRIES – 1979

Geophysical data have been prepared for the forthcoming competitive bidding of the "open" marine areas designated for lease to oil companies. Oil companies' representatives viewed these data and held talks with the Ministry's officials. These prepared data have been sold later to interested oil companies.

A Geophysicist of the Ministry has been present during inter-governmental discussions held in Barbados between Trinidad and Tobago and Barbados officials on matters pertaining to the development of hydrocarbon exploration in Barbados. A report was issued as a result of these discussions, with recommendation to the Government of Barbados.

Structure maps of the South Coast, South East Coast and North West Coast presented by Mobil Oil Company have been compared with maps of these areas previously prepared by Texaco, GSI and the Government. Recommendations were made for an extensive seismic survey on land and off-shore Trinidad and Tobago, using the most up-to-date equipment and methods. It was proposed that the marine survey be done first. This recommendation was accepted by Cabinet. In order to carry out this survey, the Government invited tenders from (8) contractors – Oil Companies. The appraisal of these tenders was being carried out, taking under consideration both technical and financial aspects.

Talks with an oil company to lease deep water areas east of Trinidad in order to do hydrocarbon exploration were in progress.

Northern Basin geophysical data were discussed with a foreign oil company which is interested in leasing these areas.

The evaluation of North West marine areas for probable hydrocarbon finding was made; a map and a report were made as a result of the study. Two companies carried out geophysical surveys on land.

Occidental in the Nariva Swamp area approximately 16 miles and Trintoc in the Point Fortin area 5 miles. Seismic surveys were conducted in the marine areas during 1979. The Ministry's geophysicists visited the surveyed areas.

An appraisal was made of Trintoc's map of the South West Peninsula area and discussions were held with Trintoc's geophysicist concerning it. Tenneco made an application to carry out a marine survey in "open" acreage in the Gulf of Paria but this application has been refused.

Three interviews were held with applicants for the post of Geophysicist in the Ministry.

During the year several courses were attended by a junior geophysicist. These included three hosted by Schlumberger on well logging, one on petroleum geology, hosted by Texaco and one on geophysics for geologist hosted by Trinidad-Tesoro.

The fourth Latin American Geological Congress held in Trinidad was attended. A geophysicist also took part in the geological congress excursion to Barbados.

ANNUAL REVIEW 1979

CRUDE OIL PRODUCTION

The country's crude oil production in 1979 was 12.44 million cubic metres (78.25 million bbls). This figure was 6.60 percent lower than that produced last year and was due to the decline in production of 992,000 cubic metres (6.24 million barrels) which was experienced by Amoco, after they had attained their their peak of 7.99 million cubic metres (50.27 million barrels) in 1978. Amoco's share of the off shore production, nevertheless, accounted for 56 percent of the country's total production.

Production from the other major marine oil company, Trinidad Northern Areas Limited (TNA), averaged 7033 cubic metres/day (44,235 bopd). This company was able to reduce the decline experienced over the previous years to ½ percent this year. However, a fire on one of the compressor stations coupled with the standing-up of good producers prevented TNA from recording an increase in total production for the year.

Crude oil production from land fields decreased by 17 percent from last year's average to 5969 cubic metres per day (37,543 bopd).

Trinidad Tesoro maintained the lead as the largest land producer with an average production of 3412 cubic metres/day (21464 bopd) for the year. This was 5.2 percent higher than the previous year's figure and was due primarily to production from new wells in their Mc Kenzie field.

Texaco Trinidad's production averaged 2965 cubic metres/day (18649 bopd) and represents an improvement on the previous year's rate of 2857 cubic metres/day (17972 bopd). Highest production attained by Texaco during the year was 3107 cubic metres/day (19543 bopd) in June. The successful well completions in the Lot 8 area of their Palo Seco field and the success of the thermal oil recovery projects in Forest Reserve have managed to minimize the effects of the drop in production resulting from power outages, and compressor problems leading to low gas lift pressures.

Production from Trintoc, increased by 4 percent to 526,000 cubic metres (3.31 million barrels) from the previous year's figure. The successful completion of wells in their Point Fortin field was responsible for the production increases.

Premier Consolidated Oilfield Limited the country's smallest producer registered a decline this year of 5 percent with a total production of 17,966 cubic metres (113,000 barrels).

DRILLING

During the year the total depth drilled was 242981 metres (797182 feet). This figure represents a 11 percent decrease in drilled depth compared with that achieved last year. A decrease in rig-activity was also registered with cumulative rig month of 156.36 in 1979 being 14 percent lower than the previous year.

The number of wells drilled and completed fell from 215 in 1978 to 184 this year. Of this total 71 were development wells consisting of 151 producers, 8 injectors and 12 abandonments. Of the 10 offshore exploratory wells, two were completed as successful wells, two were abandoned dry, two for mechanical reasons, and the other four were abandoned after testing. Three (3) exploratory wells completed on land were all successful.

Although cumulative rig months in Trinidad Tesoro fell from 59.16 in 1978 to 39.48 this year, this company completed 76 wells: the highest number of completions made by any of the companies in the country for the year. This number includes two marine exploratory wells EG 3 and EG 4 which were abandoned after testing. Sixteen (16) development wells were also drilled in their marine lease from Trintex B and C platforms. In their land operations, the company's main centre of non-thermal development drilling activity was in their Mc Kenzie field where sixteen (16) wells were completed. Development drilling in thermal areas was concentrated in the Guapo, Central Los Bajos and North Fyzabad fields. An injection well was also drilled in the Apex South Quarry field in preparation for the initiation of a steam project next year.

Trinidad Northern areas recorded an increase in rig-activity from 31.97 rig months in 1978 to 33.56 this year and achieved a 19.2 percent increase in cumulative drilled depth of 52,529 metres (172,340 feet) over the same period. Development drilling continued from Platforms 20 and 21 and from the jack-up barge TG 145. Another jack-up barge, the "Ocean Patriot", was utilized for exploratory drilling this year. Thirty-two (32) wells were completed by this company during the year. Of these three (3) were exploratory wells and includes two (2) wells in TTPCL's North Marine field which is operated by TNA. One exploratory well was abandoned dry.

Amoco Trinidad obtained an increase of 10.7 percent in cumulative drilled depth of 46814 metres (156,753 feet) over the previous year in spite of a decline in rig-activity from 40.48 rig months in 1978 to 38.19 this year. This company completed 20 wells during the year, five (5) of which were exploratory wells drilled from the drillship the "Discoverer 511".

EXPLORATORY DRILLING

Twenty (20) exploratory wells were drilled in 1979, seven (7) more than the figure recorded in 1978. Trintoc, the state owned oil company, was the only company that carried out exploratory drilling on land. This company accounted for eight (8) exploratory wells during the year while Amoco, TNA, Trinidad Tesoro and Texaco accounted for six (6), three (3) two (2) and one (1) respectively.

At the beginning of the year Trintoc continued drilling exploratory well FC 271 in the Point Fortin Central area and, on its successful completion, drilled four (4) other exploratory wells in this field. In the Ortoire district the company drilled one (1) well BE 22 to test the Herrera sands. Also, two (2) wells AM-1 and AM-2, were drilled in the Mahaica field specifically for gas. Well AM-1 produced gas when drill stem tested and was closed in awaiting completion, while well AM-2 was drilled and closed in awaiting test.

Six (6) exploratory wells were drilled by AMOCO off the east coast with the drillship "Discoverer 511". After testing and abandoning well West SEG-1 in January 1979 Amoco abandoned two (2) Samaan Deep Test Wells in February for mechanical reasons, before they completed the third Samaan Deep Test well. These wells were programmed to test deep horizons in the Samaan field. Well Samaan Deep Test - 3 was tested and abandoned in September and two months later exploratory well OPR 21, drilled to investigate deep horizons in the Teak field, had to be abandoned as a dry hole. At the end of the year the drill ship was engaged in drilling well NEP-2 to prove up a platform in the Poui field.

TNA, the other marine company, utilized one (1) jack-up "Ocean Patriot" exclusively for exploratory drilling while the other jack-up "TG 145", apart from completing one (1) exploratory well NM15X in February, was engaged in development drilling and workovers during the year. The Ocean Patriot continued drilling S 441 near the Venezuelan boundary and successfully completed it in February. The last exploratory well drilled by this jack-up was NM-17 in the TNA operated Trinidad Tesoro North Marine field. This well was abandoned dry in April.

Off the east coast, Trinidad Tesoro continued exploratory drilling in their Galeota Marine lease using the semi-submersible "Marine 111". Two wells EG 3 and EG 4 were abandoned after testing.

In the Block - 1 lease in the Gulf of Paria Texaco utilized a jack-up rig "Rowan Houston" for drilling well Manicou - 2. This well was spudded in November and is programmed for 4877 metres (16,00 feet) as a gas well.

After testing and abandoning the expendable exploratory well, West SEG-1, in January, two Samaan Deep Test exploratory wells were abandoned for mechanical reasons in February before completing the third Samaan Deep Test well. This well was tested and abandoned in September and two months later the exploratory well, OPR 21, was abandoned as a dry hole. The development wells were completed on Platform D and E in the Teak field and Platform B in the Poui field.

The cumulative drilled depth of 54016 metres (177,217 feet) attained by Trintoc was 48 percent higher than the previous year's total. With three (3) rigs operating throughout the year, an increase in rig months from 21 in 1978 to 34 this year was also achieved. Of 48 wells drilled two were semi-appraisal wells drilled to confirm the gas deliverability and reserves in the Mahaica field. Both wells AM-1 and AM-2 are closed in awaiting final completion after the wells were tested. Thirty (30) wells were completed including three (3) other exploratory wells. These exploratory wells were all completed as oil producers in the Point Fortin Central field. Development drilling including eleven (11) thermal wells were successfully completed in the Parry lands pilot steam project area.

Texaco's drilling activity fell by 56 percent to 12.10 rig months from the previous year. This was due to the single rig programme used by the company in development drilling on land up to November 1979. A Jack-up barge, the "Rowan Houston", was deployed in November to drill a deep exploratory well, Manicou-2, in the Block-1 lease in the Gulf of Paria. In December 1979, another land rig was included on their drilling programme for development drilling. Cumulative depth drilled for the year was 18,450 metres (60,534 feet) as compared with 52,383 metres (171,862 feet) in 1978. For the first half of the year, Texaco concentrated their development drilling in the Forest Reserve field and in mid-May the activity was shifted to the Lot 8 area of their Palo Seco field. The production from these Palo Seco wells were so encouraging that by the year end the company introduced an additional drilling rig to further develop this field. Twenty six (26) wells were completed during the year by Texaco. This included 22 producers, 3 injectors and 1 awaiting workover.

DEVELOPMENT DRILLING

During the year a total of 170 development wells were drilled: a decrease of some 23.8 percent from last years total of 223. There was an increase in the number of marine wells drilled from thirty-eight (38) in 1978 to fifty-six (56) in 1979. This was due mainly to the increase in TNA's drilling activity which accounted for twenty-seven (27) development wells this year as opposed to fourteen (14) drilled in 1978. Development wells were also drilled in marine fields operated by Amoco and Trinidad Tesoro.

TNA continued development drilling from Platforms 20 and 21 and from the jackup rig TH 145. This company achieved a 19.2 percent increase in cumulative depth drilled from last year's figure to 52,529 metres (172,340 feet) this year as cumulative rig months rose from 31.97 to 33.56 over the corresponding period. Eight (8) wells were completed on Platform 20, fourteen (14) on Platform 21 and seven (7) by the jackup rig TG 145. Three (3) of these wells were abandoned dry, two (2) on Platform 21 and one (1) on Cluster 9.

Amoco recorded a cumulative drilled depth of 46814 metres (156,753 feet) this year: an increase of some 10.7 percent over the previous year's figure in spite of a decline in rig months from 40.48 in 1978 to 38.19 this year. Fourteen (14) development wells were completed: eight (8) from the D + E Platforms in the Teak field, and six (6) from the Pouli B Platform. Of this total three (3) wells, Teak E 10, E 10X and Pouli B - 17, were abandoned.

Trintoc drilled thirty-nine (39) development wells during the year. Thirteen (13) of these wells were drilled for enhanced recovery, eleven (11) in Point Fortin for the Parrylands steam soak project and two in Catshill for the Catshill "N" sand waterflood project. One (1) well BE 23 was drilled in the Balata East field as a follow-up to exploratory well BE 22 and the rest were drilled in the Point Fortin field.

TABLE III
SUMMARY OF WILDCAT DRILLING IN 1979 IN TRINIDAD AND TOBAGO

Operator	Well Name	Location	Basic for Location	Lahee Exploratory Classification	Completion Date	Total Depth (ft.)	Name of Deepest Formation	Result Remarks
Amoco T'Dad Oil Co. Ltd	Samaan Deep Test 1	—	S. & SG	C2B	22.1.79	1920	MM9	Abandoned (Mech. Reason)
"	Samaan Deep Test 2	—	"	C2B	5.2.79	2041	MM9	Abandoned (Mech. Reason)
"	West Seg. 1	—	"	C2B	7.1.79	9159	West Sect. '30'	Abandoned (After Testing)
"	Samaan Deep Test 3	—	"	C2B	13.9.79	12625	MM9	Abandoned (After Testing)
"	OPR 21	—	"	C1	27.11.79	14373	MM9	Abandoned (Dry)
"	NEP 2	—	"	A2B	—	7566	—	Drilling
T'dad Tesoro Pet. Co. Ltd.	EG 3	—	"	C2C	1.2.79	11586	—	Abandoned (After Testing)
"	EG 4	—	"	C2A	23.3.79	6837	—	Abandoned (After Testing)
T'dad & T'go Oil Co. Ltd.	FC 271	F15 J86	"	A2B	—	9000	L. Cruse	Testing
"	FC 273	F15 JA 12	"	B2B	16.4.79	8000	L. Cruse	Completed (Oil)
"	FC 276	F15 NN 15	"	A2B	—	7000	L. Cruse	Testing
"	FC 281	F15 JA 10	"	B2B	7.8.79	7500	Cruse	Completed (Oil)
"	FC 287	F15 JB 9	"	B2A	11.9.79	7500	Cruse	Completed (Oil)
"	BE 22	H4 E016	"	A1	—	4700	Herrera	C.I.A.C.
"	AM 1	D 5 JL 9	"	A2B	—	8274	Manzanilla	C.I.A.C.
"	AM 2	D 5 GM 5	"	A2B	—	6164	Manzanilla	C.I.A.C.
Texaco T'dad Inc.	Manicou 2	—	S & SG	A1	—	12430	Pliocene	Drilling
T'dad Northern Range Areas	S 435	F11 ID10	"	A2B	12.2.79	8926	Cruse	Suspended
"	S 441	K24 BN2	"	B3	12.2.79	11068	Cruse	Completed (oil)
"	NM 15X(ST)	F2 LN 7	"	B2C	1.2.79	8770	Manzanilla	Completed (gas)
"	NM 17	F1 HB 1	"	c3	5.4.79	10432	Manzanilla	Abandoned (dry)

TABLE IV
SUMMARY OF DEVELOPMENT DRILL IN 1979 IN TRINIDAD AND TOBAGO

NOTE: This table covers development drilling (in contrast with
wildcat or exploratory drilling which is covered in Table III)

	Field Area Field Area, or District	Number of Producers Completed	Number of Abandoned Wells	Total Completions	Total Drilled	Number of Rigs Actively Drilling or Testing Development Wells on December 31, 1979
(a) Includes 1 steam injector and 2 wells which were completed dry and closed in awaiting workover Footage for SI-2527	1	26	3	29	158026	2
	2	33a	3	36a	146857	2
(b) Includes 3 wells which were completed dry and closed in awaiting workover	3	—	—	—	—	—
	4	44b	1	45b	156733	1
(c) Includes 6 steam injectors Footage drilled — 9704	5	25c	—	25c	33677	—
(d) Includes 1 well which was completed dry and closed in awaiting workover	6	5d	2	7d	10500	1
	7	1e	—	1e	—	—
(e) Includes 1 well which was completed dry and closed in awaiting workover	8	1f	—	1f	—	—
	9	4g	—	4g	9790	—
(f) Includes 1 well which was completed dry and closed in awaiting workover	10	3	—	3	7340	—
	11	17h	3	20h	148646	4
(g) Includes 3 wells which were completed dry and closed in awaiting workover	12	—	—	—	—	—
	13	—	—	—	—	—
(h) Includes 1 water injector Footage drill — 6305						
Totals		159	12	171	671,569	10

TABLE IVA
KEY TO AREA – NUMBERS ON MAP (FIGURE II) ON TABLE IV AND IN TEXT

AREA NUMBER	DESCRIPTION
1	SOLDADO, NORTH MARINE, COUVA MARINE
2	PT. LIGOURE, F.O.S., AREA IV AND GUAPO, POINT FORTIN WEST AND CENTRAL PARRYLANDS, CRUSE
3	BRIGHTON (LAND & MARINE), VISSIGNY, MERRIMAEC
4	PALO SECO, LOS BAJOS, ERIN
5	FOREST RESERVE FYZABAD, POINT FORTIN EAST, NEW DOME, SAN FRANCIQUE
6	QUARRY, COORA, QUINAM, MORNE DIABLE
7	OROPOUCHE
8	PENAL, BARRACKPORE, WILSON, SIPARIA
9	MORUGA NORTH & WEST, ROCK DOME, INNIS, TRINITY, CATSHILL, BALATA, BOUALLIUS
10	GUAYAGUAYARE, MORUGA EAST
11	GALEOTA, TEAK, SAMAAAN, POUI (EAST COAST)
12	SOUTH MARINE (SOUTH COAST)
13	TABAQUITE, POINTE-A-PIERRE
14	ICACOS
15	NORTH COAST

TABLE V

CRUDE OIL PRODUCTION IN TRINIDAD AND TOBAGO – 1979

COMPANY/FIELD	DISCOVERY YEAR	TOTAL WELLS DRILLED	NAME OF PRODUCING FORMATION	ANNUAL PRODUCTION BBLs.		CUMULATIVE PRODUCTION THROUGH, DECEMBER 1979 '000 BBLs.
				1978	1979	
<u>T. T. P. C. L.</u>						
FYZABAD	1920-1938	922	MIOCENE	1,518,242	1,430,893	159,067
GUAPO/BOODOOSINGH	1922	575	MIOCENE	861,385	778,239	39,742
MORUGA EAST	1953	70	MIOCENE	69,297	90,518	2,285
MORUGA NORTH	1956	23	MIOCENE	17,157	21,127	979
MORUGA WEST	1957	129	MIOCENE	78,728	72,176	8,808
COORA/QUARRY	1936	616	MIOCENE	1,188,842	1,052,166	84,824
PALO SECO/ERIN/MACKENZIE	1926	1,263	MIOCENE	2,459,887	3,097,096	91,171
NORTH MARINE	1956	19	MIOCENE	30,635	0	1,269
GALEOTA	1972	66	MIOCENE	517,507	678,067	3,975
CENTRAL LOS BAJOS	1973	119	MIOCENE	657,729	580,373	3,236
OROPOUCHE	1975	3	MIOCENE	32,524	21,696	192
BARRACKPORE	1977	4	MIOCENE	16,203	14,624	39
COMPANY TOTAL	—	3,809	—	7,448,136	7,836,975	395,587

TABLE V
CRUDE OIL PRODUCTION IN TRINIDAD AND TOBAGO – 1979

COMPANY/FIELD	DISCOVERY YEAR	TOTAL WELLS DRILLED	NAME OF PRODUCING FORMATION	ANNUAL PRODUCTION BBLs		CUMULATIVE PRODUCTION THROUGH DECEMBER 1979 '000 BBLs.
				1978	1979	
TRINTOC						
BALATA EAST & WEST	1952	51	MIOCENE	15,312	33,902	2,165
CATSHILL	1950	131	MIOCENE	254,810	220,352	21,791
INNISS	1956	38	MIOCENE	57,582	46,842	5,843
ROCK DOME	1962	3	MIOCENE	0	0	16
PENAL	1936	269	MIOCENE	545,319	485,934	58,710
NEW DOME	1928	31	MIOCENE	9,495	6,639	3,097
POINT FORTIN EAST	1929	149	MIOCENE	389,698	363,746	23,830
SAN FRANCIQUE	1929	27	MIOCENE	14,471	16,540	5,897
AREA IV & GROUP	1913	192	MIOCENE	594,013	699,741	34,932
PARRYLANDS	1913-1918	398	MIOCENE	331,287	359,302	35,622
POINT FORTIN CENTRAL	1916	162	MIOCENE	732,826	875,118	14,914
POINT FORTIN WEST	1907	308	MIOCENE	236,491	201,147	19,023
LOS BAJOS	1913	29	MIOCENE	0	0	546
ERIN	1963	4	MIOCENE	0	0	710
COMPANY TOTAL	—	1,792	—	3,181,304	3,309,263	227,096

TABLE V
CRUDE OIL PRODUCTION IN TRINIDAD AND TOBAGO – 1979

COMPANY/FIELD	DISCOVERY YEAR	TOTAL WELLS DRILLED	NAME OF PRODUCING FORMATION	ANNUAL PRODUCTION BBLs		CUMULATIVE PRODUCTION THROUGH, DECEMBER 1979 '000 BBLs.
				1978	1979	
P.C.O.L.						
SIPARIA	1957	5	MIOCENE	6,771	7,369	807
SAN FRANCISQUE	1929	75	MIOCENE	36,329	32,968	2,970
FYZABAD	1918	253	MIOCENE	56,142	55,363	12,953
PALO SECO	1915	83	MIOCENE	6,067	5,440	1,618
BARRACKPORE	1970	3	MIOCENE	7,316	6,919	115
ICACOS	1955	11	MIOCENE	7,038	6,637	447
DEFUNCT FIELDS	1954	19	MIOCENE	0	0	323
COMPANY TOTAL	—	449	—	119,663	114,696	19,233
T.N.A.						
FOS – FT	1954	30	MIOCENE	188,111	130,712	3,871
SOLDADO	1955	485	MIOCENE	16,010,817	16,014,230	355,571
COMPANY TOTAL	—	515	—	16,198,928	16,144,942	359,442
AMOCO						
TEAK	1971	70	MIOCENE	15,448,399	14,156,833	115,441
SAMAAN	1971	44	MIOCENE	18,233,726	14,773,752	109,126
POUI	1974	34	MIOCENE	16,594,993	15,111,313	67,084
COMPANY TOTAL	—	148	—	50,277,118	44,041,898	291,651
COUNTRY'S TOTAL	—	11,072	—	83,777,503	78,249,474	1,876,509

TABLE V
CRUDE OIL PRODUCTION IN TRINIDAD AND TOBAGO – 1979

COMPANY/FIELD	DISCOVERY YEAR	TOTAL WELLS DRILLED	NAME OF PRODUCING FORMATION	ANNUAL PRODUCTION BBLs.		CUMULATIVE PRODUCTION THROUGH, DECEMBER 1979 '000 BBLs.
				1978	1979	
TEXACO						
GUAYAGUAYARE	1902	697	MIOCENE	1,251,670	1,207,378	80,951
TRINITY	1956	95	MIOCENE	204,955	194,706	14,207
BARRACKPORE	1911	328	MIOCENE	540,293	553,536	26,381
OROPOUCHE	1944	126	MIOCENE	244,962	217,795	5,744
MORNE DIABLO/QUINAM	1926	—	MIOCENE	50,933	57,437	7,481
FOREST RESERVE	1913	2,011	MIOCENE	2,346,012	2,613,310	244,113
PALO SECO	1929	—	MIOCENE	1,050,161	1,121,000	84,940
BRIGHTON	1903	615	MIOCENE	591,599	586,423	70,209
ERIN	1963	23	MIOCENE	82,762	84,772	2,150
COUVA MARINE	1963	6	MIOCENE	0	0	301
CRUSE	1913	150	MIOCENE	65,802	56,828	25,644
WILSON	1936	77	MIOCENE	97,430	85,075	19,364
TABAQUITE	1911	225	MIOCENE	25,775	23,440	1,644
BALATA CENTRAL	1949	6	MIOCENE	0	0	371
COMPANY TOTAL*	—	4,359	—	6,552,354	6,801,700	583,500

REVIEW OF FLUID INJECTION OPERATIONS TRINIDAD AND TOBAGO DURING 1979

In 1979, crude oil produced by wells under the influence of fluid injection topped the 7 million barrel level for the first time in the history of the local petroleum industry. As was the case last year, 31% of this record production came from Amoco's waterflood project. The year saw the demise of natural gas injection as a practicable method of secondary oil recovery or reservoir pressure maintenance in the face of diminishing gas supplies on land. On the other hand, thermal recovery projects, although affected by numerous problems, both mechanical and geological, managed to show an improvement in performance over that of previous years, and there was every indication that there will be continued growth and expansion in this sphere of activity in the future.

Fluid injection and production statistics for the period 1975 to 1979 are summarized in Table V1; a graphical presentation of these statistics is also shown in Figure V. A summary of fluid injection operations by company is also shown in Table V11.

WATER INJECTION:

Averaging a production rate of 10,800 bopd, water injection operations were the source of more than half (55.6%) of the oil produced by fluid injection operations in 1979. An average rate of injection of 19,369 bopd was maintained in the 17 active waterflood schemes. This level of activity has been due in large measure to Amoco's Teak water flood project. The number of active waterflood projects in the country decreased by one, with the termination of that company's Samaan Pilot Project in June.

Amoco Trinidad Oil Company continued water injection in Fault Blocks '11' and '111' of their Teak field flood during the year. Water injection in the Teak field was initiated in April 1977 and by the end of 1979 a cumulative total of 29.4 million barrels of water had been injected into the two fault blocks. The company produced an average of 6,120 bopd by water injection during the year.

Texaco operated 10 waterflood schemes during the year which produced a total of 1.3 million barrels of oil. As in the previous year, 6 of these schemes were located in the Western District and 4 in the Eastern District. The problems experienced by the operators in keeping their projects in operation and the generally high water-cuts shown by the schemes were a reflection of the age of the project and of the fields, the average age of the producing wells being about 30 years. Casing failure resulting from sand production has been common to all of the projects.

In the Trinity field project, in addition to mechanical problems, numerous water break-outs occurred in that highly faulted area. Injection rates in the Navette '410' project fell because of mechanical problems in the water treatment plant, while the Rancho Quemado project was affected by difficulties encountered in obtaining a bacteria-free water supply for injection.

Trinidad-Tesoro's 4 active cyclic waterflood schemes produced 50,000 barrels of oil during the year. An average of 3,200 bwpd was injected into 3 reservoirs. Water injection in the CO/UC/100, CO/UC/110 and CO/UC/314 reservoirs continued during 1979 and by the end of the year a total of 1.33 million barrels was injected. Injection in the CO/UC/100 reservoir was achieved through the single injector CO141, with reservoir pressure increasing by approximately 150 psi during the year. The injection cycle of the CO/UC/314 reservoir continued for the fourth year. There was no significant increase in reservoir pressure during the year, indicating that either the reservoir is larger than estimated or that there is leakage from the reservoir. No water was injected into the FM/UF/169 reservoir because of problems arising at the injection facilities. Similar problems also affected injection rates in the Coora waterflood schemes.

In spite of a 27% increase in water injection rates during 1979, oil production in Trintoc's Catshill CO-30 Sand waterflood project fell by 32.8% to an average of 178 bopd during the year. The decline in performance of this project began in January and continued unabated throughout the year. Cumulative oil produced from this reservoir to date amounts to 5.1 million barrels of which 8.75% is secondary production; cumulative water injected into the reservoir is 2.9 million barrels.

In the proposed Catshill 'N' Sand waterflood, 2 offtake wells were drilled and completed in 1979.

This year, the performance of TNA's Main Field waterflood project was adversely affected by electrical and mechanical problems experienced by the injection plant facilities, and by severe water channelling in the '8011' reservoir. Water injection rate averaged 5000 bpd, that is, the equivalent of 50% of the plant's capacity. A shortage of gaslift gas, which resulted in the closure of some offtake wells, also limited all production. The '8011' reservoir produced an average of 855 bopd during the year; this is a 6% decrease from last year's figure. Cumulative water injected into the reservoir at the end of 1979 was 8.5 million barrels; cumulative secondary oil produced was 0.6 million barrels.

Water injection activity in Trinidad and Toabgo for 1979 is summarized by company and project in Table V111.

STEAM INJECTION:

Nineteen Seventy Nine was another year during which thermal oil recovery projects contributed substantially to the volume of crude oil produced in the country. Oil production from steam injection projects increased by 17.8% from last year's figure to average 8,300 bpd, while correspondingly, the volume of steam injected increased by 31.6% to 7.4 million barrels; overall production-to-injection ratio for all projects fell however, from last year's figure of 0.45 to 0.41 barrel of oil produced per barrel of water injected.

Trinidad-Tesoro continued their vigorous steamflooding programme during the year. This was reflected in a 7.4% increase in the company's thermal oil production figure, the 2 million barrels of crude produced by these steam injection projects representing 26% of their annual production. This was the same level of contribution to production by thermal projects as in the previous year. Steam injection rates averaged 7,629 bpd for the year, that is, a 18% decrease from the 1978 figure.

There are now 21 patterns in the N.W. Palo Seco Steamflood, one less than the year before. Continuous steam injection into one of the patterns had to be terminated due to premature steam breakthrough in one well and the eruption of mud in another. Due to the occurrence of two blowouts, steam injection rates in the Palo Seco field decreased from 8,800 bpd in October 1978 to about 6,300 bpd in September 1979. Steam-oil ratio averaged 2.28 barrels of steam per barrel of oil for the year.

Central Los Bajos, 18 wells underwent cyclic steam stimulation and one well was put on continuous steam injection. It is evident from the increased production of neighbouring wells, that the cyclical steaming of updip wells on the periphery of the reservoir in the project area is causing an effective steamflood.

The old Fyzabad thermal project has now been replaced by the thermal project associated with the Upper Forest and Upper Cruse reservoirs of the Sewlal Trace area of the Fyzabad field. Five injectors have been drilled to steamflood the Upper Forest Sands and 3 were drilled to the Upper Cruse.

In an effort to overcome the severe mechanical problems which plagued the thermal recovery projects in Guapo, viz casing joint pullouts and liner failures, Trinidad Tesoro instituted a development drilling programme in which wells were completed using cased-hole gravel packs with higher grade casing and liners than were employed previously.

Good steamflood performance in Texaco's 3 thermal projects at Forest Reserve accounted for an early rise in production during January to June. There was a subsequent steep decline in production during the latter half of the year due to downtime on gaslifting wells, loss of electricity, and downtime in steam production. In spite of the problems thermal projects produced an average of 2,690 bopd, which was an increase of 860 bopd over the production of the previous year. Fluid injection also showed an increase in 1979, 4.6 million barrels of steam and hot water being injected as compared to 2.4 million barrels during the year before.

The Project 111 Amplification Steamflood appeared to be responding to steam injection and push-pull operations on the offtake wells were started this year to help alter mobility ratios. This project suffered mechanical problems such as casing, cement and liner failures which had a negative effect on its productivity. No response was observed in the Phase 1 Expansion steamflood project in which the average reservoir depth is 800 feet. Not unexpectedly, however, steam breakout was a major problem here. In February, the fluid injected in the Project 1V Hot Waterflood was changed from saltwater to freshwater.

Table 1X summarizes steam injection activity, by company and projects, for 1979.

GAS INJECTION

As Table X indicates, the Texaco Guayaguayare '007' Gas & Water Injection Project now holds the distinction of being the only project in the country in which natural gas was injected in 1979. An average volume of 51 mcfd was injected during the year.

Carbon Dioxide:

Due to mechanical problems at Point Lisas and Forest Reserve, less than 3 million cubic feet per day of carbon dioxide were injected in Texaco's 3 projects although there exists plant capacity capable of producing 8 million cubic feet of gas daily. Carbon dioxide projects produced 311 bopd, a 33% drop when compared with the 1978 figure.

Injection of CO₂ in Project 1 was discontinued in April due to the lack of an adequate supply of the gas and the project is now 'slugging' with water. Repressuring of the Lower Forest Zone '5' with carbon dioxide continued during the year; it is estimated that 38.4 thousand barrels of secondary oil were recovered from this reservoir through CO₂ injection.

A summary of carbon dioxide injection activity is presented at Table X.

TABLE VI
SUMMARY OF FLUID INJECTION OPERATIONS IN TRINIDAD AND TOBAGO: 1975 – 1979

YEAR	NO. OF PROJECTS IN OPERATION AT END OF YEAR				INJECTION VOLUMES			CRUDE OIL PRODUCTION					
	Gas	Water	Steam	Carbon Dioxide	Natural Gas (Mmscf)	Water and Other Fluids (Bbls)	Steam (Bbl)	OIL PRODUCED BY WELLS UNDER PROJECT INFLUENCE (Bbl)				Oil expressed as a percentage of Country's Total production	
								Gas Inject. Projects	Water Inject. Projects	Thermal Recovery Projects	Carbon Dioxide Projects	All Projects	
1975	8	16	6	2	1,443	13,758,293	1,530,743	352,920	1,992,222	1,395,432	146,105	3,386,679	4.9
1976	7	16	8	3	607 1189*	18,536,272	2,076,772	414,364	2,001,986	1,223,092	203,842	3,843,284	5.0
1977	2	18	9	3	204 1686*	26,455,049	4,353,607	61,710	3,313,246	1,923,299	154,575	5,452,830	6.5
1978	2	18	12	3	101 768*	24,312,504	5,606,776	—	3,844,276	2,572,602	170,379	6,587,257	7.9
1979	—	17	10	3	19 1054*	22,755,841	7,378,320	—	3,947,162	3,029,681	113,675	7,090,518	9.1

* CO₂ INJECTED IN FOREST RESERVE PROJECTS.

TABLE VII
FLUID INJECTION OPERATIONS – 1979

WATER INJECTION:

COMPANY	No. of Active Projects	Water Injected (Bbl)	FLUID PRODUCED			Water Cut (%)
			Oil (Bbl)	Water (Bbl)	Gas (Mscf)	
AMOCO	1	12,765,655	2,233,454	66,115	1,286,895	3
TEXACO	10	7,069,951	1,303,809	2,144,244	2,182,460	62
T.N.A.	1	1,408,101	312,162	261,542	646,094	46
T.T.P.C.L.	4	1,164,586	32,902	11,540	27,900	26
TTOC	1	347,548	64,835	33,037	16,227	34
TOTAL	17	22,755,841	3,947,162	2,516,478	4,159,576	39

STEAM INJECTION:

COMPANY	No. of Active Projects	Steam Injected (Bbl)	FLUID PRODUCED			Prod'n/Inj. Ratio (Bbl/Bbl)
			Oil (Bbl)	Water (Bbl)	Gas (Mscf)	
TTI	3	4,593,720	981,998	1,813,813	586,092	0.2
T.T.P.C.L.	7	2,784,600	2,047,683	1,125,305	74,467	0.7
ALL CO	10	7,378,320	3,029,681	2,939,118	^{660,559} 660,550 *	0.4

CARBON DIOXIDE INJECTION:

COMPANY	No of Active Projects	CO ₂ Injected (Mscf)	FLUID PRODUCED			GOR (Scf/Bbl)
			Oil (Bbl)	Water (Bbl)	Gas (Mscf)	
TEXACO	3	1,053,770	113,675	114,093	270,455	2,379

NATURAL GAS INJECTION:

COMPANY	No. of Active Projects	Gas Injected (Mscf)	FLUID PRODUCED			GOR (Scf/Bbl)
			Oil (Bbl)	Water (Bbl)	Gas (Mscf)	
TEXACO	–	18,653	–	–	–	–

* Gas and Water Injection Project – no production attributed to gas injection.

TABLE VIII
WATER INJECTION SUMMARY BY PROJECTS – 1979

COMPANY	FIELD	PROJECT	Water Injected (Bbl)	FLUID PRODUCED			Water Cut (%)
				Oil (Bbl)	Water (Bbl)	Gas (Mscf)	
TTI	F/Reserve	(UCRA)*	98,391	—	—	—	—
		UCWE-Middle Field	153,304	52,639	40,460	51,558	44
		U. Cruse-'645' Sd.	492,677	73,034	82,688	117,013	53
		Bernstein UM Cruse (Proj. IV Hot Water Flood)	289,843	41,985	19,620	58,431	32
	Guayaguayare	'Navette '007'	1,648	—	—	—	—
		'Navette '410'	539,515	220,233	209,640	956,191	49
		'410' Extension	1,914,527	223,308	744,129	270,504	77
		'307' Waterflood	1,199,019	96,348	106,879	111,599	53
	Trinity Palo Seco	'307' Extension	815,284	190,711	290,293	224,536	60
		Shallow Herrera	221,077	25,560	22,151	30,224	46
		Rancho Quemado)	1,201,305	196,638	489,599	147,797	71
		LF '234' sd.)	143,361	183,353	138,785	214,607	43
TTI	All Fields	All Projects	7,069,951	1,303,809	2,144,244	2,182,460	43
TTPCL	Coora	CO/UC/100/1	316,913	14,529	963	11,362	6
		CO/UC/110/1	644,641	—	—	—	—
		CO/UC/314/1	203,032	—	—	—	—
		CO/UC/317/II	—	18,373	10,577	16,538	36
TTPCL	All Fields	All Projects	1,164,586	32,902	11,540	27,900	26
TTOC TNA	Catshill Soldado	CO – 30 sd.	347,548	64,835	33,037	16,227	34
		Cruse	1,408,101	312,162	261,542	646,094	46
ATOC	Teak	A/C/E Project	12,765,655	2,233,454	66,115	1,286,895	3
ALL CO.	All Fields	All Projects	22,755,841	3,947,162	2,516,478	4,159,576	38

* Carbon Dioxide/Water Injection Project.

TABLE IX
STEAM INJECTION SUMMARY BY PROJECTS – 1979

COMPANY	FIELD	PROJECT	Steam Injection (Bbl)	FLUID PRODUCED			Prod'n /Inj'n Ratio (Bbl)
				Oil (Bbl)	Water (Bbl)	Gas (Mscf)	
TTI	Forest Reserve	Project 3	3,343,741	810,253	1,724,586	447,821	0.2
		Forest Sd.	972,734	137,797	57,264	120,148	0.1
		Phase I Expansion					
		Project IV					
		Hot Waterflood	277,245	33,948	31,963	18,123	0.1
TTI	All Fields	All Projects	4,593,720	981,998	1,813,813	586,092	0.2
TTPCL	Central Los Bajos	Main Project	70,079	292,229	87,013	407	4.2
		Patterns 1-5	30,940	203,365	53,808	–	6.6
	Fyzabad Guapo	Main Project	191,782	244,392	44,788	419	1.3
		Exp. Gen. 3	161,032	184,209	40,753	7,360	1.1
	Palo Seco	Exp. Areas 1A-2D	198,931	177,051	175,956	9,486	0.9
		Main Project	1,583,121	694,344	410,960	56,795	0.4
		Patterns 1-5	548,715	252,093	312,027	–	0.5
TTPCL	All Fields	All Projects	2,784,600	2,047,683	1,125,305	74,467	0.7
ALL CO.	All Fields	All Projects	7,378,320	3,029,681	2,939,118	660,559	0.4

TABLE X
CARBON DIOXIDE INJECTION

COMPANY	FIELD	PROJECT	FLUID INJECTED		FLUID PRODUCED			GOR (Scf/Bbl)
			Water (Bbl)	Co ₂ (Mscf)	Oil (Bbl)	Water (Bbl)	Gas (Mscf)	
TTI	Forest Reserve	UCRA – Project I	98,391	328,487	83,131	112,099	183,131	2,203
		Forest Sands	–	115,835	4,567	298	4,385	960
		Forest Sd. Zones	–	609,448	25,977	1,696	82,939	3,193
TOTAL	All Fields	All Projects	98,391	1,053,770	113,675	114,093	270,455	2,379

NATURAL GAS INJECTION SUMMARY BY AREAS – 1979

COMPANY	FIELD	PROJECT	GAS INJECTED (MSCF)	OIL PRODUCED *
TTI	Guayaguayare	'007' Gas + Water	18,653	

* No production attributed to gas injection.

REFINING AND PETROCHEMICAL MANUFACTURE 1979Refining

The severe cutback in crude running levels, particularly in the Caribbean and European refineries in recent years, eased in 1979 for refineries in Trinidad and Tobago. Crude throughputs reached levels which improved refinery economics especially as the amount of fuel oil produced was minimized.

Averaged refinery throughput in 1979 was 227,005 barrels per day, a drop of 3.5% from the corresponding figure for 1978. The following table lists daily average throughputs for the Texaco and Trintoc refineries over the decade:—

YEAR	AVERAGE DAILY THROUGHPUT (BLS PER DAY)		TOTAL
	TEXACO	TRINTOC	
1970	364,368	69,870	424,238
1971	331,297	67,427	398,724
1972	326,777	67,381	394,158
1973	321,648	66,492	388,140
1974	301,759	56,613	358,372
1975	187,866	46,782	234,648
1976	266,274	54,994	321,268
1977	217,555	55,124	272,629
1978	183,866	51,398	235,264
1979	175,367	51,638	227,005

Table 17

For the year 1979 total crude oil refined in Trinidad and Tobago was 82,856,825 barrels. Texaco processed 64,008,955 barrels or a daily average of 175,367 barrels, representing a decrease of 4.6% from the 1978 level.

Under the existing economic conditions, Texaco's refinery has met the challenge by reducing crude throughput to the point where downstream processing could be provided for most of the fuel oil produced. This was accomplished; by shutting down the older smaller and less efficient crude units and reducing unit throughputs on the remaining operating crude distillation units to a level where maximum fractionation efficiency could be attained.

In July 1979, in an effort to maximize the utilization of refining capacity and downstream refining processes, Texaco carried out a test run at the Point-a-Pierre refinery to desulphurize Arabian Light Crude. The test run was successful and the operation continued during the year resulting in a total production of 1.1 million barrels of desulphurized crude. The 'reconstituted HTU processed Arabian Light Crude' was exported to the U.S. East Coast.

At Trintoc total throughput for the year amounted to 18,847,870 barrels or a daily average of 51,638 barrels/day, a small rise of 0.5% over the volume processed in 1978.

This year there was some improvement in product disposal as the company was able to secure new contracts for fuel oil, its major product. However, in November/December throughput had to be cutback as delays in the actual lifting of fuel oil cargoes by contracted customers resulted in high stocks. This necessitated a reduction of the processing level in order to minimize the production of more fuel oil.

A major fire on the crude distillation unit on 23rd July resulted in a 3-week shutdown as repairs to the considerable amount of damage had to be effected. This fire occurred only two days after inspection and as a result the conversion complex, though unaffected by the fire, was unable to resume operation (due to lack of feedstock) until the crude distiller was re-commissioned.

The main refinery products were:—

TABLE 18

PRODUCTS	MILLION	BARRELS	PER CENT CHANGE BETWEEN 1978 AND 1979
	1979	1978	
FUEL OILS	43.5	45.5	-4.4
GASOLINES	15.1	17.1	-11.7
GAS/DIESEL	11.7	10.1	+15.8
AVIATION TUR- BINE FUEL	2.5	2.2	+13.6
KEROSENE	3.2	4.5	-28.9
LUBES/GREASES	0.7	0.7	—
PETROCHEMICALS	1.0	0.8	+25
DESUPULPHURISED CRUDE	1.1	—	—

TABLE 19

REFINED PRODUCTS BALANCE 1979

AVAILABILITY	MILLION (bbls)	DISPOSAL	MILLION (bbls)
STOCK AT 1st JAN.	9.4	SHIPMENTS	70.5
		BUNKERS	4.2
		LOCAL CONSUMPTION	0.9
PRODUCTS OBTAINED CRUDE DELIVERED	79.6	STOCK AT 1st. DECEMBER	13.4
	89.0		89.0

Crude feedstock to the country's refineries originated from the following sources:—

TABLE 20

NAME OF CRUDE	COUNTRY	AMOUNT (BBLs)	PER CENT TOTAL
TEXACO	—	12,256,602	14.71
ARABIAN LIGHT	SAUDI ARABIA	12,821,211	15.38
ARABIAN MEDIUM	SAUDI ARABIA	969,114	1.16
ARABIAN HEAVY	SAUDI ARABIA	23,813,760	28.57
DURI	INDONESIA	21,648	0.03
SAIZ	LIBYA	133,994	0.16
CABINDA	WEST AFRICA	4,373,276	5.25
MINAS	INDONESIA	6,091,606	7.31
ANGOLAN	ANGOLA	787,119	0.94
CINTA	INDONESIA	545,490	0.65
LIGHT NAPHTHA	SAUDI ARABIA	1,076,509	1.29
ZAIRE	ZAIRE	863,103	1.04
DUBAI	UNITED ARAB EMIRATES	8,526	0.01
ARABIAN LIGHT BERRI SARI	SAUDI ARABIA	241,310	0.29
	SAUDI ARABIA	484,136	0.58
TEXACO SUB-TOTAL		64,487,404	77.38
TRINTOC			
TRINIDAD	—	18,847,864	22.61
TRINTOC SUB-TOTAL		18,847,864	22.61
TRINIDAD-TESORO			
TRINIDAD	—	7,830	0.01
TRINIDAD-TESORO SUB-TOTAL		7,830	0.01
TOTAL		83,343,098	100

CRUDE OIL BALANCE, 1979

Table 21

AVAILABILITY	MILLION (bbls)	DISPOSAL	MILLION (bbls)
STOCK AT 1st JANUARY	4.2	EXPORTS	46.3
PRODUCTION	78.2	DELIVERED TO REFINERY	82.9
IMPORTS	52.2	LOSS FROM PRODUCTION	0.7
		STOCK AT 31st DECEMBER	4.7
	134.6		134.6

PETROCHEMICALS

Production of petrochemical intermediates from the Texaco refinery amounted to 1,001,437 barrels in 1979 as compared to 854,341 barrels in 1978, an increase of 17.2%.

Low plant downtime at the major petrochemical units resulted in increased production of normal paraffins benzene and toluene.

PER CENT OF TOTAL PRODUCTION

TABLE 22

	1979	1978	PER CENT CHANGE
NORMAL PARAFFINS	61.4	61.9	-0.5
TOLUENE	21.1	19.3	1.8
BENZENE	7.0	6.3	0.7

Cyclohexane production was again low in 1979 mainly because of problems with the hydrogen recycle compressor. Other factors affecting cyclohexane manufacture were an extended shutdown for pipework repairs and the recurring problem of unavailability of hydrogen from Federation Chemicals Limited. The scheduled shutdown of the Catalytic Polymerization and Nonene units for Test and Inspection resulted in decreased production of nonene and tetramer for the year. T & TEC power failures/outages again affected the operation of all petrochemical units in 1979.

PRODUCTION AND EXPORTS OF IMPORTANT PETROCHEMICAL INTERMEDIATES
TRINIDAD AND TOBAGO (Quantities in Barrels)

Table 23

	YEAR 1979		YEAR 1978	
	PRODUCTION	EXPORTS	PRODUCTION	EXPORTS
NORMAL PARAFFINS	614,980	610,307	522,237	526,507*
DI-ISOBUTYLENE	274	—	2,308	6,792*
NONENE	32,652	37,983*	43,563	41,911
TETRAMER	14,118	23,971*	21,243	14,833
BENZENE	70,342	80,323*	53,228	65,280
TOLUENE	211,758	236,314*	162,689	134,154
XYLENE	24,110	21,819	21,263	17,892
CYCLOHEXANE	26,752	21,853	15,539	30,702*
UNREFINED NAPHTHENIC ACID	9,366	15,496	12,271	8,298

*Excess of Export Over Production Made Up From Stocks

NITROGENOUS FERTILIZERS

Net Production of Anhydrous Ammonia totalled 452,431 short tons corresponding to an average daily production of 1,240 short tons/day and representing an overall decrease from 1978 production of 12.3%. Of this total, FedChem produced 103,053 short tons a drop of 35.6% whilst Tringen's production rose by 15.4% to 349,378 short tons. Production of Ammonium Sulphate and Urea decreased by 6.6% and 11.6% to 77,664 and 69,922 short tons respectively.

NATURAL GAS REPORT – 1979

The production of natural gas for the year 1979 amounted to a cumulative figure of 4806 million cubic metres (169,740 mmcf) with an average daily production of 13.2 million cubic metres (465 mmcf). This represents a 7.5% increase in production over the corresponding figure for 1978.

Amoco Trinidad Oil Company was responsible for just under 75% of this total with an average daily production of 9.6 million cubic metres (340 mmcf). T.N.A. produced an average of 1.8 million cubic metres/day (64 mmcf/d) with the remaining companies – Trinidad-Tesoro, Texaco and Trintoc producing 1.7 million cubic metres/day (61 mmcf/d).

Overall, gas utilization increased from 63.6% in 1978 to 66 percent of the total gas produced for the year 1979 and this is reflected in a 2 percent decrease in the quantity of the gas flared. In 1979, gas flared without utilization amounted to 1605 million cubic metres (56700 mmcf) or 4.4 million cubic metres/day (155 mmcf/d).

Gas consumed as fuel by the oil companies accounted for 18 percent of the total gas produced which represents an average of 2.4 million cubic metres/day (188 mmcf/d), while gas consumed by non-oil companies as fuel was approximately 2.7 million cubic metres/day (95 mmcf/d). The largest non-oil company consumer was the Trinidad and Tobago Electricity Commission which utilized 1.7 million cubic metres/day (60 mmcf/d) in the generation of electricity. In the manufacture of fertilizers, a total of 2.2 million cubic metres/day (77.3 mmcf/d) of natural gas was consumed with 45 percent utilized as fuel and the remaining 55 percent used as process gas.

NEW FACILITIES

During 1979, National Gas Company installed a 14 mile, 20" gas pipeline link from Picton to Pt. Lisas. One small consumer, Coelhos Chaguanas was added to the gas distribution system by the laying of 8000' of 2" pipe line parallel to the Solomon Hochoy Highway.

The National Gas Company was involved in the design of several projects relating to the existing main gas transmission system. Amongst these were:

1. A two mile section 24" pipeline from Gyayaguayare to Beach Field.
2. The relocation of 4 miles of 16" pipeline parallel to Princess Margaret Highway to facilitate the construction of the 2nd carriageway.
3. The design of the gas metering system for Iscott and Fertrin projects.
4. The design of the gas pipeline and associated metering facilities to Metal Box and Caribbean Packaging Industries.

Trinidad Tesoro obtained 26,000 feet of 14 inch pipe which would be used to repair and relocate sections of the existing gas sales line between Fyzabad and Pt. Lisas. The pipeline would be upgraded by new pipe in proximity to the heavily populated areas and public buildings such as schools.

OTHER BUSINESS

A pipeline inspection unit was created in the Ministry of Energy with responsibility for the safety of the main oil and gas pipelines in the country.

TABLE XI
ANNUAL STATISTICS FOR NATURAL GAS PRODUCTION AND UTILIZATION: 1975 - 1979

	1975		1976		1977		1978		1979	
	MILLIONS OF S.C.F.	%	MILLIONS OF S.C.F.	%	MILLIONS OF S.C.F.	%	MILLIONS OF S.C.F.	%	MILLIONS OF S.C.F.	%
PRODUCTION	126,434	100.0	137,959	100.0	149,589	100.0	157,920	100.0	169,740	100.0
G.O.R. (SCF/BBL)	1,608	-	1,775	-	1,789	-	1,885	-	2,169	-
A. USED AS FUEL:-										
IN FIELDS	6,000	4.7	7,128	5.2	9,064	6.0	10,616	6.7	10,244	6.0
IN REFINERIES	15,763	12.5	18,541	13.4	19,350	12.9	18,751	11.9	20,865	12.3
IN OTHER INDUSTRIES	24,855	19.7	27,276	19.8	34,554	23.1	39,842	25.2	40,881	24.1
SUB TOTAL:-	46,618	36.8	52,945	38.4	62,968	42.0	69,209	43.8	71,990	42.4
B. OTHER COMPLETE UTILIZATION:-										
USED AS PROCESS GAS	6,844	5.4	7,169	5.2	7,708	5.1	15,153	9.6	15,445	9.1
INJECTED INTO FORMATION	2,018	1.6	1,699	1.2	333	0.2	114	0.07	19	-
CONVERTED INTO C.H.P.S.	60	0.1	50	0.1	62	0.1	63	0.03	50	-
SUB TOTAL:-	8,922	7.1	8,918	6.5	8,103	5.4	15,330	9.7	15,514	9.1
C. VENTED:-										
AFTER USE OF PNEUMATIC ENERGY	6,684	5.4	7,200	5.2	10,349	6.9	15,843	10.1	25,550	15.1
WITHOUT USE	64,010	50.6	68,896	49.9	68,169	45.6	57,538	36.4	56,686	33.4
SUB TOTAL:-	70,894	56.1	76,096	55.1	78,518	52.5	73,381	46.5	82,236	48.5

SUMMARY OF ACCIDENTS OCCURRING IN THE PETROLEUM INDUSTRY – 1979

The total number of accidents recorded in the Energy Industry was 687 for 1979. This total represents a decrease of about 22% over the figure reported in 1978 and includes 276 Refinery Accidents which do not fall under the jurisdiction of the Ministry of Energy and Energy-based Industries.

Accidents which took place in the producing fields numbered 411 thereby showing increase of 9.3% to last year's 4.8 percent. From this number 8.3% were classified as serious and consisted of fractures, head injuries, amputation of fingers, deep lacerations, severe burns crush injuries and eye injuries. The non-serious accidents involved those treated for shock, bruises to the body, sprains, strained muscles, squeezed limbs and fingers.

For the years, three (3) fatal accidents were recorded. Two occurred at Amoco and the third at Tesoro producing field.

On the Drill ship "Discoverer 511" operating in Amoco's lease, two (2) men were fatally injured while working in the "moonpool". The "Torgue arm" securing a hydraulic motor broke free from its support striking both men while Number 4 mooring which was in operation.

The other took place at Tesoro's well Quarry 53 where a Floorman was struck on his head and back by a power tong during workover operation. While rotating and lifting stuck tubing, the tubing suddenly came free and lifted the power tong with it. The power tong disengaged from the tubing, broke away from its hanger and struck the workman. The injured died two weeks later in hospital as a result of injuries sustained.

TABLE X11

ACCIDENT STATISTICS FOR 1979

COMPANY	FIELD	TOTAL	FATALITIES	SERIOUS				NON-SERIOUS			
				D	P	E	O	D	P	E	O
TEXACO	GUAYAGUAYARE	6	—	—	1	—	—	—	4	—	1
	BARRACKPORE	2	—	—	—	—	—	—	1	—	1
	BRIGHTON/FOREST RESERVE	22	—	—	4	—	—	8	10	—	—
	PALO SECO	11	—	—	—	—	—	9	2	—	—
	ERIN	—	—	—	—	—	—	—	—	—	—
	CRUSE	—	—	—	—	—	—	—	—	—	—
	WILSON	—	—	—	—	—	—	—	—	—	—
	POINTE-A-PIERRE	1	—	—	—	—	—	—	—	—	—
		42	Nil	Nil	5	Nil	Nil	17	17	Nil	3
AMOCO	ALL	207	2	8	4	Nil	1	120	53	—	19
TESORO	ALL	40	1	2	3	—	—	16	13	—	5
TRINMAR	ALL	65	—	2	—	—	—	18	14	10	21
TRINTOC	ALL	57	—	5	2	—	2	30	15	—	3
P.C.O.L.	ALL	—	—	—	—	—	—	—	—	—	—
DEMINEX	ALL	—	—	—	—	—	—	—	—	—	—
	411	3	17	14	Nil	3	201	112	10	5	

* Refinery Accidents under the jurisdiction of the Factory Inspectorate Division amounted to 276 (not included in totals).

D = DRILLING; P = PRODUCTION; E = ENGINEERING; O = OTHERS.

ROYAL ASSISMENTS

Appendix V111 presents a summary of Crude Oil Assessed for State Royalty by company, showing averaged price per barrel and analyses for the half-yearly periods ending 30th June and 31st December 1979.

Net Royalty production decreased from 47,564,836 barrels and 45,794,418 barrels in the first and second half of 1978 to 42,735,489 barrels and 43,817,600 barrels respectively in 1979. The main reason for this is the Amoco Trinidad Oil Company's production which continued its downward trend.

Prices of Petroleum Products continued rising. Total Royalty on crude for the year was therefore \$486,061,538 as compared with \$274,391,049 for 1978 and \$266,038,875 for 1977 (See Appendix 1X – Average Price in T.T. Currency per barrel).

Appendix 1X presents a summary of Royalty assessed for Crude Oil, Natural Gasolene and Natural Gas produced, and Minimum Rents on State owned Oil Mining Leases/Licences for the half-yearly periods 1977, 1978 and 1979.

Total Royalty in 1979 of \$490,484,882 is higher than 1978 and 1977 respectively at \$277,570,968 and \$269,782,849. Higher prices of Petroleum Products in 1979 are therefore mainly responsible for this increase, despite the drop in production in 1979 when compared with 1978 and 1977.

LEGAL DEVELOPMENTS IN 1979

The Legal Section had its share of the routine duties which included the revision of contracts, the giving of advice on various matters pertaining to oil industry, the drafting of licences and other documents, and attendance at meetings and committees.

A. LEGISLATION

The following legislation – the drafting of which the Legal Section assisted – relevant to the petroleum industry were passed in 1979:–

- (a) The Petroleum (Amendment) Act, 1979 – Act No. 9 of 1979.
- (b) The Law Revision (Miscellaneous Amendment) (No. 1) Act, 1979 – Act No. 45 of 1979.
- (c) The Price of Petroleum Products (Amendment) Order, 1979 – Government Notice No. 114 of 1979.
- (d) The Price of Petroleum Products (Amendment) Order, 1979 – Government Notice No. 126 of 1979.
- (e) The Price of Petroleum Products (Amendment) Order, 1979 – Government Notice No. 199 of 1979.
- (f) The Price of Petroleum Products (Amendment) (No. 4) Order, 1979 – Government Notice No. 200 of 1979.
- (g) The Price of Petroleum Products (Amendment) (No. 5) Order, 1979 – Government Notice No. 201 of 1979.
- (h) The Petroleum Impost Rating Order, 1979 – Government Notice No. 202 of 1979.
- (i) The Petroleum Production Levy and Subsidy (Gross Margin) (Amendment) Order, 1979 – Government Notice No. 115 of 1979.
- (j) The Petroleum Production Levy and Subsidy (Gross Margin) (Amendment) Order, 1979 – Government Notice No. 127 of 1979.
- (k) The Petroleum Production Levy and Subsidy (Gross Margin) (Amendment)

Order, 1979 – Government Notice No. 197 of 1979.

- (l) The Petroleum Production Levy and Subsidy (Gross Margin) (No. 2) Order, 1979, Government Notice No. 198 of 1979.
- (m) The Petroleum Profits Tax (Posted Prices) (Amoco Trinidad Oil Company) Order, 1979 – Government Notice No. 189 of 1979.
- (n) The Petroleum Profits Tax (Posted Prices) (Texaco Trinidad Inc.) Order 1979 – Government Notice No. 190 of 1979.
- (o) The Petroleum Profits Tax (Posted Prices) (Trinidad and Tobago Oil Company) Order, 1979 – Government Notice No. 191 of 1979.
- (p) The Petroleum Profits Tax (Posted Prices) (Premier Consolidated Oilfields Limited) Order, 1979 – Government Notice No. 192 of 1979.
- (q) The Petroleum Regulations (Competitive Bidding) Order, 1979 – Government Notice No. 85 of 1979.

B. LICENCES

In 1979 an application from the National Gas Company of Trinidad and Tobago Limited for a Licence to construct a 20-inch Pipeline between Picton and Point Lisas was received and considered – vide Government Notice No. 130 of 1979.

Furthermore, an application from Trinidad and Tobago Oil Company Limited for an Exploration and Production (Public Petroleum Rights) Licence was received – Government Notice No. 32 of 1979.

C. LAW REFORM

The Legal Section worked with the Law Commission in revising the following enactments for inclusion in the Revised edition of the Laws of Trinidad and Tobago:—

- (a) Mines, Borings and Quarries Ordinance, Ch. 26 No. 4.
- (b) Drilling Regulations, made pursuant to the Mines, Borings and Quarries Ordinance, Ch. 26 No. 4.
- (c) Asphalt Industry Regulations Ordinance, Ch. 26 No. 10.
- (d) Petrochemicals Industry Development Act, Act No. 4 of 1962.
- (e) Geological Survey Ordinance, Ch. 26 No. 11.
- (f) Petroleum Production Levy and Subsidy Act, Act No. 14 of 1974.
- (g) Oil Mining (High Water Mark) Ordinance, Ch. 26 No. 12.
- (h) Petroleum Act, Act No. 26 of 1969.

AGREEMENTS/CONTRACTS

The Legal Section was involved in the drafting of the following agreements/contracts:—

- (a) An agreement between the Ministry of Petroleum and Mines and Occidental Exploration and Production Company to facilitate the latter to conduct an experimental seismic survey in the Nariva Swamp area.
- (b) Shipping Agreement between Fertilizers of Trinidad and Tobago and Amoco International Sales Company.
- (c) Agency Agreement between Fertilizers of Trinidad and Tobago and Amoco International Sales Company for the marketing of ammonia.

E. OTHER WORK

The Legal Section assisted in the Finalization of the Memorandum and Articles of Association of the National Energy Corporation of Trinidad and Tobago Limited.

ANCILLARY ACTIVITIES

Staff Reports, Royalty, Legal Developments,
Safety Leases & Licences

STAFF

1979 was a dramatic year for the Ministry in that only five (5) new officers were recruited but a chain of resignations followed at the Professional and Technical level resulting in the loss of key and experienced personnel. Among officers recruited were:—

Mr. M. Kurpiel	—	Geophysical Consultant (On three-year contract after retirement)
A. Jupiter	—	Petroleum Engineer I
C. Baisden	—	Petroleum Engineer I
A. Peters	—	Mining Survey Technician
M. Abdool	—	Mechanical Engineer I

Officers who left the service of the Ministry included:—

Mr. L. Thompson	—	Petroleum Engineer
P. Seetahal	—	Petroleum Engineer
Syping Lee	—	Geologist II
K. Rodrigues	—	Geologist I
G. Richards	—	Mechanical Engineer I
M. Joseph (Miss)	—	Petroleum Engineer Assistant
B. Nunes (Mrs.)	—	Draughtsman I

Considerable problems continued to be experienced with respect to the recruitment and retention of technical staff especially at the level of Petroleum Engineer where seven (7) vacancies remained unfilled.

A Pipeline Inspection Unit was created with a staff of one Petroleum Inspector 11 and three (3) Petroleum Inspector 1. In addition the Draughting Unit of the Geological Division was complimented with the addition of three (3) new posts of Draughtsman 1.

TRAINING

Miss H. Wong, Research Officer, Energy Planning Division attended the three-month Course in Project Formulation and Evaluation.

Mr. T. Ali, Chemical Engineer 11 was assigned to the National Gas Company and Mr. George Chin Chemical Engineer 1 was attached to the Co-ordinating Task Force. Both these officers visited the United States of America to receive basic training for involvement in the proposed L.N.G. Project.

COURSE ON SAFETY IN THE PETROLEUM INDUSTRY

The highlight of the training activity was a short course on safety in the Petroleum Industry which was organised by the Ministry of Energy and Energy-based Industries and coordinated by Mr. Rupert Mands, Petroleum Engineer 111. This course was conducted by the Petroleum Training and Technical Services of Norman, Oklahoma, United States of America. The president of this organization is Dr. Henry Crichlow a national of Trinidad and Tobago. Participants for the course included nominees from Oil and Service Companies. The Factory Inspectorate of the Ministry of Labour, the Oil Field Workers Trade Union and personnel of the Ministry of Energy and Energy-based Industries.

CONFERENCES AND SEMINARS

Members of staff continued to participate at conferences and international meetings to keep up-to-date on new developments in the Petroleum and Energy Industries.

4TH LATIN AMERICAN GEOLOGICAL CONGRESS

The Government of Trinidad and Tobago was host to participants in the 4th Latin American Geological Congress which was held from 7th July 1979 to 15th July 1979 at the Trinidad Hilton Hotel. The Honourable Minister Mr. Errol Mahabir was Honorary President of the Congress and gave the Feature address at the Formal opening. Mr. John Scott, Geologist 111 was elected President of this Congress. The undermentioned members of staff were part of the Central Organizing Committee for the Congress:—

Mr. Carlton Braithwaite	Administrative Officer V
Mr. John Kassie	Administrative Officer V (Temporary)
Mr. Trevor Swift	Administrative Officer 11

Delegates to the Congress came from North and Latin America, and Europe and many of the leading earth scientists and Geologist of world renown shared their experiences with their local colleagues.

VISIT TO THE UNITED KINGDOM BY – HONOURABLE ERROL MAHABIR

During the period 24th October 1979 to 7th November 1979 the Honourable Minister of Petroleum and Mines Mr. E. Mahabir paid an official visit to the United Kingdom at the invitation of the Minister of State and Energy the Honourable Hamish Gray. Discussions were held on a number of important matters of mutual interest to Trinidad and Tobago and the United Kingdom. Mr. John Scott, Geologist 111 also accompanied the Honourable Minister on this visit.

Other Conferences and Meetings attended were as follows:—

<u>Name of Officers</u>	<u>Event</u>
R. Appleton	— U.N. Law of the Sea – March, 1979
J.P. Scott	— Convention of the American Association of Petroleum Geologist
Mrs. M. Kurpiel	— Official visit to Barbados on Government to Government Assistance
Mrs. K. Bhoelai	— Meeting in New York on Fertrin Project
P. Seetahal N. Ramsaywak	— Offshore Technology Conference, Houston, Texas

H. Toney	—	O.A.S./Commonwealth Science Council Seminar Puerto Rico, May, 1979
S. Davis T. Ramlakhan	—	Conference on Future of Heavy Crude and TAR Sands, Alberta, Canada, June 1979
O. Fernandes	—	Official Visit to Barbados Government to Government Assistance
B. Ali	—	Meeting of Latin American Energy Organization (OLADE) July, 1979, Costa Rica
K. Haynes Mrs. M. Kurpiel C. Alexander	—	Geological Field Trip to Barbados, July 1979
R. Appleton	—	U.N. Law of Sea Meeting New York, August, 1979
R. Mends	—	Official visit to Antigua — Government to Government Arrangements
T. Boopsingh K. Haynes	—	World Petroleum Congress Bucharest Romania 7th September, 1979 — 15th September, 1979
S. Davis	—	Conference on Computer Processed Interpretation Caracas — 22nd November, 1979 — 23rd November, 1979.

APPENDIX I

ANNUAL STATISTICS OF PRODUCTION, DRILLING, REFINING - EXPORTS AND IMPORTS - 1979 - 1969

ITEM	UNIT	PERCENTAGE DIFFERENCE 1979 - 1978	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969
CRUDE OIL	'000 bbls	-7	78,249	83,778	83,619	77,673	78,621	68,136	60,670	51,211	47,148	51,047	57,418
CASING HEAD GASOLINE (C.H.P.S.)	'000 bbls	-36.3	44	60	61	53	61	69	79	137	141	168	150
TOTAL CRUDE OIL AND NATURAL GASOLINE (1+2)	'000 bbls	-7	78,293	83,838	83,680	77,726	78,682	68,205	60,749	51,348	47,289	51,215	57,568
CRUDE OIL PRODUCTION - CROWN OIL RIGHTS	'000 bbls	-7	75,399	80,701	80,612	74,704	76,018	65,078	57,736	48,246	43,929	47,594	54,014
CRUDE OIL PRODUCTION - PRIVATE OIL RIGHTS	'000 bbls	-7.9	2,850	3,077	3,007	2,969	2,603	3,058	2,934	2,965	3,219	3,452	3,405
TOTAL IMPORTS	'000 bbls	-10	51,631	56,817	67,441	87,459	58,796	95,636	103,977	107,662	107,567	115,445	105,418
IMPORTS OF REFINED PRODUCTS	'000 bbls	-	-	-	1,681	2,503	260	46	21	76	75	69	43
IMPORTS OF CRUDE OIL FOR REFINING	'000 bbls	-10	51,631	56,817	65,760	84,784	58,144	95,472	103,624	107,150	106,867	113,275	103,762
IMPORTS OF OTHER OILS FOR REFINING AND BLENDING	'000 bbls	-	-	-	0	172	392	118	332	436	625	2,101	1,613
TOTAL EXPORTS	'000 bbls	-11.9	113,105	126,604	140,753	147,896	139,714	153,297	155,998	149,992	146,663	154,974	147,878
EXPORTS OF CRUDE OIL	'000 bbls	-16.6	46,282	54,008	50,936	44,408	48,307	31,870	23,614	14,005	6,998	8,669	6,139
EXPORTS OF REFINED PRODUCTS	'000 bbls	-8.6	66,823	72,596	89,817	103,488	91,407	121,427	132,384	135,972	139,665	146,305	141,648
RUNS TO STILL	'000 bbls	-3.7	82,857	85,882	99,536	117,595	85,660	130,819	141,687	144,274	145,547	154,860	154,077
NUMBER OF WELLS STARTED	AS STATED	-24.2	190	236	235	224	182	219	205	184	248	140	127
TOTAL NUMBER OF WELLS COMPLETED	AS STATED	-16.8	184	215	217	207	189	212	212	189	220	135	130
NUMBER OF DRILLING WELLS COMPLETED AS OIL WELLS	AS STATED	-18.0	144	170	170	153	150	176	181	162	175	107	99
NUMBER OF DRILLING WELLS ABANDONED, ETC.	AS STATED	-12.5	40	45	47	54	24	21	31	27	45	28	31
TOTAL FOOTAGE DRILLED (ALL WELLS)	FEET	+28.3	1,248,660	895,098	922,295	919,705	839,649	909,980	955,185	841,742	939,259	663,743	690,671
FOOTAGE DRILLED ON CROWN OIL RIGHTS	FEET	+29.6	1,228,181	863,989	882,023	879,132	772,279	766,787	874,867	760,769	809,954	614,719	666,975
FOOTAGE DRILLED ON PRIVATE OIL RIGHTS	FEET	-51.9	20,479	31,109	40,272	40,573	67,370	143,193	80,318	80,973	129,305	49,024	23,696
AVERAGE DEPTH OF COMPLETED DRILLING WELLS (15)	FEET	+43.0	6,786	3,868	4,196	4,443	4,442	4,509	4,505	4,294	4,273	4,917	5,313
TOTAL NUMBER OF WELLS PRODUCING (AVERAGE DURING YEAR)	AS STATED	+3.6	3,399	3,275	3,148	2,997	2,777	2,981	2,894	2,932	3,035	3,123	3,257
NUMBER OF WELLS PRODUCED BY FLOWING (AVERAGE DURING YEAR)	AS STATED	+1.7	516	507	428	438	438	498	506	525	569	626	708
NUMBER OF WELLS PRODUCED BY ARTIFICIAL LIFT (AVERAGE DURING YEAR)	AS STATED	+3.9	2,883	2,768	2,720	2,559	2,339	2,483	2,388	2,407	2,476	2,497	2,549
AVERAGE DAILY PRODUCTION PER PRODUCING WELL	BARRELS	-11.2	63.0	70.1	72.8	71.0	77.6	62.6	57.4	47.7	42.6	44.8	48.3
AVERAGE DAILY PRODUCTION FLOWING WELLS	BARRELS	-25.9	215.4	271.4	335.7	328.5	358.7	248.0	204.4	146.8	114.4	119.9	125.2
AVERAGE DAILY PRODUCTION PER ARTIFICIAL LIFT WELL	BARRELS	+7.2	35.8	33.2	31.4	25.5	24.9	25.4	26.3	26.1	26.4	26.0	26.9
TOTAL VALUE OF DOMESTIC EXPORTS	\$'000	+23.1	6,175,213	4,810,025	5,188,987	5,331,557	3,839,970	3,934,151	1,052,476	1,050,023	1,000,940	944,131	934,658
TOTAL VALUE OF PETROLEUM PRODUCTS (ITEM 28)	\$'000	+23.4	5,715,496	4,379,188	4,787,280	4,960,604	1,925,785	2,532,081	831,496	830,993	804,831	668,439	644,676
TOTAL VALUE OF LAKE ASPHALT PRODUCTS	\$'000	+89.3	3,355	360	3,051	4,426	4,240	4,657	3,876	3,299	3,561	3,991	2,764
TOTAL NATURAL GAS PRODUCED	MMCF	+6.9	169,740	157,920	149,589	137,959	126,434	128,293	119,979	104,338	109,814	121,060	137,500
USED AS FUEL	MMCF	+12.5	71,990	69,209	62,968	52,931	46,618	50,599	54,700	57,131	55,866	56,490	58,348
REPLACED IN FORMATION	MMCF	+39.0	187	114	333	1,699	2,017	5,706	6,381	9,230	12,112	19,018	24,728
LOSSES, NOT COLLECTED	MMCF	+10.7	82,236	73,381	8,518	76,095	70,890	63,760	49,213	28,016	32,793	35,356	43,464

APPENDIX 11A
LAND AND MARINE FOOTAGE DRILLED' 1979

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
LAND	31.013	21.949	30.225	37.712	41.104	42.770	33.833	42.528	34.285	37.423	27.952	37.610	418.404
MARINE	36.763	42.648	38.380	36.429	24.012	39.988	26.268	15.537	17.590	25.658	38.469	26.986	368.728
TOTAL	67.776	64.597	68.605	74.141	65.116	82.758	60.101	58.065	51.875	63.081	66.421	64.596	787.132
DAILY AVERAGE													
FEET	2.186.3	2307.0	2.213.1	2.471.4	2.100.5	2.758.6	1.938.7	1.873.0	1.729.2	2.034.8	2.214.0	2.083.7	2.156.5
DAILY AVERAGE													
RIG	143.0	167.9	165.8	178.2	156.1	201.5	161.4	157.7	165.7	189.4	169.4	148.6	-
MARINE %													
TOTAL	54.2	66.0	55.9	49.1	36.9	48.3	43.7	26.7	33.9	40.7	57.9	41.8	46.8

APPENDIX 111A
ANALYSIS OF PRODUCTION BY OPERATING COMPANIES - 1978

COMPANY	Av. No. of Wells	FLOWING			Av. No. of Wells	GAS LIFT			Av. No. of Wells	PUMPING			Av. No. of Wells	OTHER			Av. No. of Wells	SALT WATER			Av. No. of Wells Produced	Daily Av/Producing Well	Total Oil Produced bbls	Coy's Prod'n As % of Total Prod'n	OIL RIGHTS		OIL RIGHTS	
		Quantity bbls	% of Total Oil	Daily Av/Well bbls		Quantity bbls	% of Total Oil	Daily Av/Well bbls		Quantity bbls	% of Total Oil	Daily Av/Well bbls		Quantity bbls	% of Total Oil	Daily Av/Well bbls		Quantity bbls	Per Cent of Total Liquid	Daily Av/Well bbls					Crown Prod'n bbls	Per Cent of Total	Private Prod'n bbls	Per cent of Total
TRINIDAD TESORO PETROLEUM CO. LTD.	66	1,232,532	15.7	51.1	106	624,067	7.9	16.2	1,142	5,980,376	76.3	14.3	-	-	-	-	640	2,143,630	21.4	9.1	3,836	5.5	7,836,975	10.0	6,248,116	79.7	1,588,859	20.3
TEXACO TRINIDAD INC.	175	810,036	12.0	12.6	335	1,906,608	28.0	15.5	629	4,085,056	60.0	17.7	-	-	-	-	444	6,125,725	47.3	37.7	1,139	16.3	6,801,700	8.6	5,997,491	88.1	804,209	11.9
TRINIDAD AND TOBAGO OIL CO.	96	1,296,521	39.1	37.0	12	103,023	3.1	23.5	378	1,909,719	57.8	13.8	-	-	-	-	304	1,625,546	32.9	14.6	486	18.6	3,309,263	4.2	2,939,827	88.8	369,436	11.2
PREMIER CONSOLIDATES OILFIELDS LTD.	3	7,399	6.4	6.7	-	-	-	-	80	106,887	93.1	3.6	3	410	0.5	0.3	32	62,544	35.3	5.4	86	3.6	114,696	0.1	26,796	23.3	87,900	76.7
TRINIDAD NORTHERN AREAS	112	8,184,989	50.6	200.2	104	5,600,422	34.6	147.5	52	2,359,531	14.8	124.3	-	-	-	-	240	4,604,905	22.1	52.5	268	165.0	16,144,942	20.6	16,144,942	100.0	-	-
AMOCO TRINIDAD OIL CO.	64	29,044,724	65.9	1,243.3	42	14,997,174	34.1	978.2	-	-	-	-	-	-	-	-	71	24,521,321	35.7	946.2	106	1,138.3	44,041,898	56.5	44,041,898	100.8	-	-
TOTAL	516	40,576,201	51.8	215.4	599	23,231,294	29.6	106.2	2281	14,441,569	18.4	17.3	3	410	0.2	0.3	1731	39,083,062	33.3	61.8	3,399	63.0	78,249,474	100.0	75,399,070	96.3	2,850,404	3.7
TOTAL 1978	507	50,221,296	59.9	271.3	619	19,514,996	23.2	86.3	2146	14,040,816	16.7	17.9	3	395	0.2	0.3	1636	29,788,123	26.2	49.8	3,275	70.0	83,777,503	100.0	80,700,912	96.3	3,076,591	3.7

COMPANY	CROWN OIL RIGHT bbls	PRIVATE OIL RIGHT bbls	TOTAL bbls
TRINIDAD TESORO PET.CO. LIMITED.	46,590	1,269	47,859
TOTAL 1978	58,877	1,370	60,247

APPENDIX IIB
DAILY AVERAGE PRODUCTION BY MONTHS FOR ALL COMPANIES – 1979
(ALL QUANTITIES IN BBLs)

COMPANY	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	CRUDE	B.O.P.D.
T.T.P.C.L.	666,268	593,879	662,823	639,253	653,075	631,617	685,133	665,682	601,161	666,650	670,947	700,487	7,836,975	
B.O.P.D.	21,493	21,210	21,381	21,308	21,067	21,054	22,101	21,474	20,039	21,505	22,365	22,596		1,471
TRINTOC	276,115	249,316	278,033	279,663	284,630	281,930	277,586	275,989	278,213	283,136	270,617	274,035	3,309,263	
B.O.P.D.	8,907	8,904	8,968	9,322	9,182	9,398	8,954	8,903	9,274	9,133	9,021	8,840		9,066
T.T.I.	563,685	513,719	578,241	576,588	603,281	585,751	583,502	574,740	521,335	562,777	573,723	564,358	6,801,700	
B.O.P.D.	18,183	18,347	18,653	19,220	19,461	19,525	18,823	18,540	17,378	18,154	19,124	18,205		18,635
P.C.O.L.	10,109	8,801	9,940	9,206	9,793	9,580	9,741	10,259	9,220	8,954	9,288	9,805	114,696	
B.O.P.D.	326	314	321	307	316	319	314	331	307	289	310	316		314
T.N.A.	1,337,926	1,245,194	1,369,683	1,324,645	1,396,783	1,323,474	1,385,655	1,338,929	1,333,566	1,410,753	1,328,583	1,349,751	16,144,942	
B.P.O.D.	43,159	44,471	44,184	44,155	45,057	44,116	44,699	43,191	44,452	45,508	44,286	43,541		44,233
AMOCO	3,777,360	3,339,297	3,635,782	3,613,622	3,757,706	3,610,788	3,737,201	3,663,534	3,629,603	3,881,373	3,668,977	3,726,655	44,041,898	
B.O.P.D.	121,850	119,261	117,283	120,454	121,216	120,359	120,555	118,178	120,987	125,206	122,299	120,215		120,663
TOTAL 1979	6,631,463	5,950,206	6,534,502	6,442,977	6,705,268	6,443,140	6,678,818	6,529,133	6,373,098	6,813,643	6,522,135	6,625,091	78,249,474	
B.O.P.D.	213,918	212,507	210,790	214,766	216,299	214,771	215,446	210,617	212,437	219,795	217,405	213,713		214,382
TOTAL 1978	7,273,765	6,729,337	7,356,514	7,033,406	7,220,736	6,968,261	7,075,906	6,688,798	6,846,948	6,605,095	6,605,095	6,905,878	8,377,503	
B.O.P.D.	234,638	240,333	237,307	234,447	232,927	232,275	228,255	228,156	222,960	220,869	220,170	222,771		229,527

APPENDIX IV
PRODUCTION AND DISPOSAL OF NATURAL GAS – 1979
(ALL FIGURES OF GAS PRODUCTION IN MSCF) (MSCF – 1000 STANDARD CUBIC FEET)

	CRUDE OIL PRODUCTION (bbls)	AVERAGE GOR (cu.ft./bbl)	NATURAL PRODUCTION	NATURAL GAS DISPOSAL									NATURAL GAS RECOVERY			INTER-OIL COMPANY SALES	USE FOR THE MANUFACTURE OF PETROCHEMICALS	
				SALES TO OTHER COMPANIES	REPLACED INTO FORMATION	CONVERTED INTO CHIPS	USED AS FUEL		VENTED TO ATMOSPHERE		PIPELINE LOSSES UNACCOUNTED FOR	NOT COLLECTED	NATURAL GAS TREATED	AVERAGE PLANT RECOVERY (IG/MCF)	NAT. GASOLINE PRODUCED (bbls)			
							IN FIELDS	IN REFINERIES	AFTER UTILIZATION	WITHOUT UTILIZATION								TOTAL
JANUARY	6,631,463	2141	14,196,754	5,014,892	10,416	4,733	976,404	1,908,353	1,910,716	3,251,371	5,162,087	222,693	897,176	329,254	0.479	4,511	2,600,879	1,449,203
FEBRUARY	5,950,206	2105	12,525,764	4,699,565	4,014	3,781	784,285	1,290,660	1,826,516	2,873,094	4,699,610	155,093	888,756	234,533	0.537	3,604	1,930,572	1,393,532
MARCH	6,534,502	2096	13,694,948	4,719,090	-	6,074	826,167	1,350,481	2,017,516	3,499,587	5,517,103	318,308	957,725	364,375	0.556	5,789	1,910,521	1,225,058
APRIL	6,442,977	2206	14,211,032	4,985,230	348	4,594	954,054	1,544,382	1,973,388	3,536,952	5,510,340	269,951	942,133	309,963	0.494	4,378	2,213,830	1,397,121
MAY	6,705,268	2121	14,221,827	4,991,609	3,875	5,527	881,899	1,363,164	2,088,165	3,654,968	5,743,133	251,475	981,145	303,855	0.583	5,069	1,937,647	1,292,711
JUNE	6,443,140	2055	13,237,439	4,300,088	-	3,499	762,665	1,452,240	2,193,402	3,547,595	5,740,997	160,900	844,050	263,574	0.443	3,336	2,038,335	1,093,314
HALF-YEARLY TOTAL	38,707,556		82,087,764	28,710,474	18,653	28,208	5,185,474	8,882,280	12,009,703	20,363,567	32,373,270	1,378,420	5,510,985	1,805,554	0.517	26,687	12,631,784	7,850,939
JULY	6,678,818	2062	13,774,057	4,625,279	-	2,953	803,513	1,536,273	2,194,901	3,469,917	5,664,818	219,733	921,488	224,477	0.438	2,814	2,409,880	1,231,939
AUGUST	6,529,133	2237	14,603,810	5,186,718	-	3,224	842,469	1,838,101	2,010,196	3,637,084	5,647,280	222,526	863,492	244,405	0.440	3,073	2,640,582	1,492,261
SEPTEMBER	6,373,098	2256	14,376,554	4,872,815	-	3,735	865,388	1,819,249	2,099,118	3,554,890	5,654,008	292,131	869,228	265,976	0.468	3,560	2,512,546	1,386,739
OCTOBER	6,813,643	2290	15,601,247	4,938,826	-	5,127	856,319	2,159,399	2,230,927	4,129,814	6,360,741	308,875	971,960	380,771	0.449	4,887	2,850,116	1,500,175
NOVEMBER	6,522,135	2223	14,497,864	3,872,776	-	4,041	856,152	2,329,731	2,361,096	3,870,153	6,231,249	239,585	964,330	326,022	0.413	3,851	2,620,019	958,159
DECEMBER	6,625,091	2234	14,798,908	4,119,312	-	3,136	834,567	2,299,601	2,644,182	3,713,252	6,357,434	188,785	996,073	286,544	0.365	2,989	2,856,995	1,024,476
HALF YEARLY TOTAL	39,541,918		87,652,440	27,615,726	-	22,216	5,058,408	11,982,354	13,540,420	22,375,110	35,915,530	1,471,635	5,586,571	1,728,195	0.428	21,174	15,890,138	7,593,749
YEAR TOTAL	78,249,474	2169	169,740,204	56,326,200	18,653	50,424	10,243,882	20,864,634	25,550,123	42,738,677	68,288,800	2,850,055	11,097,556	3,533,749	0.474	47,861	28,521,922	15,444,688
% DISPOSAL FOR YEAR	-	-	-	33.2	-	-	6.0	12.3	15.1	25.2	40.3	1.7	6.5	-	-	-	-	-

APPENDIX V
DESTINATION OF EXPORTS OF CRUDE AND REFINED PRODUCTS FROM TRINIDAD
AND TOBAGO - 1979 (ALL QUANTITIES IN BARRELS)

COUNTRY	TOTAL	% OF TOTAL EXPORTS	CRUDE PETROLEUM EXPORTED	L.P.G.	AVIATION TURBINE FUEL	AVIATION GASOLINE	MOTOR GASOLINE	KEROSINE	GAS AND DIESEL OILS	FUEL OILS	LUBES AND GREASES	ASPHALTIC PRODUCTS	OTHER REFINED PRODUCTS	PETRO-CHEMICALS
NORTH AMERICA														
U.S.A.	21,060,578	60.398	46,281,662	-	402,539	6,585	4,246,616	273,361	1,655,441	16,338,355	130,971	-	1,447,095	277,953
CANADA	170,032	0.144	-	-	-	-	-	-	-	-	170,032	-	-	-
TOTAL N.A.	21,230,610	60,542	46,281,662	-	402,539	6,585	4,246,616	273,361	1,655,441	16,338,355	301,003	-	1,447,095¹	277,953
CENTRAL AMERICA														
COSTA RICA	32,936	0.028	-	-	-	-	-	-	25,000	-	-	-	7,936	-
GUATEMALA	1,853,930	1.576	-	-	-	23,598	-	9,490	549,529	1,231,539	-	-	39,774	-
HONDURUS	1,289,013	1.096	-	46,319	-	9,694	283,540	36,254	413,206	-	-	-	-	-
MEXICO	219,536	0.611	-	-	-	-	-	-	-	219,536	-	-	-	-
OTHER C.A. ²	594,272	0.505	-	159,815	-	29,931	401,582	-	-	-	-	-	2,944	-
TOTAL C.A.	4,489,687	3,816	-	206,134	-	63,223	1,185,122	45,744	987,735	1,951,075	-	-	50,654	-
SOUTH AMERICA														
FRENCH GUIANA	851,230	0.723	-	30,410	98,643	2,186	144,299	12,345	559,223	-	-	4,124	-	-
GUYANA	2,358,439	2.005	-	100,693	81,748	15,037	550,052	149,089	1,143,263	312,381	-	6,176	-	-
SURINAM	5,549,983	4.717	-	3,200	66,472	17,662	449,107	22,180	1,677,203	3,302,506	-	7,711	3,942	-
COLOMBIA	23,007	0.020	-	-	-	-	-	-	-	-	8,629	-	14,738	-
ARGENTINA	3,843	0.003	-	-	-	3,843	-	-	-	-	-	-	-	-
TOTAL S.A.	8,786,502	7.468	-	134,303	246,863	38,728	1,143,458	183,614	3,379,689	3,614,887	8,629	18,011	18,680	-
WEST INDIAN ISLANDS														
BRITISH ³	3,598,223	3.058	-	122,337	275,712	32,021	548,901	822,182	1,411,151	323,727	3,954	4,776	53,462	-
FRENCH ⁴	730,977	0.621	-	21,223	70,191	41,050	184,024	33,648	281,345	47,074	-	38,231	14,191	-
NETHERLAND	4,200	0.004	-	-	-	-	1,000	-	3,200	-	-	-	-	-
PUERTO RICO	5,489,304	4.666	-	-	108,491	26,195	4,689,426	630,586	34,606	-	-	-	-	-
VIRGIN ISLANDS	235,951	0.201	-	2,524	475	27,339	107,744	1,644	96,225	-	-	-	-	-
OTHER WEST INDIAN ISLANDS ⁶	1,031,539	0.877	-	-	-	32,346	4,468	2,342	18,072	974,311	-	-	-	-
TOTAL WEST INDIES	11,090,194	9.427	-	146,084	454,084	158,951	5,535,563	1,490,402	1,844,599	1,345,112	3,954	43,007	67,653	-
EUROPE														
TURKEY	231,334	0.197	-	-	-	-	-	-	-	231,334	-	-	-	-
DENMARK	192,320	0.163	-	-	-	-	-	-	-	192,320	-	-	-	-
FRANCE	259,071	0.645	-	-	-	-	-	-	-	759,071	-	-	-	-
FED. REPUBLIC OF GERMANY	807,901	0.687	-	-	-	-	-	-	-	807,901	-	-	-	312,770
ITALY	312,770	0.266	-	-	-	-	534,123	-	1,255,357	206,808	-	-	-	437,466
NETHERLANDS	3,043,657	2.587	-	-	-	539,903	-	-	-	-	-	-	-	-
UNITED KINGDOM	7,609,747	6.468	-	-	955,333	-	-	-	244,688	6,397,149	-	-	-	12,577
OTHERS	1,862,959	1.583	-	-	-	-	-	-	956,111	907,848	-	-	-	-
TOTAL EUROPE	14,819,759	12.596	-	-	955,333	539,903	534,123	-	2,426,156	9,601,431	-	-	-	762,813
OTHERS														
AFRICA ²	2,704,631	2.299	-	-	-	-	321,895	82,254	538,828	1,632,925	126,536	-	2,193	-
CANARY ISLANDS	322,785	0.274	-	-	-	-	-	-	65,902	256,883	-	-	-	-
JAPAN	7,925	0.007	-	-	-	-	-	-	-	-	-	-	-	7,925
TOTAL OTHERS	3,035,341	2.580	-	-	-	-	321,895	82,254	604,730	1,889,808	126,536	-	2,193	7,925
TOTAL CARGOES	113,452,093	96.425	46,781,662	486,521	2,059,604	807,390	2,966,777	2,075,375	10,898,350	34,740,668	439,762	61,018	1,586,275	1,048,691
FOREIGN BUNKERS	4,201,217	3.571	-	-	161,686	732	-	-	649,533	3,361,871	27,099	55	241	-
TOTAL EXPORTS	117,653,310	100.000	46,281,662	486,521	2,221,290	808,122	2,966,777	2,075,375	11,547,883	38,102,539	466,861	61,073	1,586,516	1,048,691

- (1) HTU PROCESSED ARABIAN LIGHT CRUDE
(2) OTHER CENTRAL AMERICA: - PANAMA, CANAL ZONE
(3) BRITISH: - ANTIGUA, ANGUILLA, BAHAMAS, BEQUIA, CASTRIES, CARRIACOU, DOMINICA, GRENADA, GRAND CAYMAN
(4) FRENCH: - GUADELOUPE, MARTINIQUE, ST. BARTHS, ST. MAARTEN
(5) NETHERLAND: - CURACAO, SABA
(6) OTHER WEST INDIAN ISLANDS: - DOMINICAN REPUBLIC, HAITI, CUBA
(7) AFRICA: - ANGOLA, REPUBLIC OF CAMEROON, REPUBLIC OF SENEGAL, SIERRA LEONE, NIGERIA, IVORY COAST

APPENDIX VI

MOVEMENT OF REFINERY PRODUCTS - 1979

(QUANTITIES IN BARRELS)

INVENTORY NAME	OPENING INVENTORY	PRODUCTION	IMPORTS	OTHER RECEIPTS	PURCHASES FROM OTHER PETROLEUM MARKETS	TOTAL	SALES TO OTHER PETROLEUM MARKETS	LOCAL CONSUMPTION				EXPORTS		GAINS AND LOSSES	CLOSING INVENTORY	TOTAL
								OWN USE	RETAILER	LOCAL BUNKERS	TOTAL	CARGOES	FOREIGN BUNKERS			
LIQUIFIED GAS	61,101	758,955	37,843	6,142	377,812	1,241,853	370,183	519	398,929	-	399,448	407,378	-	13,347	51,497	1,241,853
AVIATION GASOLINE	41,983	270,620	-	25,388	29,374	367,365	29,657	-	5,439	23,619	29,058	299,085	732	(415)	9,248	367,365
AVIATION TURBINE FUELS	2,181,522	2,395,105	-	-	657,043	5,233,670	820,399	-	70,752	313,042	383,794	1,851,902	161,686	(954)	2,016,843	5,233,670
MOTOR GASOLINES	5,417,882	18,826,596	-	7,976	2,580,680	22,833,134	2,476,774	8,940	2,492,476	-	2,501,416	12,810,246	-	(8,160)	5,052,858	22,833,134
KEROSINE	221,404	3,371,179	-	11,085	221,792	3,825,460	171,351	2,430	215,179	-	217,609	3,263,220	-	263	173,017	3,825,460
WHITE SPIRIT	29,109	17,744	-	-	15,288	62,051	13,100	961	14,643	-	15,604	3,749	233	576	28,789	62,051
VAPOURISING OIL	-	340,952	-	-	-	340,952	-	-	-	-	-	340,952	-	-	-	340,952
GAS OIL	2,232,765	10,864,097	-	8,992	1,071,132	14,176,986	1,394,754	46,673	877,799	139,656	1,067,128	9,330,389	116,737	(2,276)	2,270,254	14,176,986
MARINE DIESEL	485,570	465,692	-	27,000	830,490	1,808,752	517,391	2,809	12,526	23,730	39,065	191,416	532,796	64,205	463,879	1,808,752
FUEL OIL	11,209,738	43,304,705	-	1,475,788	4,047,196	60,037,427	3,273,836	459,040	136,317	13,810	609,167	40,684,474	3,361,871	38,642	12,069,437	60,037,427
LUBES AND GREASES	192,373	685,855	31,452	34,326	62,470	1,006,476	63,413	9,641	77,035	359	87,035	638,163	27,099	4,329	186,437	1,006,476
ASPHALTIC PRODUCTS	250,016	276,129	111	-	188,315	714,571	187,870	-	187,935	-	187,935	78,617	55	230	259,864	714,571
UNFINISHED OILS	3,281,698	(214,067)	-	-	-	3,067,631	-	2,471	-	-	2,471	-	-	-	3,065,160	3,067,631
PETROCHEMICALS	218,233	1,001,443	-	-	7,615	1,227,291	7,108	1,851	7,588	-	9,439	1,048,212	-	27	162,505	1,227,291
OTHER FINISHED PRODUCTS	1,522	14,114	-	-	767	16,403	721	331	753	6	1,090	80	8	-	14,504	16,403
TOTAL	25,824,916	78,379,119	69,406	1,596,697	10,089,974	115,960,022	9,326,557	538,666	4,497,371	514,222	5,550,259	70,947,883	4,201,217	109,814	25,824,292	115,960,022

APPENDIX VII
MOVEMENT OF CRUDE AND C.H.P.S. YEAR ENDED 31st DECEMBER, 1979

MONTH	PRODUCTION	IMPORTS	Decrease in Inventories (Open)-(Close)	TOTALS	Purchases and Exchanges from other Companies	Sales and Exchanges from other Companies	Own Use	To Refinery	Exports	Gains and Losses	TOTAL
JANUARY	6,635,974	4,335,121	(272,632)	10,698,463	2,396,893	2,396,893	31,285,	6,919,115	3,697,066	50,997	10,598,463
FEBRUARY	5,953,810	3,436,934	(242,076)	9,148,668	2,224,395	2,224,395	51,547	5,511,165	3,570,417	15,539	9,148,668
MARCH	6,540,291	3,248,575	1,288,131	11,076,997	2,457,408	2,457,408	29,967	6,929,699	4,071,521	45,810	11,076,997
APRIL	6,447,355	3,398,501	(14,039) †	9,831,817*	2,439,637*	2,439,638*	50,891	6,454,844	3,272,627	53,454	9,831,816*
MAY	6,710,671	4,463,615	(788,014)	10,386,272	2,519,332	2,519,332	17,518	6,490,750	3,837,466	40,538	10,386,272
JUNE	6,452,946	3,385,624	255,774	10,094,344	2,446,574	2,446,574	57,429	6,113,141	3,907,515	16,259	10,094,344
JULY	6,681,632	5,141,657	(1,919,454)	9,903,835	2,415,990	2,415,990	28,471	6,197,143	3,686,267	(8,046)	9,903,835
AUGUST	6,525,734	5,073,605	93,180	11,692,519	2,476,043	2,476,043	26,994	6,709,234	4,898,668	57,623	11,692,519
SEPTEMBER	6,376,658	4,068,454	498,601	10,934,713	2,470,690	2,470,690	28,445	7,525,073	3,359,877	21,318	10,934,713
OCTOBER	6,818,530	5,613,890	(624,849)	11,807,571	2,542,451	2,542,451	33,193	7,902,571	3,800,172	71,635	11,807,571
NOVEMBER	6,525,986	4,639,276	938,080	12,103,342	2,570,814	2,570,814	29,973	8,064,134	3,980,935	28,300	12,103,342
DECEMBER	6,628,080	5,405,673	288,050	12,321,803	2,694,575	2,694,575	57,122	8,047,466	4,199,131	18,084	12,321,803
TOTAL.	78,297,667	52,210,925	(508,248)	130,000,344	29,654,803	29,654,803	442,835	82,864,335	46,281,662	411,511	130,000,343

* 1 bbl. difference Tesoro-Trintoc shipment in April.

APPENDIX VIII

SUMMARY OF CURDE OIL ASSESSED FOR CROWN ROYALTY WITH PRICES AND ANALYSIS - 1979
(FOR HALF YEARLY ASSESSMENT PERIODS 30th JUNE AND 31st DECEMBER)
1 BARREL - 34,9726 I.G.

COMPANY	NET ROYALTY PRODUCTION BBLs	ROYALTY		SUB DIVISION OF (ROYALTY) CRUDE INTO PRODUCTS AS PER R.L.E.I. ANALYSIS										BUNKER "C"	
		10% ASSESSED BBLs	VALUE T & T \$	AVERAGE PRICE \$/BBL	LIGHT FRACTIONS			GAS OIL					FUEL OIL		
					QUANTITY	PERCENTAGE	TETRA ETHYL LEAD TO BLEND TO 70/72 OCT. GAS M/S	53-57 D.I. BBLs	48-52 D.I. BBLs	43-47 D.I. BBLs	NO. 2 FUEL BBLs	TOTAL GAS OILS BBLs	PERCENTAGE	QUANTITY BBLs	PERCENTAGE
TRINIDAD TESORO PETROLEUM CO. LTD.	2,731,029	273,103	10,127,873	37.08	23,470	8.59	1,265,506.68	2,272	3,303	4,481	50,340	60,396	22.12	189,237	69.29
TESORO GALEOTA	283,199	*35,400	1,753,472	49.53	5,238	14.80	-	-	-	-	17,100	17,100	48.30	13,062	36.90
PRIMIER CONSOLIDATED OILFIELDS LTD.	13,305	1,331	54,653	41.06	125	9.39	11,783.52	-	193	-	271	464	34.86	742	55.75
ESTATE OF TIMOTHY ROODAL	201	20	717	35.85	1	5.00	-	-	-	-	-6	6	30.00	13	65.00
TRINTOC	1,455,714	145,571	5,644,226	38.77	19,673	13.52	4,620,883.98	7,829	-	18,022	3,427	29,278	20.11	96,620	66.37
TRINIDAD NORTHERN AREAS	7,997,705	799,771	29,080,919	36.36	104,232	13.03	36,121,100.96	-	108,015	-	-	108,015	13.51	587,524	73.46
TEXACO TRINIDAD INC.,	3,015,336	301,534	12,206,157	40.48	37,649	12.49	6,015,260.67	25,419	12,070	1,105	45,081	83,675	27.75	180,210	59.76
AMOCO TRINIDAD OIL CO.	21,734,555	*2,716,819	150,231,745	55.30	335,873	12.37	25,639,314.12	-	2,037,396	-	-	2,037,396	74.99	343,550	12.64
TOTAL & AVERAGES JANUARY - JUNE	37,231,044	4,273,549	209,099,762	48.93	526,261	12.31	73,673,751.93	35,520	2,160,977	23,608	116,225	2,336,330	54.67	1,410,958	33.02
TRINIDAD TESORO PETROLEUM CO. LTD.	2,835,432	283,543	14,048,783	49.55	27,118	9.56	4,435,452.83	-	90	19,162	44,257	63,509	22.40	192,916	68.04
TESORO GALEOTA	394,868	*49,358	3,231,610	65.47	9,775	19.80	-	-	-	-	23,663	23,663	47.94	15,920	32.25
PRIMIER CONSOLIDATED OILFIELDS LTD.	13,154	1,315	70,577	53.67	117	8.90	13,524.00	-	166	-	292	458	34.83	740	56.27
ESTATE OF TIMOTHY ROODAL	159	16	781	48.81	-	-	-	-	-	-	5	5	31.25	11	68.75
TRINTOC	1,478,253	147,825	7,524,417	50.90	19,331	13.08	4,185,805.97	8,265	-	20,981	3,074	32,320	21.86	96,174	65.06
TRINIDAD NORTHERN AREAS LTD.	8,147,237	814,724	38,999,058	47.87	99,226	12.18	33,831,815.64	-	119,404	-	-	119,404	14.66	596,094	73.16
TEXACO TRINIDAD INC.	2,965,610	296,561	15,638,150	52.73	35,526	11.98	5,614,545.99	28,444	7,410	1,025	47,507	84,386	28.45	176,649	59.57
AMOCO TRINIDAD OIL CO.	22,307,343	*2,788,418	197,448,400	70.81	322,433	11.56	23,344,464.78	-	2,100,335	-	-	2,100,335	75.33	365,650	13.11
TOTAL & AVERAGES JULY - DECEMBER	38,142,056	4,381,760	276,961,776	63.21	513,526	11.72	71,425,609.21	36,709	2,227,405	41,168	118,798	2,424,080	55.32	1,444,154	32.96
YEAR'S TOTALS & AVERAGES	75,373,100	8,655,309	486,061,538	56.16	1,039,787	12.01	145,099,361.14	72,229	4,388,382	64,776	235,023	4,760,410	55.00	2,855,112	32.99

*ROYALTY RATE IS 12% ADDITIONAL BARRELS 1st HALF 1979 - 5,504,439, 2nd HALF 5,675,553

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 1977, 1978, 1979, IS SHOWN IN THE FOLLOWING TABLE:—

SOURCE OF REVENUE	ASSESSMENT FOR HALF YEARLY PERIODS ENDING:					
	31-12-79	30-6-79	31-12-78	30-6-78	31-12-77	30-6-77
	\$	\$	\$	\$	\$	\$
ROYALTY ON NATURAL GAS	598,996	554,865	555,118	506,233	504,139	333,968
ROYALTY ON NATURAL GASOLINE	183,076	167,912	127,699	96,911	106,862	51,669
MINIMUM RENT NOT OFFSET BY ROYALTY ON CRUDE OIL	1,667,945	1,250,550	1,041,482	852,476	1,317,999	1,439,337
ROYALTY ON CRUDE OIL	276,961,776	209,099,762	140,240,666	134,150,383	133,260,152	132,768,723
HALF YEARLY TOTAL	279,411,793	211,073,089	141,964,965	135,606,003	135,189,152	134,593,697
YEARLY TOTAL	490,484,882		277,570,968		269,782,849	

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

SUBSTANCE ASSESSED FOR ROYALTY	UNIT	HALF YEARLY PERIODS ENDING :					
		31-12-79	30-6-79	31-12-78	30-6-78	31-12-77	30-6-77
NATURAL GAS	MCF	39,933,049	36,990,992	37,007,841	33,748,887	33,609,301	22,264,508
NATURAL GASOLINE	I.G.	698,723	832,985	1,016,200	955,868	1,080,341	524,101
CRUDE OIL NET	BBL	4,381,760	4,273,549	45,794,418	47,564,836	47,069,250	46,006,040
CRUDE OIL AVERAGE ROYALTY VALUE	STT	63.2079	48.9288	30.62	28.20	28.31	26.89

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

PRODUCT	AVERAGE PRICE IN T & T CURRENCY PER BARREL OF 34.9726 I.G. FOR HALF YEAR ENDED:					
	31-12-79	30-6-79	31-12-78	30-6-78	31-12-77	30-6-77
	\$	\$	\$	\$	\$	\$
BUNKER C GRADE FUEL	41.018462	30.252680	30.252680	22.932632	24.189503	23.077831
NO. 2 FUEL	79.878381	57.149252	62.139847	36.560176	33.629313	34.505520
43-47 D.I. GAS OIL	80.387021	62.451363	62.419306	36.718266	33.738602	34.682019
48-52 D.I. GAS OIL	80.513494	62.554904	62.522845	36.844738	33.865074	34.808491
53-57 D.I. GAS OIL	80.766439	62.807849	62.775790	37.097683	34.118019	35.061436
70-72 OCTANE M HEADED MOTOR GAS	89.160363	71.121581	71.113217	43.830282	34.638343	36.001424
AVERAGE MIDDLE RATE FOR SIGHT DRAFT ON N.Y. T & T CURRENCY FOR U.S. \$1.00	2.40900	2.40900	2.409	2.409	2.40900	2.40900
VALUE OF TETRA ETHYL HEAD IN T & T CENTS PER MILLIMETRE	1.704319	1.394855	.01310848	.01195074	.01095350	.00999786
ROYALTY IN T & T CENTS PER GALLON ON NATURAL GASOLINE (C.H.P.S.)	25.843494	20.648249	12.560751	10.686644	9.890582	10.318300

THE HALF YEARLY VOLUME OF PRODUCTS TO WHICH THE ABOVE PRICES FOR 1979 WERE APPLIED RESPECTIVELY IN CALCULATING ROYALTY ON CRUDE OIL WILL BE FOUND IN APPENDIX VIII

APPENDIX X

The following Table Shows for the year 1977, 1978, 1979 the Quantity of Asphalt
Extracted from the Pitch Lake and the Quantities of Derived Product which were
exported and Consumed locally.

NATURAL ASPHALT	TONS		
	1977	1978	1979
Extracted by the Ministry of Works for Local Use	21,429	22,673	15,377
Extracted by Trinidad Lake Asphalt Co.,	22,167	39,718	39,433
TOTAL	43,956	62,391	54,810
Derived products Manufactured by the Company:—			
Exported			
Crude Asphalt	—	—	—
Dried Asphalt	15,162	27,618	29,104
Asphalt Cement	195	21	193
TOTAL	15,357	27,639	29,297
Local Sales			
Crude Asphalt	195	32	60
Dried Asphalt	381	101	676
Asphalt Cement	147	58	12
TOTAL	723	191	748

NOTE: The above tabulation 1 Long ten – 2,240 lbs.

TABLE XI
ANNUAL STATISTICS FOR NATURAL GAS PRODUCTION AND UTILIZATION: 1975 - 1979

	1975		1976		1977		1978		1979	
	MILLIONS OF S.C.F.	%	MILLIONS OF S.C.F.	%	MILLIONS OF S.C.F.	%	MILLIONS OF S.C.F.	%	MILLIONS OF S.C.F.	%
PRODUCTION	126,434	100.0	137,959	100.0	149,589	100.0	157,920	100.0	169,740	100.0
G.O.R. (SCF/BBL)	1,608	-	1,775	-	1,789	-	1,885	-	2,169	-
A. USED AS FUEL:-										
IN FIELDS	6,000	4.7	7,128	5.2	9,064	6.0	10,616	6.7	10,244	6.0
IN REFINERIES	15,763	12.5	18,541	13.4	19,350	12.9	18,751	11.9	20,865	12.3
IN OTHER INDUSTRIES	24,855	19.7	27,276	19.8	34,554	23.1	39,842	25.2	40,881	24.1
SUB TOTAL:-	46,618	36.8	52,945	38.4	62,968	42.0	69,209	43.8	71,990	42.4
B. OTHER COMPLETE UTILIZATION:-										
USED AS PROCESS GAS	6,844	5.4	7,169	5.2	7,708	5.1	15,153	9.6	15,445	9.1
INJECTED INTO FORMATION	2,018	1.6	1,699	1.2	333	0.2	114	0.07	19	-
CONVERTED INTO C.H.P.S.	60	0.1	50	0.1	62	0.1	63	0.03	50	-
SUB TOTAL:-	8,922	7.1	8,918	6.5	8,103	5.4	15,330	9.7	15,514	9.1
C. VENTED:-										
AFTER USE OF PNEUMATIC ENERGY	6,684	5.4	7,200	5.2	10,349	6.9	15,843	10.1	25,550	15.1
WITHOUT USE	64,010	50.6	68,896	49.9	68,169	45.6	57,538	36.4	56,686	33.4
SUB TOTAL:-	70,894	56.1	76,096	55.1	78,518	52.5	73,381	46.5	82,236	48.5

SUMMARY OF ACCIDENTS OCCURRING IN THE PETROLEUM INDUSTRY – 1979

The total number of accidents recorded in the Energy Industry was 687 for 1979. This total represents a decrease of about 22% over the figure reported in 1978 and includes 276 Refinery Accidents which do not fall under the jurisdiction of the Ministry of Energy and Energy-based Industries.

Accidents which took place in the producing fields numbered 411 thereby showing increase of 9.3% to last year's 4.8 percent. From this number 8.3% were classified as serious and consisted of fractures, head injuries, amputation of fingers, deep lacerations, severe burns crush injuries and eye injuries. The non-serious accidents involved those treated for shock, bruises to the body, sprains, strained muscles, squeezed limbs and fingers.

For the years, three (3) fatal accidents were recorded. Two occurred at Amoco and the third at Tesoro producing field.

On the Drill ship "Discoverer 511" operating in Amoco's lease, two (2) men were fatally injured while working in the "moonpool". The "Torgue arm" securing a hydraulic motor broke free from its support striking both men while Number 4 mooring which was in operation.

The other took place at Tesoro's well Quarry 53 where a Floorman was struck on his head and back by a power tong during workover operation. While rotating and lifting stuck tubing, the tubing suddenly came free and lifted the power tong with it. The power tong disengaged from the tubing, broke away from its hanger and struck the workman. The injured died two weeks later in hospital as a result of injuries sustained.

TABLE X11

ACCIDENT STATISTICS FOR 1979

COMPANY	FIELD	TOTAL	FATALITIES	SERIOUS				NON-SERIOUS			
				D	P	E	O	D	P	E	O
TEXACO	GUAYAGUAYARE	6	—	—	1	—	—	—	4	—	1
	BARRACKPORE	2	—	—	—	—	—	—	1	—	1
	BRIGHTON/FOREST RESERVE	22	—	—	4	—	—	8	10	—	—
	PALO SECO	11	—	—	—	—	—	9	2	—	—
	ERIN	—	—	—	—	—	—	—	—	—	—
	CRUSE	—	—	—	—	—	—	—	—	—	—
	WILSON	—	—	—	—	—	—	—	—	—	—
	POINTE-A-PIERRE	1	—	—	—	—	—	—	—	—	—
		42	Nil	Nil	5	Nil	Nil	17	17	Nil	3
AMOCO	ALL	207	2	8	4	Nil	1	120	53	—	19
TESORO	ALL	40	1	2	3	—	—	16	13	—	5
TRINMAR	ALL	65	—	2	—	—	—	18	14	10	21
TRINTOC	ALL	57	—	5	2	—	2	30	15	—	3
P.C.O.L.	ALL	—	—	—	—	—	—	—	—	—	—
DEMINEX	ALL	—	—	—	—	—	—	—	—	—	—
		411	3	17	14	Nil	3	201	112	10	5

* Refinery Accidents under the jurisdiction of the Factory Inspectorate Division amounted to 276 (not included in totals).
D = DRILLING; P = PRODUCTION; E = ENGINEERING; O = OTHERS.

ROYAL ASSESSMENTS

Appendix V111 presents a summary of Crude Oil Assessed for State Royalty by company, showing averaged price per barrel and analyses for the half-yearly periods ending 30th June and 31st December 1979.

Net Royalty production decreased from 47,564,836 barrels and 45,794,418 barrels in the first and second half of 1978 to 42,735,489 barrels and 43,817,600 barrels respectively in 1979. The main reason for this is the Amoco Trinidad Oil Company's production which continued its downward trend.

Prices of Petroleum Products continued rising. Total Royalty on crude for the year was therefore \$486,061,538 as compared with \$274,391,049 for 1978 and \$266,038,875 for 1977 (See Appendix 1X – Average Price in T.T. Currency per barrel).

Appendix 1X presents a summary of Royalty assessed for Crude Oil, Natural Gasolene and Natural Gas produced, and Minimum Rents on State owned Oil Mining Leases/Licences for the half-yearly periods 1977, 1978 and 1979.

Total Royalty in 1979 of \$490,484,882 is higher than 1978 and 1977 respectively at \$277,570,968 and \$269,782,849. Higher prices of Petroleum Products in 1979 are therefore mainly responsible for this increase, despite the drop in production in 1979 when compared with 1978 and 1977.

LEGAL DEVELOPMENTS IN 1979

The Legal Section had its share of the routine duties which included the revision of contracts, the giving of advice on various matters pertaining to oil industry, the drafting of licences and other documents, and attendance at meetings and committees.

A. LEGISLATION

The following legislation – the drafting of which the Legal Section assisted – relevant to the petroleum industry were passed in 1979:–

- (a) The Petroleum (Amendment) Act, 1979 – Act No. 9 of 1979.
- (b) The Law Revision (Miscellaneous Amendment) (No. 1) Act, 1979 – Act No. 45 of 1979.
- (c) The Price of Petroleum Products (Amendment) Order, 1979 – Government Notice No. 114 of 1979.
- (d) The Price of Petroleum Products (Amendment) Order, 1979 – Government Notice No. 126 of 1979.
- (e) The Price of Petroleum Products (Amendment) Order, 1979 – Government Notice No. 199 of 1979.
- (f) The Price of Petroleum Products (Amendment) (No. 4) Order, 1979 – Government Notice No. 200 of 1979.
- (g) The Price of Petroleum Products (Amendment) (No. 5) Order, 1979 – Government Notice No. 201 of 1979.
- (h) The Petroleum Impost Rating Order, 1979 – Government Notice No. 202 of 1979.
- (i) The Petroleum Production Levy and Subsidy (Gross Margin) (Amendment) Order, 1979 – Government Notice No. 115 of 1979.
- (j) The Petroleum Production Levy and Subsidy (Gross Margin) (Amendment) Order, 1979 – Government Notice No. 127 of 1979.
- (k) The Petroleum Production Levy and Subsidy (Gross Margin) (Amendment)

Order, 1979 – Government Notice No. 197 of 1979.

- (l) The Petroleum Production Levy and Subsidy (Gross Margin) (No. 2) Order, 1979, Government Notice No. 198 of 1979.
- (m) The Petroleum Profits Tax (Posted Prices) (Amoco Trinidad Oil Company) Order, 1979 – Government Notice No. 189 of 1979.
- (n) The Petroleum Profits Tax (Posted Prices) (Texaco Trinidad Inc.) Order 1979 – Government Notice No. 190 of 1979.
- (o) The Petroleum Profits Tax (Posted Prices) (Trinidad and Tobago Oil Company) Order, 1979 – Government Notice No. 191 of 1979.
- (p) The Petroleum Profits Tax (Posted Prices) (Premier Consolidated Oilfields Limited) Order, 1979 – Government Notice No. 192 of 1979.
- (q) The Petroleum Regulations (Competitive Bidding) Order, 1979 – Government Notice No. 85 of 1979.

B. LICENCES

In 1979 an application from the National Gas Company of Trinidad and Tobago Limited for a Licence to construct a 20-inch Pipeline between Picton and Point Lisas was received and considered – vide Government Notice No. 130 of 1979.

Furthermore, an application from Trinidad and Tobago Oil Company Limited for an Exploration and Production (Public Petroleum Rights) Licence was received – Government Notice No. 32 of 1979.

C. LAW REFORM

The Legal Section worked with the Law Commission in revising the following enactments for inclusion in the Revised edition of the Laws of Trinidad and Tobago:—

- (a) Mines, Borings and Quarries Ordinance, Ch. 26 No. 4.
- (b) Drilling Regulations, made pursuant to the Mines, Borings and Quarries Ordinance, Ch. 26 No. 4.
- (c) Asphalt Industry Regulations Ordinance, Ch. 26 No. 10.
- (d) Petrochemicals Industry Development Act, Act No. 4 of 1962.
- (e) Geological Survey Ordinance, Ch. 26 No. 11.
- (f) Petroleum Production Levy and Subsidy Act, Act No. 14 of 1974.
- (g) Oil Mining (High Water Mark) Ordinance, Ch. 26 No. 12.
- (h) Petroleum Act, Act No. 26 of 1969.

AGREEMENTS/CONTRACTS

The Legal Section was involved in the drafting of the following agreements/contracts:—

- (a) An agreement between the Ministry of Petroleum and Mines and Occidental Exploration and Production Company to facilitate the latter to conduct an experimental seismic survey in the Nariva Swamp area.
- (b) Shipping Agreement between Fertilizers of Trinidad and Tobago and Amoco International Sales Company.
- (c) Agency Agreement between Fertilizers of Trinidad and Tobago and Amoco International Sales Company for the marketing of ammonia.

E. OTHER WORK

The Legal Section assisted in the Finalization of the Memorandum and Articles of Association of the National Energy Corporation of Trinidad and Tobago Limited.

ANCILLARY ACTIVITIES

Staff Reports, Royalty, Legal Developments,
Safety Leases & Licences

STAFF

1979 was a dramatic year for the Ministry in that only five (5) new officers were recruited but a chain of resignations followed at the Professional and Technical level resulting in the loss of key and experienced personnel. Among officers recruited were:—

Mr. M. Kurpiel	—	Geophysical Consultant (On three-year contract after retirement)
A. Jupiter	—	Petroleum Engineer I
C. Baisden	—	Petroleum Engineer I
A. Peters	—	Mining Survey Technician
M. Abdool	—	Mechanical Engineer I

Officers who left the service of the Ministry included:—

Mr. L. Thompson	—	Petroleum Engineer
P. Seetahal	—	Petroleum Engineer
Syping Lee	—	Geologist II
K. Rodrigues	—	Geologist I
G. Richards	—	Mechanical Engineer I
M. Joseph (Miss)	—	Petroleum Engineer Assistant
B. Nunes (Mrs.)	—	Draughtsman I

Considerable problems continued to be experienced with respect to the recruitment and retention of technical staff especially at the level of Petroleum Engineer where seven (7) vacancies remained unfilled.

A Pipeline Inspection Unit was created with a staff of one Petroleum Inspector 11 and three (3) Petroleum Inspector 1. In addition the Draughting Unit of the Geological Division was complimented with the addition of three (3) new posts of Draughtsman 1.

TRAINING

Miss H. Wong, Research Officer, Energy Planning Division attended the three-month Course in Project Formulation and Evaluation.

Mr. T. Ali, Chemical Engineer 11 was assigned to the National Gas Company and Mr. George Chin Chemical Engineer 1 was attached to the Co-ordinating Task Force. Both these officers visited the United States of America to receive basic training for involvement in the proposed L.N.G. Project.

COURSE ON SAFETY IN THE PETROLEUM INDUSTRY

The highlight of the training activity was a short course on safety in the Petroleum Industry which was organised by the Ministry of Energy and Energy-based Industries and co-ordinated by Mr. Rupert Mands, Petroleum Engineer 111. This course was conducted by the Petroleum Training and Technical Services of Norman, Oklahoma, United States of America. The president of this organization is Dr. Henry Crichlow a national of Trinidad and Tobago. Participants for the course included nominees from Oil and Service Companies. The Factory Inspectorate of the Ministry of Labour, the Oil Field Workers Trade Union and personnel of the Ministry of Energy and Energy-based Industries.

CONFERENCES AND SEMINARS

Members of staff continued to participate at conferences and international meetings to keep up-to-date on new developments in the Petroleum and Energy Industries.

4TH LATIN AMERICAN GEOLOGICAL CONGRESS

The Government of Trinidad and Tobago was host to participants in the 4th Latin American Geological Congress which was held from 7th July 1979 to 15th July 1979 at the Trinidad Hilton Hotel. The Honourable Minister Mr. Errol Mahabir was Honorary President of the Congress and gave the Feature address at the Formal opening. Mr. John Scott, Geologist 111 was elected President of this Congress. The undermentioned members of staff were part of the Central Organizing Committee for the Congress:—

Mr. Carlton Braithwaite	Administrative Officer V
Mr. John Kassie	Administrative Officer V (Temporary)
Mr. Trevor Swift	Administrative Officer 11

Delegates to the Congress came from North and Latin America, and Europe and many of the leading earth scientists and Geologist of world renown shared their experiences with their local colleagues.

VISIT TO THE UNITED KINGDOM BY – HONOURABLE ERROL MAHABIR

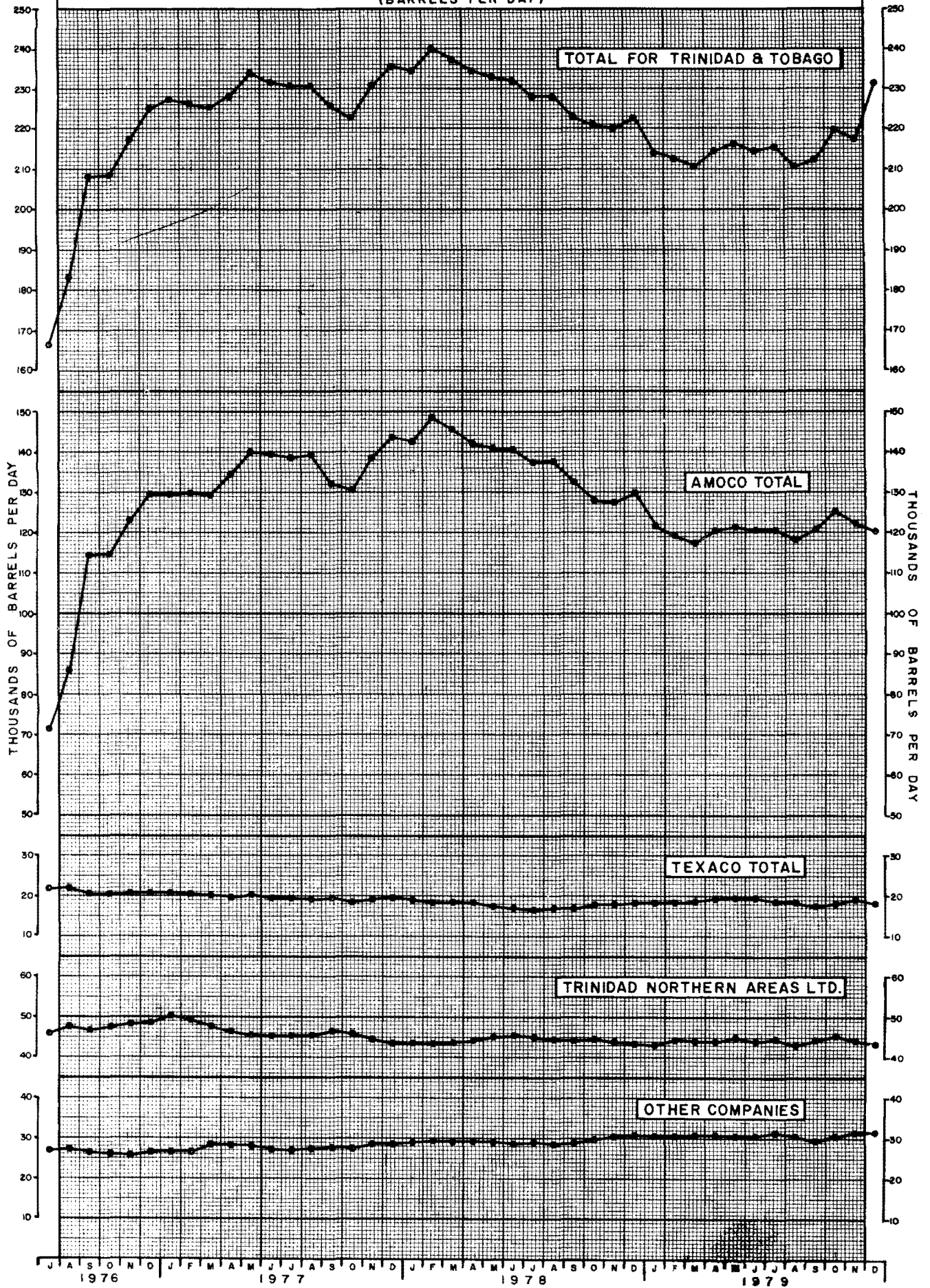
During the period 24th October 1979 to 7th November 1979 the Honourable Minister of Petroleum and Mines Mr. E. Mahabir paid an official visit to the United Kingdom at the Invitation of the Minister of State and Energy the Honourable Hamish Gray. Discussions were held on a number of important matters of mutual interest to Trinidad and Tobago and the United Kingdom. Mr. John Scott, Geologist 111 also accompanied the Honourable Minister on this visit.

Other Conferences and Meetings attended were as follows:—

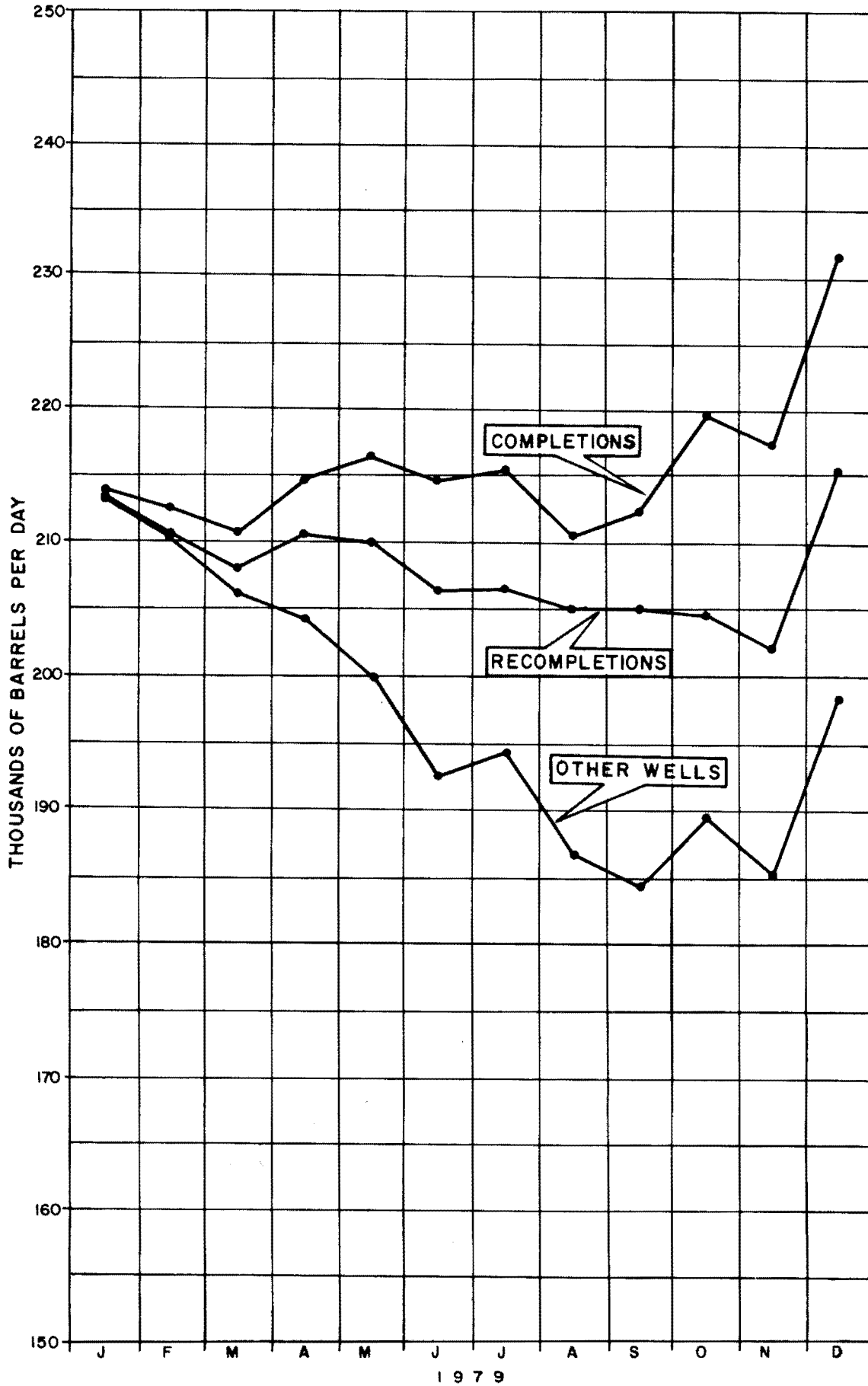
<u>Name of Officers</u>		<u>Event</u>
R. Appleton	—	U.N. Law of the Sea – March, 1979
J.P. Scott	—	Convention of the American Association of Petroleum Geologist
Mrs. M. Kurpiel	—	Official visit to Barbados on Government to Government Assistance
Mrs. K. Bhoolai	—	Meeting in New York on Fertrin Project
P. Seetahal N. Ramsaywak	—	Offshore Technology Conference, Houston, Texas

H. Toney	—	O.A.S./Commonwealth Science Council Seminar Puerto Rico, May, 1979
S. Davis T. Ramlakhan	—	Conference on Future of Heavy Crude and TAR Sands, Alberta, Canada, June 1979
O. Fernandes	—	Official Visit to Barbados Government to Government Assistance
B. Ali	—	Meeting of Latin American Energy Organization (OLADE) July, 1979, Costa Rica
K. Haynes Mrs. M. Kurpiel C. Alexander	—	Geological Field Trip to Barbados, July 1979
R. Appleton	—	U.N. Law of Sea Meeting New York, August, 1979
R. Mends	—	Official visit to Antigua — Government to Government Arrangements
T. Boopsingh K. Haynes	—	World Petroleum Congress Bucharest Romania 7th September, 1979 — 15th September, 1979
S. Davis	—	Conference on Computer Processed Interpretation Caracas — 22nd November, 1979 — 23rd November, 1979.

MINISTRY OF ENERGY & ENERGY BASED INDUSTRIES
CRUDE OIL PRODUCTION RATE BY MONTHS
 JULY 1976-DECEMBER 1979
 (BARRELS PER DAY)



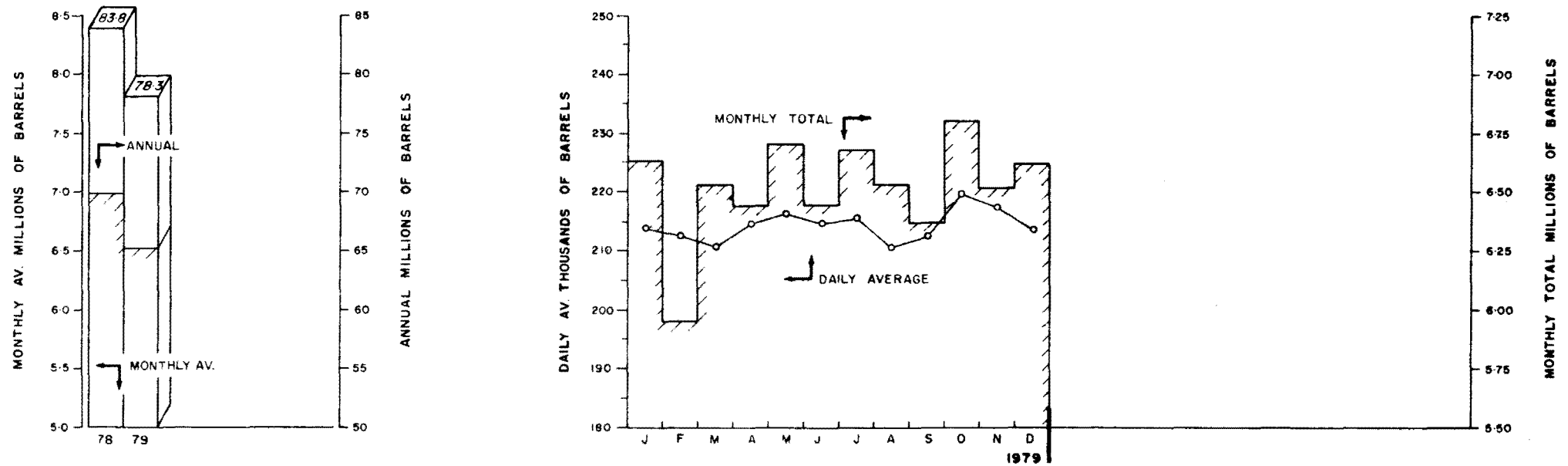
MINISTRY OF ENERGY & ENERGY BASED INDUSTRIES
TRINIDAD AND TOBAGO CRUDE OIL PRODUCTION, 1979
DAILY AVERAGE BY MONTHS
 COMPLETIONS, RECOMPLETIONS AND OTHER WELLS



STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD & TOBAGO

CRUDE OIL PRODUCTION

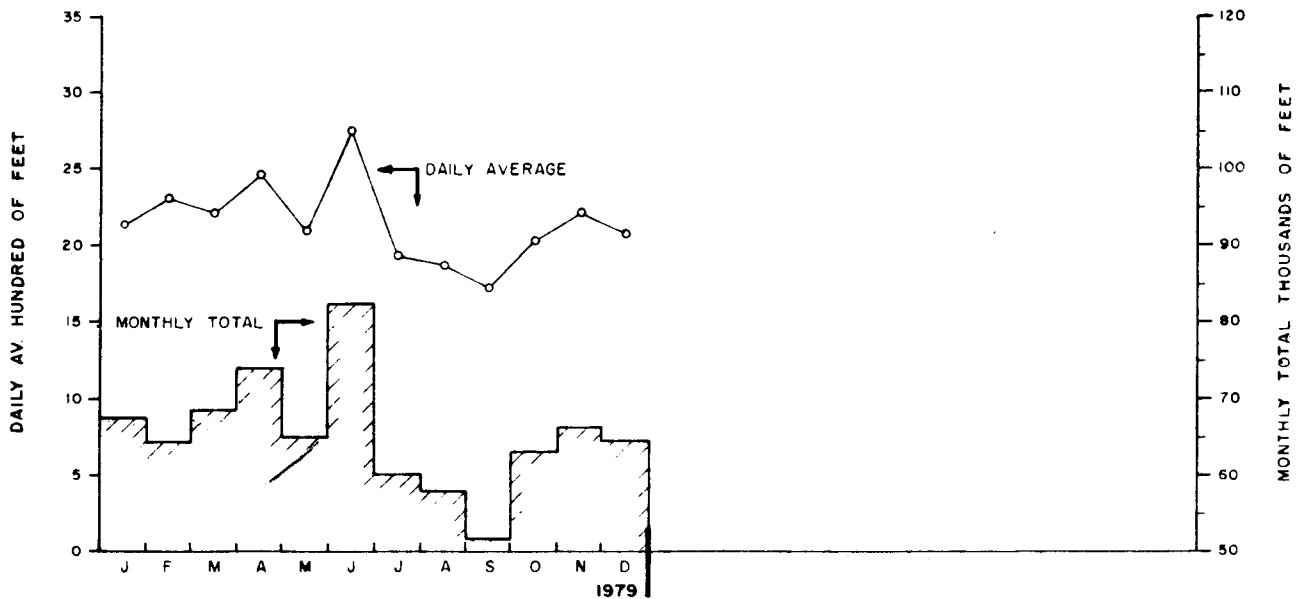
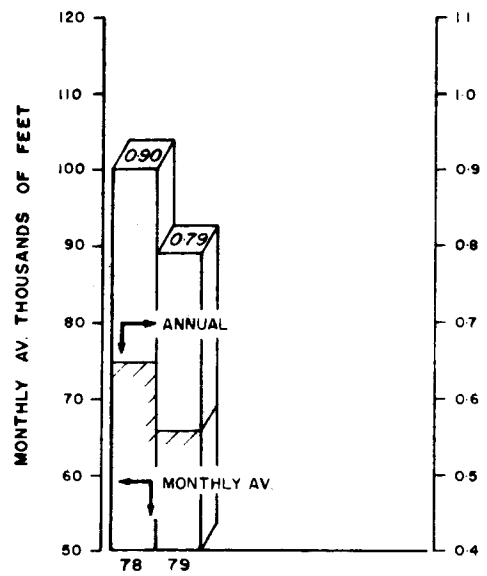
FIG. V111



STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD & TOBAGO

DRILLING

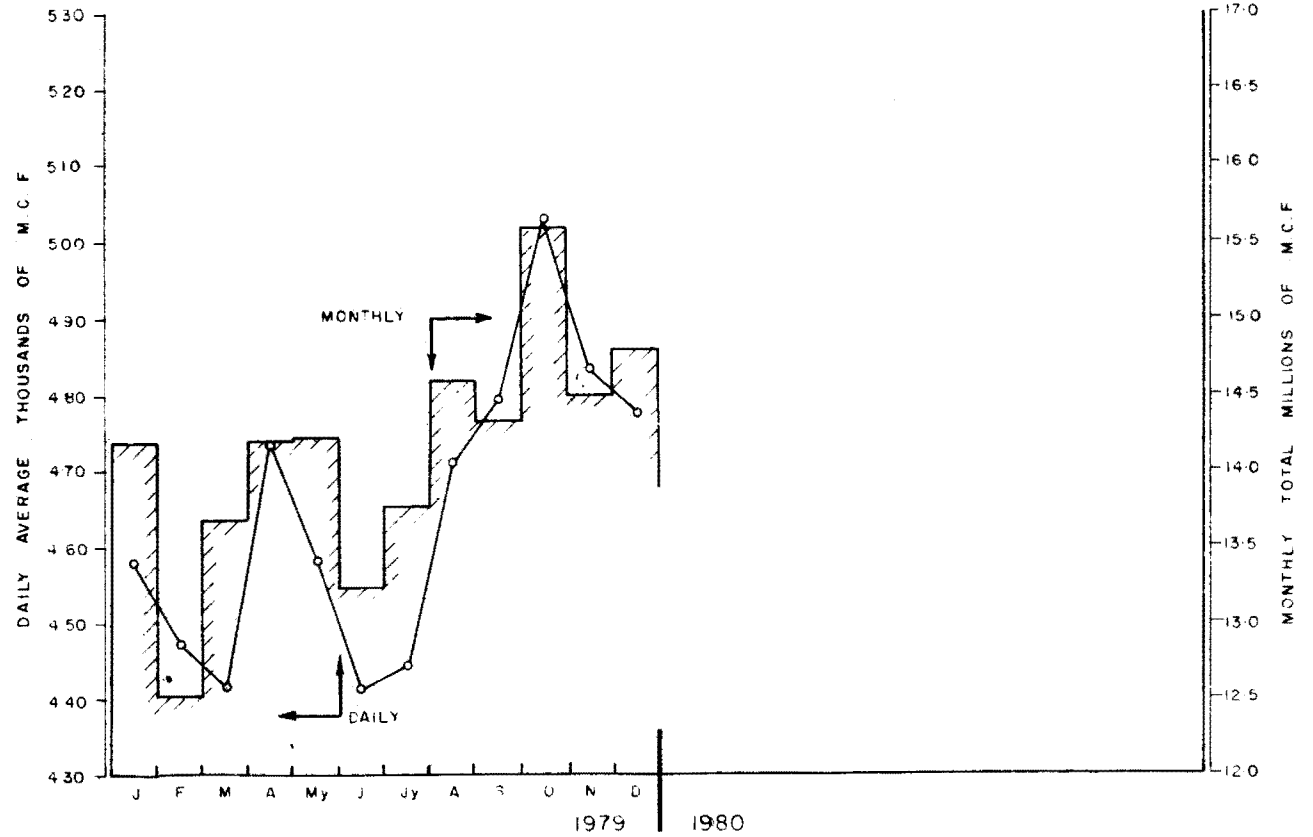
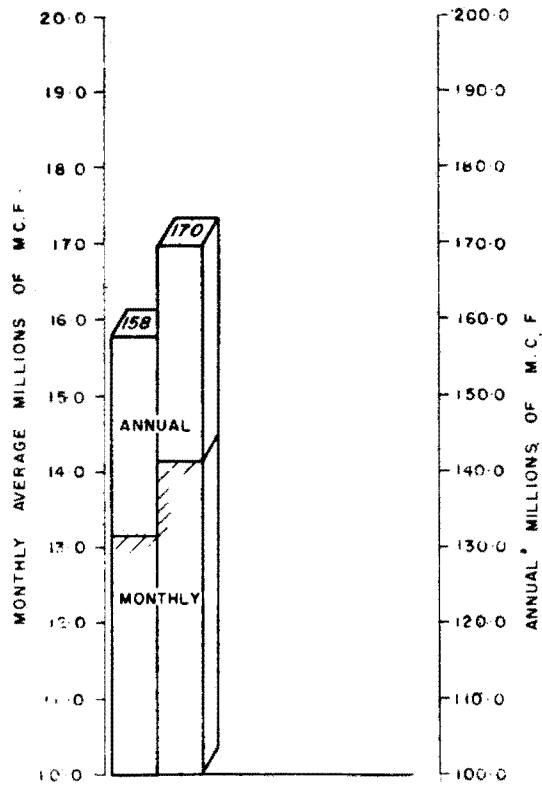
FIG. V11



STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD & TOBAGO

NATURAL GAS PRODUCTION

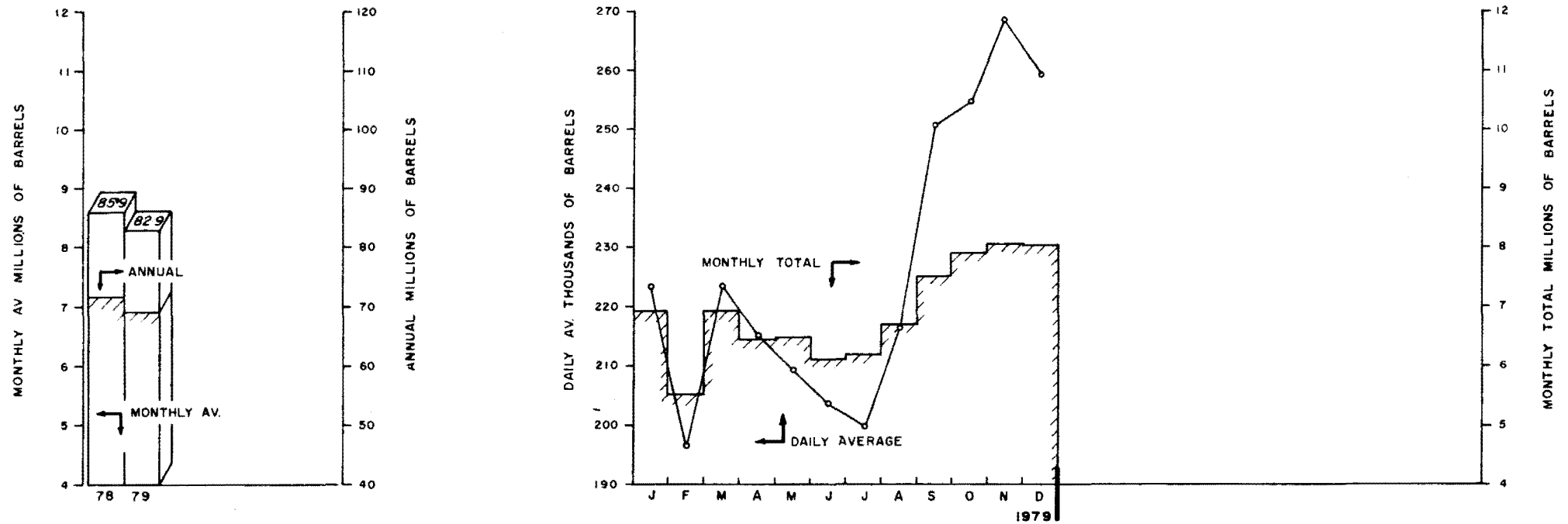
Fig. X



STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD & TOBAGO

REFINERY THROUGHPUT

Fig. 1X



STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD & TOBAGO

CRUDE OIL IMPORTS

Fig. X1

