

TRINIDAD AND TOBAGO



MINISTRY OF PETROLEUM AND MINES

ANNUAL REPORT

FOR THE YEAR

1971

Errata 1971 Report.

Page 15 - In the 2nd paragraph beginning " a total volume" every where the unit M.S.C.F. is stated should be changed to read M.M.C.F.

Figure 1 - Geophysical Activities 1970 should read 1971.

Page 24 - Line No. 2 - should read under 1971.

- 16.1 instead of - 36.3
- 1971
- 141 instead of - 107.

Line No. 3 should read under 1971 47,289 instead of 47,255.

ERRATA

Page 20

10th line from bottom should read 200,000 bopd. instead of 2000 bopd.

Page 21

Line 5 should read Shell Trinidad Ltd. 37½% instead of 25%.

Line 10 should read Shell Trinidad Ltd. 30% instead of 37½%.

Page 23

21st line from the bottom should read injecting gas and water instead of objecting gas and water.

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FOREWORD

The Petroleum Industry of Trinidad and Tobago has always had as its primary objective the making of a more significant contribution to the development of the country and its people.

The resurgence of the Petroleum Industry after its temporary decline in production during the past two years became much more manifest during the year 1971 as the Oil Companies operating here demonstrated their appreciation of the country's revised national policy on petroleum.

There was an intensified programme of exploration and development in both our land and marine areas in an effort to maximise crude oil recovery from a number of oil-bearing formations. The operators have also concentrated their efforts on accelerated secondary oil recovery programmes. The exploitation of recent discoveries of crude oil offshore the East Coast by AMOCO Trinidad Oil Company was energetically pursued and in December, 1971, it was anticipated that early in 1972, the delivery of East Coast crude oil to tankers would begin from the new Pt. Galeota Terminal. Results in 1971 of the initial tests from discovery wells in the new fields gave positive indications that in the near future there would be a significant growth in the crude oil production sector of Trinidad and Tobago's petroleum economy.

The significant discovery of oil and natural gas off the East Coast of Trinidad and Tobago, coinciding as it does with growing world-wide energy deficit particularly in the United States, have created the conditions for a greatly expanded petroleum industry in Trinidad and Tobago. As evidence of this, agreement in principle has been reached by the Government of Trinidad and Tobago, AMOCO Trinidad Inc. (the producers) and the Natural Gas Pipeline Company of Chicago (the purchasers) for the establishment, at Point Lisas in Trinidad and Tobago, of an LNG plant for processing natural gas for sales to the United States.

I sincerely wish through this medium to thank all the local operators associated with the Petroleum Industry for their excellent co-operation throughout the year 1971 and to place on record my deep appreciation of the concerted efforts of the entire staff of the Ministry of Petroleum and Mines who, despite their reduction in numbers arising out of transfers and departures, maintained at all times the high standard of performance associated with the Ministry.

Minister of Petroleum and Mines

SUMMARY AND HIGHLIGHTS OF THE OIL INDUSTRY

At the end of 1971 Trinidad and Tobago had produced 7% less crude oil than in the previous year. This decline in production which started in 1968 is expected to be reversed in 1972 when large new fields off the East Coast will be brought on production.

A record level of drilling activity was achieved and although the results of development and appraisal drilling in established producing areas were generally poor, exploratory drilling off the East coast discovered substantial reserves of oil and gas.

In the refining sector of the Industry, refinery throughput dropped by 6% to 145.5 million bbls.

Table I summarises and compares overall production and drilling activity in Trinidad and Tobago for the years 1968, 1969, 1970 and 1971. Figures II and III also vividly illustrate annual drilling and production statistics.

Highlights of the Petroleum Industry during 1971 include the following:—

- (1) the first exploratory well completed in the North Coast marine area off Trinidad and Tobago, KK 6-1, was drilled by the DEMINEX-Agip Consortium to 8,996 feet in the record depth for the Country of 430 feet of water. The well discovered methane gas. Follow-up drilling is required to determine commerciality.
- (2) Construction of the US \$80 million Desulphurisation Plant at Texaco's Pointe-a-Pierre refinery was initiated in February.
- (3) Technical and economic studies were made on the feasibility of exporting liquefied natural gas from the substantial gas reserves previously discovered on the South East Coast by AMOCO.
- (4) The Government of Trinidad and Tobago entered a joint-venture agreement with Delta Exploration Company Inc. of Houston, Texas, for the purpose of carrying out a seismic survey in the Gulf of Paria and off the East Coast of Trinidad.
- (5) A Government-appointed Committee held discussions with oil company officials on the determinations of prices submitted to the Commissioner of Inland Revenue, for tax purposes, refinery processing fees and other forms of government oil revenue.
- (6) A Committee appointed by Government examined and comprehensively reported on the problems of the pollution of the sea, of rivers, inland and coastal waters, and agricultural lands, by oil and other industrial effluents.
- (7) A Consortium comprising Shell Trinidad Ltd., Texaco Trinidad Inc. and Trinidad-Tesoro Petroleum Company was granted an Exploration and Production (Public Petroleum Rights) Licence for an area of approximately 187,400 acres off the South-East Coast of Trinidad.
- (8) The Government of Trinidad and Tobago hosted, in April, a UN Seminar on "The Mineral Resources of the Continental Shelf" which lasted two weeks.
- (9) The Ministry participated in several conferences dealing with such controversial subjects as, The Law of the Sea, Sea-bed Resources and Pollution.
- (10) Texaco achieved the record for the deepest well drilled in Trinidad and Tobago when it completed Columbus 1, in 40 feet of water off the coast of Guayaguayare at a depth of 17,153 feet. The well was subsequently abandoned after testing.

TABLE I
Summary of Statistics for the Trinidad and Tobago Petroleum Industry 1968-1971

	1968	1969	1970	1971
Annual Crude Oil Production (barrels)	66,903,906	57,418,493	51,046,893	47,204,819
Annual Natural Gas Production (mscf)	157,444,945	137,502,590	121,059,606	109,813,825
Average GOR (scf/barrel)	2,264	2,394	2,372	2,326
Annual CHPS (Natural Gasoline Production (barrels)	163,670	150,466	168,460	141,285
Daily Refinery Capacity (barrels/day)	430,000	433,000	436,000	436,000
Annual Refinery Troughput (barrels/year)	151,282,098	154,076,702	154,860,261	145,547,960
Total wells completed during the year	175	130	135	220
Average depth of completed wells (feet)	5,356	5,468	4,917	4,273
Total footage drilled during the year	942,686	690,671	663,743	939,259
Oil and Gas Wells completed during the year	151	99	108	175
Drilling success-ratio (per cent)	86.9	76.2	80.0	79.5
Proven Crude Oil Reserves (million barrels)	N.A.	N.A.	N.A.	N.A.
Acreage Developed	43,630	44,915		
Average Rigs running	8.2	7.0	7.0	9.0

GEOLOGICAL AND GEOPHYSICAL ACTIVITY

Geophysical activity during 1971 was restricted to the North Coast marine area and a portion of the East Coast Continental Slope. An infill seismic survey was carried out by the Amerada Hess Group in their licensed area on the North Coast. Occidental of Trinidad Inc. carried out some seismic work on the North and East continental slopes. A total of 329 line miles was shot in .47 party months. See Table II and Figure I (Hatched Areas). So surface geological work was conducted during the year.

A most significant exploratory effort was made in 1971 when the Government, through the Ministry of Petroleum and Mines and the Delta Exploration Company entered into a joint-venture contract to conduct a comprehensive geophysical survey of open marine acreage off the coasts of Trinidad and Tobago. A combined seismic, gravity and magnetic survey covering approximately 1.75 million acres, comprised of approximately 1,300 line-miles is scheduled to begin early in 1972. The areas to be covered include the Northern half of the Gulf of Paria and open acreages on the North-East and East coasts. The survey will include a portion of the Eastern Continental slope to a water depth of 2,000 feet. Interested companies will purchase the data, and at a date to be announced, will submit confidential bids on a competitive basis for Exploration and Production licences.

TABLE II
Party Months of Geological and Geophysical Exploration in 1971

Company	Seismograph	Total
Occidental	11/30	11/30
Amerada Hess Ashland	3/30	3/30
Totals	14/30	14/30

Drilling

The highest level of drilling activity since 1966 was recorded in 1971 when a monthly average of 12.4 rig months of activity was achieved. This rise in the level of activity was due mainly to Texaco Trinidad Inc. maintaining at least 5 rigs in continuous operation during the year.

In 1971 there were 220 wells drilled and completed, giving a cumulative footage drilled of 939,134 feet (Table 2). This represents an increase of 63 per cent in the number of wells drilled and a 41 per cent increase in the resulting footage drilled. Three new groups of companies, the Deminex-Agip Consortium; Phillips-Cleary - Apco Consortium; and the Santa Fe-Oceanic-Terra Consortium were actively engaged in drilling off the North Coast of Trinidad.

Exploratory Drilling

There were 35 exploratory wells drilled and completed in 1971 of which 22 were abandoned as dry or uneconomic. The successful ratio of 38 per cent is the same level as that for 1970. Figure 3 shows the location of exploratory and semi-exploratory wells.

AMOCO Trinidad Oil Co. continued their exploration programme successfully in 1971 despite the drilling and temporary abandonment of seven exploratory wells off the East Coast. This programme has led to an oil and gas discovery in the North Offshore Point Radix (OPR) area and a gas discovery on the Tourmaline structure. There are plans to erect a platform in 1972 to develop the oil and gas reserves in the North OPR area. The platform will be called the Samaan Platform. A production test from Tourmaline 2A yielded 6 million cubic feet of gas per day from a 5-foot perforated interval within a massive pay zone at a depth of 3,950 feet.

In the North Coast area of Trinidad on the licences which were granted in 1970, five wells were drilled and abandoned after testing. The Deminex-Agip Consortium drilled their first well KK6-1 which was abandoned after testing methane or dry natural gas. Further drilling and testing of this area will be undertaken by the group to determine the significance of this methane gas discovery which established the presence of reservoirs and hydrocarbons in the new basin.

Phillips Petroleum Caribbean Ltd. *et al* had a 3-well drilling programme and the Santa Fe group drilled one well. All of the above wells were drilled on seismic structures as defined by the United Nations - Trinidad and Tobago Government Seismic Survey conducted in 1969. At the end of the year the Deminex-Agip group was still drilling their second well. HH 6-1.

Shell Trinidad Ltd. had one semi-appraisal well, Penal 257, which was abandoned as being dry after reaching its objective in deep Herrera Sands. Trinidad Canadian Oilfield Ltd. in a joint-venture with Texaco Trinidad Inc. drilled a successful appraisal well. Tabaquite 220, in central Trinidad. This well was drilled to evaluate a stratigraphic trap in the Nariva sands in an area about 1½ miles south of the old Tabaquite field.

Trinidad Northern Areas Ltd. drilled two semi-appraisal wells - one in the Point Fortin Offshore area and the other in East Soldado. Both wells failed to locate sufficient oil reserves to justify the erection of a platform at those locations.

Trinidad-Tesoro Petroleum Company Ltd. drilled two appraisal wells in 1971. One of the wells, GU-815, was a successful oil producer in the East Guapo Field.

Texaco Trinidad Inc. drilled and completed 17 exploratory or appraisal wells. Of these wells, AS 124X and Columbus 1 were drilling in December 1970 and completed in 1971. AS 124X was completed as a gas producer in the lower Nariva Blanket sand and Columbus 1, the deepest well in Trinidad, was abandoned at 17,153 feet after some uneconomic shows

TABLE III
Summary of Wildcat Drilling in Trinidad and Tobago - 1971

Operator	Well Name	Index Map Reference	Basis for Location	LAHEE Explor. Class.	Completion Date	Total Depth (Feet)	Name and/or Age of Deepest Formation	Results/Remarks
AMOCO Trinidad Oil Co.	OPR - 13	E - 16	Seis SSG	C ₁	26. 1.71	15,191	Miocene	Abandoned after testing Oil and Gas
	OPR - 14	F - 16	Seis	C ₃	4. 3.71	9,727	Miocene	Abandoned after testing Oil and Gas
	OPR - 15	F - 16	Seis SSG	C ₁	22. 6.71	12,181	Gros Morne	Abandoned after testing Oil
	SEG - 7	B - 18	Seis SSG	C ₁	20. 3.71	14,019	Miocene	Abandoned after testing Gas
	Tourmaline 1	D - 15	Seis SSG	C ₃	19.11.71	5,020	Miocene	Abandoned - Mechanical reasons
	Tourmaline 2	D - 15	Seis SSG	C ₃	27.10.71	462	Miocene	Abandoned - Mechanical reasons
	Tourmaline 2A	D - 15	Seis SSG	C ₃	25.11.71	9,442	Miocene	Abandoned after testing Gas
	West Tour-	C - 15	Seis SSG	A ₃	-	-	-	Drilling at 31.12.71
DEMINEX	KK6 - 1	P - 11	Seis SSG	C ₃	3. 5.71	8,990	Tertiary	Abandoned after testing Gas
	HH6 - 1	M - 10	Seis SSG	A ₃	-	-	Tertiary	Drilling at 31.12.71
PHILLIPS	ALICE - 1	N - 18	Seis SSG	C ₃	14. 7.71	5,032	Tertiary	Abandoned after testing
	ALMA - 1	M - 12	Seis SSG	C ₃	26. 7.71	3,389	Tertiary	Abandoned after testing
	BETTY - 1	L - 20	Seis SSG	C ₃	18. 9.71	6,064	Tertiary	Abandoned after testing
SANTA FE	HH9 - 1	L - 16	Seis SSG	C ₃	5.12.71	3,128	Tertiary	Abandoned after testing
S.T.L.	P 257	D - 8	Seis SSG	C ₁	16. 5.71	9,499	Cipero	Abandoned
T.C.O.	Tab. 220	F - 9	Seis SSG	B _{2c}	8. 9.71	3,019	Nariva	Oil Producer
T.N.A.	FOS 25	D - 15	SSG	C ₁	11. 4.71	5,000	Cruse	Abandoned dry
	S 318	D - 4	SSG	B ₁	21. 3.71	4,000	Morne L'Enfer	Oil producer
Texaco T'dad Inc.	BP 462	E - 9	Seis SSG	C _{2c}	15. 2.71	2,000	Base Wilson Sands	Abandoned
	464	D - 9	Seis SSG	C _{2c}	22. 3.71	2,500	Base Wilson Sands	Abandoned
	465	D - 9	Seis SSG	C ₁	16. 3.71	7,450	Cipero Sands	Abandoned
	466	E - 9	Seis SSG	C ₁	28. 2.71	2,000	Base Wilson Sands	Abandoned
	470	E - 9	Seis SSG	C _{2c}	15. 7.71	1,900	Base Wilson Sands	Abandoned
	AS 124 X	E - 6	SSG	B ₁	21. 1.71	6,782	Top Lower Nariva Blanket Sands	Gas producer
	Columbus 1	B - 10	Seis SSG	C ₃	23. 2.71	17,153	Lower Gros Morne	Abandoned
	FR 1377 GY 613	D - 6 C - 10	SSG Seis SSG	B _{2c} C ₃	18. 5.71 12. 4.71	2,100 900	Top Cruse Lower Cruse	Oil producer Abandoned dry

TABLE III
Summary of Wildcat Drilling in Trinidad and Tobago – 1971–Continued

Operator	Well Name	Index Map Reference	Basis for Location	LAHEE Explor. Class.	Completion Date	Total Depth (Feet)	Name and/or Age of Deepest Formation	Results/Remarks
Texaco T'dad Inc.	GY 614	E – 12	Seis SSG	C _{2c}	16. 8.71	10,750	Herrera	Abandoned
	615	D – 12	Seis SSG	C ₃	26.11.71	10,400	Lizard Springs	Abandoned
	616	D – 13	Seis SSG	C ₃	20. 8.71	7,585	Lower Gros Morne	Abandoned
	619	D – 11	Seis SSG	C ₃	9.11.71	4,642	Lower Gros Morne	Abandoned
	620	D – 13	Seis SSG	C _{2c}	29.10.71	990	Lower Gros Morne Sands C'	Abandoned
	621	E – 12	Seis SSG	A ₃	–	4,000	Lower Gros Morne Sands	Testing
	G.S. 2	D – 13	Seis SSG	C _{2c}	4. 6.71	8,157	Lower Gros Morne Sands	Abandoned
	E.N. 21	C – 6	Seis	C ₁	23. 9.71	9,396	Cruse	Abandoned
T.T.P.C.L.	Gu. C 815	D – 6	SSG	B ₁	28. 2.71	3,300	Cruse	Oil producer
	Gal. A 13	E – 14	SSG	A ₁	–	6,125	Gros Morne	Closed in awaiting completion.

were tested in the lower Gros Morne Sands. In the Barrackpore field four Jones-Village appraisal wells were abandoned after locating good thicknesses of the predicted shallow Wilson sands which were wet. The fifth appraisal well in the Barrackpore area was abandoned after it encountered poorly developed Wilson and Herrera sands. Of the eight exploratory wells in the Guyaguayare area, six were programmed to evaluate lower Gros Morne sands, one for Herrera sands in North Lizard Spring area, and one as a deep Cretaceous test. Six of these wells were abandoned dry; the deep Cretaceous test GY 615, programmed for 17,000 feet, was abandoned at 10,400 feet due to mechanical problems and the other, GY 621, has been completed as a mediocre oil producer.

If Forest Reserve FR 1377 was completed at 2,100 feet as a successful shallow oil producer. In Erin EN 21 was abandoned as a dry hole at 9,636 when it failed to encounter any commercial oil sands.

Table III summarises exploratory drilling activity for 1971.

Development Drilling

There were 185 development wells drilled and completed during 1971. This figure does not include the 24 development wells drilled from AMOCO's Teak 'A' platform and Trinidad-Tesoro's Trintes 1 platform for these wells are awaiting completion of the production facilities on land at Point Galeota.

A success ratio of 87.6 per cent was achieved during the drilling of the above development wells.

Trinidad-Tesoro Petroleum Company Ltd. drilled 89 development wells with an excellent success-ratio of about 96 per cent. There were 38 wells drilled as part of the 'huff and puff' steam stimulation project in North Palo Seco and Guapo areas. The remaining 47 successful wells were located in Palo Seco, Erin, Quarry, Fyzabad, Guapo and the reactivated Boodoosingh field. On their Trintes offshore platform, 15 wells were drilled and gravel-packed on completion. It is expected that production would commence in April 1972 after the completion of production facilities on land.

Texaco Trinidad Inc. concentrated about half of their 65 development wells in the Vessigny and Forest Reserve fields. The remaining wells consist mainly of outstep, infill, and replacement wells in Palo Seco, Erin, Barrackpore, Oropouche and Guyaguayare areas.

Trinidad Northern Areas Ltd. drilled 8 wells in the Point Fortin offshore area and 6 wells in North and East Soldado. At the end of 1971 the erection of their 12 well platform, No. 17, was still in progress. It is anticipated that production from this platform would offset the natural field decline.

Shell Trinidad Ltd. continued its 'pup-well' drilling programme with 15 wells in the Point Fortin East Area while 4 other wells were drilled in the Catshill field. Premier Consolidated Oilfields Ltd. drilled 3 development wells.

AMOCO Trinidad Oil Company drilled 8 development wells in 1971 on their Teak 'A' platform. At the end of the year, the first 9 wells on the platform were in the final stages of completion and testing in anticipation of commercial production in January 1972. Teak 'B' platform was under construction in an area about two miles North of Teak 'A'.

In preparation for the exportation of East Coast crude oil production in January 1972, AMOCO, within ten months, completed a production platform, its storage facilities, offices, a 1,600 foot jetty at Galeota Point and a 42-inch loading line extending some three miles to a Single Point Mooring which was designed to handle tankers ranging up to 250,000 dwt. The 16-inch main oil transmission line from Teak field to Galeota was also installed and tested.

Table IV summarises the development drilling activity according to areas in Trinidad and Tobago.

TABLE IV
Summary of Development Drilling in Trinidad and Tobago – 1971

Area Number	Producers Completed	Dry holes Completed	Total Completions	Footage Drilled	Rigs Active 31-12-71
1	6	1	7	22,449	–
2	24	1	25	111,086	–
3	13	4	17	39,026	–
4	62	4	66	234,475	2
5	39	4	43	125,391	4
6	2	1	3	14,350	–
7	3	1	4	16,962	1
8	7	3	10	35,117	–
9	4	1	5	11,721	–
10	2	1	3	14,666	–
11	–	1	1	105,417*	–
12	–	–	–	–	–
13	–	1	1	3,000	–
14	–	1	–	–	–
15	–	–	–	–	–
Totals	162	23	185	733,660	7

For definition of Areas, see Table IV A following

*Includes footage of wells closed-in and awaiting completion.

TABLE IVA
Key to Area – Numbers on Map (Figure II) on Tables IV and in Text

Area Number	Description
1	Soldado, North Marine, Couva Marine
2	Pt. Ligoure, F.O.S., Area IV, Point Fortin West and Central, Guapo, Parrylands, Cruse
3	Brighton (Land and Marine) Vessigny, Merrimac, Rousillac
4	Palo Seco, Los Bajos, Erin
5	Forest Reserve, Fyzabad, Point Fortin East, New Dome, San Francique
6	Quarry, Coora, Quinam Morne Diablo
7	Oropouche
8	Penal, Barrackpore, Wilson, Siparia, Mandingo
9	Moruga West, Rock Dome, Innis, Trinity, Moruga North, Catshill, Balata, Bovallius
10	Guayaguayare, Lizard Springs, Moruga East
11	Palmiste, Galeota (east coast)
12	South Marine (south coast)
13	Tabaquite, Pointe-a-Pierre
14	Icacos
15	North Coast

Production

The total volume of crude oil produced in Trinidad and Tobago during 1971 amounted to 47,204,819 barrels at an average rate of 129,328 b/d, as compared with 140,315 barrels daily in the previous year. This is the first time since 1965 that the Country's annual crude oil production has failed to reach the fifty million barrel mark (Table I).

In spite of the record level of drilling activity which was achieved during the year, oil production continued its downward trend; nevertheless, new completions contributed appreciably to the total oil produced and the 11 per cent decline which was experienced during 1970 was reduced to 7.6 per cent (Figure 4).

Although Trinidad-Tesoro Petroleum Company Ltd. did not complete their East Coast offshore production facilities they still managed to register a 4.7 per cent increase over their 1970 production. The high success-ratio of this company's development drilling programme together with moderate success with their steam-injection projects are responsible for their maintaining an average production rate of 20,596 b/d during the year. Of the established oil producing companies, only Trinidad-Tesoro and Shell Trinidad Ltd. showed increases over their production rates in the previous year. With the completion of their East Coast wells in 1972, Trinidad-Tesoro should continue to show a rise in production during 1972.

Texaco Trinidad Inc. showed a relatively large (14.8 per cent) decline in production in spite of their vigorous development drilling programme. This company's average production for 1971 was 37,707 b/d. As Figure III shows, the Guayaguayare fields which have to a large extent been a major influence on Texaco's production figures since 1966, did not perform as well as was expected during the year.

Mechanical problems with waterflood facilities and increasing water production in the secondary recovery projects in the Navet fields have caused further production decline in the Guyaguayare area. The absence of successful appraisal well locations and mediocre success of the development wells drilled in 1971 have also contributed appreciably to Texaco's declining oil production rate.

Trinidad's largest oil producer — Trinidad Northern Areas — had a decline of 6,000 b/d in its production rate in 1971 as compared to its performance in the previous year. The Company produced at an average daily rate of 60,274 b/d. A general increase in sand problems and water incursion has aggravated the normal production decline in the Soldado fields. T.N.A.'s appraisal and development well-drilling programmes have also not yielded wells which were productive enough to slow down the Company's decline rate and it is now apparent that Trinidad Northern Areas, like Texaco Trinidad Inc., has reached a stage where exploratory effort is not being rewarded by any discovery of substantial new reserves. With the completion of platform No. 17 in East Soldado field in 1972, T.N.A. should achieve a smaller decline rate than that which obtained in 1971.

Shell Trinidad Ltd. maintained an average production of 9,009 b/d which was an increase of 8.7 per cent over the previous year's figures. Premier Consolidated Oilfields Ltd. and Trinidad Canadian Oil Ltd. produced at an average daily rate of 520 b/d and 1,065 b/d respectively.

AMOCO Trinidad Oil Company produced 57,000 barrels of crude from wells which were being tested on their offshore East Coast licences. During 1971, eight fields in Trinidad produced more than 1 million barrels each.

Figure IV illustrates graphically the contribution of new and recompleted wells to the Country's total crude oil production and Table V gives a detailed comparison, by fields, of production for the years 1970 and 1971.

TABLE V
Oil Production Trinidad and Tobago — 1971

Company Field	Area No.	Discovery Year	Total Wells Drilled	Age of Producing Formation	Annual Production		Cumulative Production Through December 1971 (thousands of barrels)
					1970 (bbls)	1971 (bbls)	
SHELL TRINIDAD LTD.							
Balata West & East	9	1952	48	Miocene	39,126	45,329	1,959
Catshill	9	1950	116	"	513,355	498,022	19,289
Inniss	9	1956	33	"	104,366	80,896	5,357
Rock Dome	9	1962	3	"	—	—	16
Penal	8	1936	258	"	1,115,887	1,111,820	53,662
New Dome	5	1928	31	"	14,846	14,374	3,020
Point Fortin East	5	1929	131	"	474,009	937,255	19,592
San Francique	5	1929	27	"	20,442	17,926	5,768
Los Bajos	4	1918	29	"	—	—	546
Erin	4	1963	4	"	—	—	710
Area IV & Guapo	2	1963	156	"	169,106	127,787	32,324
Parrylands 1-5	2	1918/ 1913	343	"	321,622	267,391	33,115
Point Fortin Central	2	1916	94	"	92,654	79,570	11,649
Point Fortin West	2	1907	204	"	161,364	108,069	17,595
TOTAL			1,477		3,026,788	3,288,439	204,602

TABLE V
Oil Production Trinidad and Tobago - 1971 - Continued

Company Field	Area No.	Discovery Year	Total Wells Drilled	Age of Producing Formation	Annual Production		Cumulative Production Through December 1971 (thousands of barrels)
					1970 (bbls)	1971 (bbls)	
T.N.A.							
FOS-Ft	2	1954	30	Miocene	171,001	404,830	2,020
Soldado	1	1955	327	"	23,935,002	21,595,103	216,482
TOTAL			357		24,106,003	21,999,933	218,502
TEXACO T'DAD INC.							
Guayaguayare	10	1902	643	Miocene	3,444,114	3,321,284	66,859
Trinity	9	1956	94	"	395,674	344,454	12,432
Barrackpore	8	1911	296	"	792,978	745,459	21,695
Oropouche	8	1944	45	"	62,931	107,660	2,714
Morne Diablo/Quinam	6	1926	-	"	124,095	81,768	7,036
Forest Reserve	5	1913	1,813	"	4,366,508	3,867,508	223,134
Palo Seco	4	1929	-	"	4,092,881	3,009,901	73,800
Brighton	3	1908	605	"	2,264,086	1,910,751	63,322
Erin	4	1963	21	"	610,295	374,363	1,159
TOTAL			3,517		16,153,562	13,763,148	472,151
BELPETCO							
Couva Marine	1	1963	6	Miocene	-	-	178
P.C.O.L.							
Bovallius	9	1954	6	"	-	-	189
Rock Dome	9	1955	11	"	-	-	134
Siparia	8	1957	5	"	17,139	13,627	734
San Francique	5	1929	75	"	54,465	54,443	2,653
Fyzabad	5	1918	252	"	67,374	61,082	12,499
Palo Seco	4	1915	83	"	9,575	9,515	1,560
Icacos	14	1965	13	"	37,540	31,354	351
Barrackpore	8	1970	3	"	12,343	19,673	32
TOTAL			448		198,436	189,694	18,330
T.T.P.C.L.							
Fyzabad	5)	1920)	825	Miocene	2,056,593)	2,081,180	147,078
Apex Quarry	6)	1938)		"	126,889)		
Guapo	2	1922	446	"	649,386	588,231	33,382
Moruga East	10	1953	59	"	45,645	39,945	1,834
" North	9	1956	18	"	18,980	16,576	832
" West	9	1957	129	"	160,989	109,659	8,067
Coora/Quarry	6	1936	596	"	2,924,693	1,250,736	75,954
Palo Seco/Erin (Mck)	4	1926	955	"	2,686,632	3,361,901	67,664
North Marine	1	1956	15	"	142,542	69,471	1,098
TOTAL			3,043		7,182,349	7,517,699	335,909
T.C.O.							
Balata Central	9	1949	6	Miocene	7,062	-	371
Wilson	8	1936	74	"	245,727	250,178	18,299
Cruse	2	1913	150	"	122,722	126,855	25,044
Tabaquite	13	1911	220	"	4,244	11,785	1,348
TOTAL			450		379,755	388,818	45,062
					51,046,893	47,147,731	1,294,556

SURVEY OF FLUID INJECTION OPERATIONS DURING 1971

Gas Injection

Total gas injected during 1971 was reduced by approximately 40% from its previous year's level. A total of 10,825,580 Mcf. was injected into the formation for all operations in 1971 as compared with 18,298,121 Mcf. for 1970.

The total crude oil production from gas injection operations, however, seems to have continued its steady decline. During 1971, gas injected yielded only 3,568,723 bbls. as compared with 4,126,963 for 1970, a decline of some 13%. The most successful field utilising this type of operation was the Texaco Forest Reserve Field which produced, as a result of this type of secondary recovery a total of 1,294,736 bbls. of oil or approximately 36% of that recovered from all gas recovery operations.

Water Injection

Water injection in 1971 was reduced by approximately 10% from previous years' level to a total of 12,123,572 bbls. Texaco's operations accounted for 11,950,923 bbls. injected which yielded 2,061,289 bbls. of oil an increase of 11.5% over the previous years' figure of 1,848,845 bbls., the most successful field under this project is the Texaco Guayaguayare Navet area which yielded 1,125,915 bbls. or approximately 47.7% of total oil recovered. Shells's water injection increased by 26,000 bbls. to 172,649 barrels for 1971. Its production from these operations continued to fall yielding only 25,450 bbls. of oil. Trinidad-Tesoro have not resumed its water injections since 1969.

Steam Injection

There has been an overall increase in the amount of steam injected into the formation as a form of well-bore stimulation. The decline of yields from this method of thermal oil recovery which started in 1968 has been arrested in 1971 with a total injection of 1,969,720 yielding 1,367,721 bbls. of oil.

Total oil recovered from wells under the influence of all fluid-injection projects rose from 13.8% in 1970 to 15.5% during the year 1971. This factor alone reflects the increasingly important role that fluid injection operations (including pressure-maintenance, secondary oil recovery utilising natural gas and water as the injection media and steam injection and other thermal oil recovery mechanisms) are playing in maintaining the level of our crude oil production rates in semi-depleted areas.

Summaries of Trinidad and Tobago Fluid Injection and Production Statistics are included for the period 1967-1971 in Table VI, Statistics, by Company, for each type of fluid-injection are presented in Table VII. Water-injection Statistics, Steam-injection Statistics by projects, and statistics for gas injection, by areas, are shown under separate cover in Tables VIII, IX and X respectively.

TABLE VI
Summary of Fluid Injection Operations in Trinidad and Tobago for Period 1967 – 1971

Year	Projects					Injection Statistics		Crude Oil Production Statistics				
	No. of Projects in Operation at End of Year			Gas (mmcf)	Injection as a % of Trinidad's total gas production	Water (bbls.)	Steam (bbls.)	Total Oil Recovered from Wells under Project Influence in Bbls.				Oil expressed as a % of Trinidad's total oil production
	Gas	Water	Steam					Gas Injection Projects	Water Injection Projects	Steam Injection Projects	All Projects	
1967	27	4	10	22,633	16.1	2,906,151	1,321,088	5,188,386	466,180	969,395	6,623,961	10.2
1968	31	5	11	21,323	14.1	2,926,657	1,090,699	5,402,241	396,823	969,741	6,768,805	10.1
1969	31	7	12	24,672	17.9	2,741,938	989,773	5,200,333	661,768	878,734	6,740,835	11.7
1970	32	8	6	18,293	15.1	13,563,248	1,254,454	4,126,963	2,071,061	863,174	7,061,198	13.8
1971	32	8	7	10,826	9.8	12,123,572	1,969,720	3,568,723	2,357,145	1,367,721	7,293,589	15.5

TABLE VII
Fluid – Injection Operations - Year 1971

GAS INJECTION:

Name of Company	No. of Active Projects	Gas Injected (MSCF)	Oil Produced (bbls.)	Water Produced (bbls.)	Gas Produced (MSCF)	G.O.R. SCF/bbl.
TEXACO	10	7,278,027	1,839,200	366,740	11,483,307	6,243
S.T.L.	—	—	—	—	—	—
T.T.P.C.L.	21	3,057,070	615,905	82,868	4,551,419	
T.C.O.	—	—	—	—	—	—
TRINMAR	1	490,483	1,113,618	899	3,423,945	3,074
TOTALS:	32	10,825,580	3,568,723	450,507	19,458,671	5,453

WATER INJECTION:

Name of Company	No. of Active Projects	Water Injected (bbls.)	Oil Produced (bbls.)	Water Produced (bbls.)	Gas Produced (MSCF)	% Water in total Production
TEXACO	5	11,950,923	2,061,289	2,659,647	2,367,803	56.3%
T.T.P.C.L.	2	—	270,406	224,489	273,389	45.4%
S.T.L.	1	172,649	25,450	5,871	25,323	18.7%
TOTAL	8	12,123,572	2,357,145	2,890,007	2,666,515	56.1%

STEAM INJECTION:

Name of Company	No. of Active Projects	Steam Injected	Oil Produced (bbls.)	Water Produced (bbls.)	Gas Produced (MSCF)	% Water in total Production
TEXACO	4	1,593,546	502,043	492,494	178,958	49.6
S.T.L.	—	—	—	—	—	—
T.T.P.C.L.	2	376,174	858,022	232,700	103,413	21.3
P.C.O.L.	1	—	7,656	7,210	Not Measured	48.5
TOTAL	7	1,969,720	1,367,721	732,404	282,371	34.9

TABLE VIII
Water Injection Summary by Projects - Year 1971

Company	Field	Project	Water Injected (Bbls)	Oil Produced (Bbls)	Water Produced (Bbls)	Gas Produced (Mscf)	Percentage Water
Texaco	Forest Reserve	Zone 9 F/S Zone 4	182,769	121,155	323,470	19,795	72.8%
	Guayaguayare	410 Water Flood	4,518,693	1,125,915	1,257,720	1,221,333	53.8%
		"307" Water Flood	2,891,810	689,765	731,683	681,087	51.5%
		"007" Water Flood	81,281	—	—	—	—
	Brighton	AS 10 Fault Block	4,276,370	124,454	346,774	445,588	73.6%
Texaco	All Fields	All Projects	11,950,923	2,061,289	2,659,647	2,367,803	56.3%
T'dad-Tesoro	Fyzabad	(Polymer) FM UF 610/1	—	13,940	147	10,733	1.0%
		F.S/LC/539/1	—	256,466	224,342	262,656	46.8%
		F.M/UF/200/1	—	—	—	—	—
T'dad-Tesoro	All Fields	All Projects	—	270,406	224,489	273,389	45.4%
S.T.L.	Catshill	CO. 30 Sands	172,649	25,450	5,871	25,323	18.7%
All Companies	All Fields	All Fields	12,123,572	2,357,145	2,890,007	2,666,515	56.1%

TABLE IX
Steam Injection Summary by Projects-Year 1971

Company	Field	Project	Steam Injected (Bbls)	Oil Produced (Bbls)	Water Produced (Bbls)	Gas Produced (Mscf)	Percentage Water
Texaco	Forest Reserve	Zone 9	379,988	60,414	66,181	10,383	52.3
		IIB or 11	—	8,065	10,360	2,939	56.3
		III or 14	1,147,747	404,748	405,750	152,918	50.1
		IV or 21	65,811	28,816	10,203	12,718	26.2
		IIA	—	—	—	—	—
		V	—	—	—	—	—
		U.U.C	—	—	—	—	—
	Brighton	—	—	—	—	—	—
Texaco	All Fields	All Projects	1,593,546	502,043	492,494	178,958	49.6
	Palo Seco	Pilot Project	329,585	757,965	194,076	26,235	20.4
	Guapo	Experimental Inj.	46,589	100,057	38,624	77,178	27.9
T'dad-Tesoro	All Fields	All Projects	376,174	858,022	232,700	103,413	21.3
P.C.O.L.	Fyzabad	Zenith	—	7,656	7,210	Not Measured	48.5
All Companies	All Fields	All Projects	1,969,720	1,367,721	732,404	282,371	34.9

TABLE X
Gas Injection Summary by Areas-Year 1971

Company	Field	Gas Injected (Mscf)	Oil Produced (Bbls)	Water Produced (Bbls)	Gas Produced (Mscf)	Gas Oil Ratio Scf/bbl
Texaco	Forest Reserve	4,280,864	1,294,736	356,905	7,435,142	5,843
	Brighton	640,049	26,579	2,687	112,315	4,226
	Guayauayare	2,357,114	517,885	7,148	3,935,850	7,500
	All Fields	7,278,027	1,839,200	366,740	11,483,307	6,243
T'dad-Tesoro	Coora	404,766	127,949	36,950	1,136,440	8,882
	Quarry	1,577,378	193,087	10,025	1,054,201	5,459
	Moruga West	—	6,706	65	94,323	14,065
	Palo Seco	—	18,828	184	348,785	18,524
	Fyzabad	1,074,926	269,335	35,644	1,917,670	7,120
	All Fields	3,057,070	615,905	82,868	4,551,419	7,389
	T.N.A.	Soldado	490,483	1,113,618	899	3,423,945	3,074
All Companies	All Fields	10,825,580	3,568,723	450,507	19,458,671	5,452

NATURAL GAS PRODUCTION AND UTILISATION

Most of the natural gas produced in Trinidad and Tobago is associated with crude oil. Thus the country's natural gas production in 1971 was adversely affected by the decline in crude oil production experienced during the year. This continuous decline in production of both crude oil and natural gas over the last four (4) years is expected to be reversed as production from new offshore fields commence in 1972.

Natural gas production for the year totalled 109,814 mmch. giving an average of 300 mmcf/day a decrease of 9.3% over the previous year. The drop in natural gas production can be accounted for by the production decline in Texaco's Forest Reserve, Guayaguayare and Brighton fields, and the Soldado marine field.

Complete utilisation of natural gas produced remained steady, percentage-wise, compared with the previous year's figures. This is due entirely to a reduction in volume of gas injected into the formations. Gas injection schemes have been postponed so that any available gas is used to meet other demands and sales contracts. Thus, the percentage of gas used other than for injection, has increased by about 8% over that of the previous year, but on a volume basis the change is small.

In late February, by commissioning a new gas transmission line, T.N.A. boosted their total gas-to-shore volume to 50 million scf/day, this resulted in a reduction of gas wasted from 46.9% in 1970 to 34.0% in this area. The additional gas was purchased by Texaco for use in its refinery operations at Pointe-a-Pierre.

Natural gas vented during the year was under 30% of total production, showing a reduction by about 2,000 mmcf. of gas wasted compared with the year before.

The production of natural gas in Trinidad and Tobago is expected to be more than doubled within the next four years when the large dry gas fields off the South East Coast of Trinidad are developed. It is planned that such additional gas will be used in establishing local industries in addition to being exported in liquid form to foreign consumers under a \$(US) 500 million LNG project. Consequently, the natural gas industry and the economy of Trinidad and Tobago are anticipating a substantial up-swing in the near future. The Ministry conducted a number of economic feasibility studies on LNG operations and held several discussions with AMOCO personnel, potential buyers of gas, equipment manufacturers and engineering firms associated with LNG operations.

The trend of gas production over the past five years is given in the following table.

TABLE XI
Annual Statistics for Natural Gas Production & Utilization 1967 – 1971

	1967		1968		1969		1970		1971	
	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	140,338	100.0	151,445	100.0	137,499	100.0	121,060	100.0	109,814	100.0
G.O.R. (S.C.F./bbl)	2,159		2,264		2,394		2,372		2,326	
A. USED AS FUEL:										
In Refineries	28,304	20.2	29,257	19.3	29,383	21.4	27,403	22.6	27,117	24.7
In Fields	7,783	5.6	7,848	5.2	8,313	6.0	8,785	7.3	8,091	7.4
Other Industries	17,759	12.7	19,294	12.8	20,652	15.0	20,302	16.8	20,658	18.8
SUB TOTAL	53,846	38.5	56,399	37.3	68,348	42.4	56,490	46.7	55,866	50.9
B. OTHER COMPLETE UTILIZATION:										
Used as Process Gas	9,309	6.6	10,603	7.0	10,803	7.9	10,054	8.3	8,931	8.1
Injected into Formation	22,625	16.1	21,323	14.1	24,727	18.0	19,017	15.7	12,112	11.0
Converted into C.H.P.S.	204	0.1	173	0.1	158	0.1	143	0.1	112	0.1
SUB TOTAL	32,138	22.8	32,099	21.2	35,688	26.6	29,214	24.1	21,155	19.2
C. VENTED:										
After use of Pneumatic Energy	30,877	22.0	31,257	20.6	19,748	14.4	13,253	10.9	11,033	10.1
Without Use	23,478	16.7	31,690	20.9	23,715	17.2	22,103	18.3	21,760	19.8
SUB TOTAL	54,355	38.7	62,947	41.5	43,463	31.6	35,356	29.2	32,793	29.9

S.C.F.* – Standard Cubic Feet.

% – percent of total Natural Gas Produced.

REFINING AND PETROCHEMICAL MANUFACTURE

The refining sector continues to dominate the local Petroleum Industry. In February 1971, construction work started on the Desulphurisation unit at Texaco's Pointe-a-Pierre refinery. This unit which will process about 100,000 bbls. per day of residual fuel oil is to be completed in the third quarter of 1972. Its main units will be a Vacuum Distillation Unit and a Hydrotreater Unit.

Shell Trinidad Ltd. also started debottlenecking and moderization work on their Point Fortin refinery to increase the throughput from about 68,000 bpd. to 100,000 bpd. Work is expected to be completed by late 1973.

Total refinery throughput for 1971 decreased from 154,860,261 bbls. to 145,547,960 bbls; an average of 424,274 bpd. to 398,761 bpd. In 1971, decreases of 6.5% and 3.5% were obtained in both Texaco's and Shell's refineries respectively.

For the first time since 1967, crude oil imports into Trinidad during the year have decreased. Total crude oil imported in 1971 was 106,868,559 bbls. as compared with 113,264,796 bbls. imported in 1970. This reflects a decrease of about 5.6%. Crude oil imports in 1971 from Saudi Arabia and Libya were slightly higher than that from Venezuela, last year's leader, their percentages of the total volume imported being 29.4, 23.4 and 22.9 percent respectively.

Primary refined products experienced a fall in 1971 with total output decreasing to 141,503,418 or a percentage of 5.8. Fuel Oils decreasing by 12,081,466 bbls. to 79,272,472 bbls. which amounted to approximately 56.0% of total production. Aviation Turbine Fuel continued to fall showing a total production of 11,526,543 bbls. for 1971 as compared with 12,449,562 bbls. in 1970, while Motor Gasoline and Gas Oil showed increases of approximately 10.0% and 20.5% respectively over their production for 1970.

In respect of other refined products and petrochemicals: there were only slight variations when compared with 1970 production figures. Petrochemicals production decreased by 11.6% to 1,204,235 bbls. during the year.

As in the past, the major portion of the Refinery Products was exported to world markets as can be seen in Appendix V.

The volume of excisable products amounted to 1,957,368 bbls. The excisable sales of gasoline amounted to 1,461,412 bbls. an increase of 8.0% compared to 1970. The excisable duty on these amounted to \$13,082,778.28. The excise tax on gasoline being 27 cents for premium and 18 cents for regular.

Sales of bottled propane showed an increase of 11.9% over the 1970 figure amounting to 32,404,477 lbs. on which excise duty at 2 cents per lb. was paid.

Details of petroleum excisable products are listed hereunder:

Premium Gas bbls.	Regular Gas bbls.	Gas/Diesel bbls.	Propane lbs.
614,714	846,698	495,956	32,404,477

Production and Exports of Important Petrochemical Intermediates
Trinidad and Tobago - 1971
(Quantities in Barrels)

Petrochemical Intermediates	Year 1971		Year 1970	
	Production	Exports	Production	Exports
Normal Paraffins	603,669	741,688*	697,869	568,144
Di-isobutylene	56,730	59,637*	52,943	50,428
Nonene	42,460	38,879	24,744	26,624
Tetramer	74,013	70,357	63,699	71,307
Benzene	147,179	169,371*	106,822	89,084
Toluene	161,408	135,855	232,953	240,078
Xylene	37,659	32,009	21,733	20,922
Cyclohexane	68,022	75,891*	141,306	164,539
Unrefined Napthenic Acids	19,058	19,259*	25,565	31,072

* Excess of Exports over production made up from stocks

NITROGENOUS FERTILIZERS

Average ammonia production in Trinidad and Tobago was approximately 1,232 short tons per day. Total annual production of 449,730 short tons was 4.4% less than the last year's total of 470,538 short tons. The short fall was due primarily to mechanical problems in the Braun Ammonia Plant which was inactive for two (2) months. As a consequence, the production of Ammonium Sulphate and Urea was affected, causing annual production to fall to 56,804 and 62,076 short tons respectively.

CRUDE OIL BALANCE

Availability	Million bbls.	Disposal	Million bbls.
Stock at 1st January	2.9	Exports	7.0
Production	47.3	Delivered to Refinery	145.5
Less Loss	1.4 45.9	Stock at 31st December	3.2
Imports	106.9		<u>155.7</u>
	<u>155.7</u>		

REFINED PRODUCTS BALANCE

Stock at 1st January	7.6	Shipments	127.9
Imports	1.1	Bunkers	10.7
		Local Consumption	3.5
Crude Delivered	145.5		
Refinery Gas & Loss	4.0		
	<u>141.5</u>		
		Stock on 31st December	8.1
Products Obtained	141.5		<u>150.2</u>
	<u>150.2</u>		

A total volume of 16,628 mscf. of natural gas was used in the ammonia and nitrogenous fertilizer industry during 1971. This reflected 6.25% below the quantity used in 1970; of this quantity 8,931 mscf. were actually used in the process, and 7,697 mscf. being consumed mainly as fuel.

MARKETING

Petrol Stations – Sales and Marketing Position 1971

The number of petrol filling stations in operation in Trinidad and Tobago at the end of 1971 remained at 218.

Three new stations were completed one in Tobago, one at Wrightson Road and the third at Tabaquite.

Two stations ceased operations one in Santa Flora and one in San Fernando and one station, having a double supplier, was erroneously reported as two stations in the 1970 report.

Statistics on sale and retail outlets are distributed among the four Marketing Companies as follows:—

	Texaco	Shell	Esso	BP	Total
No. of Stations	75	62	57	24	218
Volume (Mogas IG)	16,288,697	13,046,208	9,666,785	8,001,222	47,022,912
Aver per Station	217,183	210,423	169,593	333,384	—
Market % of total Sales	34.7	27.7	20.6	17.0	100.0
% of Stations	34.4	28.5	26.1	11.0	100.0

The total throughput was 4.3% greater than the 1970 total of 45,056,497 I.G.

For the five (5) year period 1967 to 1971, local consumption of Motor Gasoline rose from 39,613,583 to 47,002,912 giving an average growth rate of 4%.

Year	Total Consumption of Mogas (IG)
1967	39,613,582
1968	40,934,685
1969	42,474,394
1970	45,056,497
1971	47,002,912

Activities at Petrol Stations were for the most part confined to the maintenance of underground storage facilities, alteration of dispensing units from single pumps to duo-pumps and modernisation of station building.

SUMMARY OF ACCIDENTS OCCURRING IN THE PETROLEUM INDUSTRY DURING 1971

In the Petroleum Industry the total number of accidents reported in the fields for 1971 was 112. This figure represents a decrease of about 3.5% in comparison with the number of accidents reported in 1970.

Approximately 30% of the accidents were classified as serious, which consisted principally of eye injuries, crush injuries, lacerated wounds, compound fractures, amputation of limbs and fingers and internal injuries. These were caused mostly by falls or resulted when workers were engaged in operations which involved machinery. The remaining 70% were minor accidents and included cuts and bruises to the body, squeezed limbs and fingers and superficial injuries caused by falls and strained muscles resulting from the performing of strenuous jobs.

There were several accidents which caused both destruction to equipment and loss of lives. One was estimated to be a million-dollar fire which took place at Texaco's Bond Department at Pointe-a-Pierre where three (3) lives were lost and seven other persons severely injured. Considerable damage was done to Company's equipment and vehicles. In the Forest Reserve Area the mast of a Winch collapsed, causing multiple contusions and internal injuries to one person. There was also a major fire at Compressor Station No. 12, Forest Reserve in which no one suffered injuries but extensive damage was done to three (3) units and the compressor building.

There were numerous accidents which, although not falling under the jurisdiction of the Ministry of Petroleum and Mines were brought to our attention and investigations were carried out. Among them were three (3) fatal accidents. One involved a transport labourer who fell from a winch truck sustaining severe cardiac injuries resulting in death. Another occurred at Shell where a trespasser was electrocuted by a fallen wire. The third accident was at Amoco's Well OPR-13, East Coast, where the Chief Engineer of the workboat M/V "Saratoga" undertaking a normally non-hazardous operation in the open sea, fell striking his head on a metal brace which fractured his skull, causing cerebral damage.

TABLE XII
Accident Statistics 1971

Company	Field	Total Accidents	Fatalities	Serious				Minor			
				D	P	E	O	D	P	E	O
Shell T'dad. Ltd.	All	5	—					3	2		
T'dad. Tesoro Petroleum Co.	All	34	—		8				25	1	
Texaco Trinidad Inc.	Forest Reserve	37	—	5	6			16	10		
	Guayaguayare	26	—	3	7			10	6		
	Brighton	2	—						2		
	Barrackpore	8	—	2	2			2	2		
	Total-Texaco	73		10	15			28	20		
Industry Totals		112		10	23			31	47	1	

D – Drilling

P – Production

E – Engineering

O – Others

ROYALTY ASSESSMENT

Appendix VIII presents a summary of Crude Oil assessed for Crown Royalty by Company, showing average prices per barrel and analyses for the half yearly periods ending 30th June, 1971 and 31st December, 1971.

Net Royalty production fell from 22,430,820 barrels in the first half of 1971 to 21,363,114 barrels in the second half, a difference of 1,067,706 bbls. The main reason, however for the decrease in Royalty of \$1,970,866 from \$13,607,834 to \$11,636,968 is due primarily to a fall by 16.4% in the price of Bunker "C" Grade Fuel, and lower prices caused by falling exchange rates. (See Appendix IX – Average price in T.T. currency per barrel).

Appendix IX presents a summary of Royalty assessed on Crude Oil, Natural Gasoline and Natural Gas produced on Crown Oil Mining Leases for the half-yearly periods during 1969, 1970 and 1971.

Total Royalty rose from \$25,729,881.34 in 1969 to \$27,902,347.00 in 1970, and fell slightly to \$27,427,945 in 1971. Production has shown a decline from 27,798,257 barrels in the first half of 1969 to 21,363,107 barrels in the second half of 1971.

Prices have fluctuated over the three year period, the average price per barrel rising from \$4.48 in 1969 to \$6.10 in the second half of 1970, and falling to \$6.07 per barrel and \$5.45 per barrel respectively in the first and second half of 1971. These significant changes are due primarily to the changes in price per barrel for Bunker "C" Grade Fuel.

Appendix X summarises the quantities of Natural Asphalt extracted from the Pitch Lake and the quantities of derived products which were exported and consumed locally during 1969, 1970 and 1971.

LEASES AND LICENCES

Total acreage under Licence decreased from 4,275,912 at the end of 1970 to 3,968,552 acres at the end of 1971.

During the year AMOCO Trinidad Oil Co. surrendered 260,000 acres under their Marine Licence; Belpetco surrendered 84,355 acres of its licenced area, and Trinidad – Tesoro Petroleum Co. Ltd., acquired 78,929 acres in the East Coast Sub-Marine area from Dominion Oil Limited.

The following is an outline of the situation in the Territory as at 31st December, 1972:—

Crown Oilrights	A	R	P
Public Petroleum Rights	224,926	2	34
Private Petroleum Rights (Enroachments)	49,918	2	21
Exploration & Production Licences (Public Petroleum Rights)	2,785,716	0	00
Marine Licences	815,128	0	00
Total Crown Oilrights	3,875,689	1	15
Private Oilrights			
Private Leases	92,862	3	27
Total Acreage of all lands under lease	3,968,552	1	02

A detailed survey of Crown and Private Leases and Licences is set out on a Company basis in Table XIII.

LEGAL DEVELOPMENTS IN 1971

The year 1971 has been the most active year so far in the history of the Legal Section of the Ministry. The work of this section is increasing at a tremendous rate as a result of the rapid progress of petroleum activities, which must be conducted in accordance with the new Petroleum Legislation.

Transitory Provisions – Section 37 of the Petroleum Act 1969

The administration of the new law is always fraught with problems and the petroleum legislation – only two years old – continues to pose novel and complex questions in a number of areas, but moreso, in the area of the conversion of Licences.

The work involved not only the conversion of all existing Licences, Leases or grants in respect of petroleum operations at the time of commencement of the Act but also the creation and issuance of Licences in respect of petroleum operations not previously required to be licensed by Law. The end result being that progress in this area was not as rapid as had been anticipated and the June deadline for conversion of Licences was not met, despite tremendous efforts to do so.

In the conversion of Oil Mining Leases and Licences granted prior to 1969 the Oil Companies were very reluctant to accept certain conditions imposed by Government under the new legislation because of their own interpretation of Section 37 of the Act. This gave rise to prolonged deliberations between Ministry officials and representatives from the three major companies holding such Licences and Leases. After months of negotiations, agreement was reached on all but three areas on which there appears to be a deadlock.

Conversion of Licences granted in Submarine Areas during the period 1961–1969 have all been finalised.

On 29th April, 1971, the Oil Mining Licence (No. 3020/01) of Dominion Oil Ltd. was converted to an Exploration Licence over two areas off the East Coast of Trinidad comprising together approximately 48,630 acres.

On May 19, 1971 an Exploration and Production (Public Petroleum Rights) Licence was granted to Dominion Oil in accordance with the terms of their converted Exploration Licence with respect to an area comprising approximately 30,299 acres of the East Coast off Trinidad.

Applications for Licences

Three applications for Pipeline Licences have been received from Texaco Trinidad Inc., two from Trinidad Tesoro Petroleum Company Ltd., and one from AMOCO Trinidad Oil Co. in respect of a 23 mile 16" "oil transmission line" from their Submarine operations off the East Coast to Galeota. These applications have all been published in the Trinidad and Tobago Gazette in accordance with the Petroleum Law.

A number of applications received under Section 37 of the Act including applications for Refining Licences, Petrochemical Licences and Exploration and Production (Private Petroleum Rights) Licence are yet to be considered and determined. Applications have also been received for several Exploration and Production (Public Petroleum Rights) and (Private Petroleum Rights) Licences over land, but these too are yet to be determined.

Several applications for Exploration and Production Licences were received in respect of a reversed "L" – shaped submarine area off the East Coast of Trinidad consisting of approximately 187,400 acres and after consideration of all the applications, Government decided to grant a licence over the Area to a Consortium comprising Shell Trinidad Ltd., Texaco Trinidad Inc. and Trinidad Tesoro Petroleum Company Ltd. The Speech made in the House of Representatives by the Minister of Petroleum and Mines in connection with the East Coast Consortium is reproduced at the end of this Section.

Renewal of Licences

As provided for under its licence, Amoco Trinidad Oil Company applied for and was granted a renewal for an additional five year term of its converted Exploration Licence over an area of approximately 944,656 areas off the East Coast.

This Company surrendered 50% of its Licensed Area under its Exploration and Production Licence No. 9051/70 in accordance with the terms of the Licence.

TABLE XIII
Oil Rights Under Lease and Licence as at 31st December, 1971 in Trinidad and Tobago

Company	CROWN																					Private			Total Crown and Private		
	Land Leases									Submarine																	
	Public Petroleum Rights			Private Petroleum Rights			Total			High Seas			Territorial Waters			Exploration Licences			Total								
	A	R	P	A	R	P	A	R	P	A	R	P	A	R	P	A	R	P	A	R	P	A	R	P	A	R	P
Trinidad Northern Areas	32	3	33	-	-	-	32	3	33	88,486	0	00	95,161	0	00	-	-	-	183,647	0	00	-	-	-	183,679	3	33
Texaco Trinidad Inc.	127,926	0	35	33,495	3	32	161,422	0	27	252,900	0	00	158,906	0	00	-	-	-	411,806	0	00	81,491	3	28	654,720	0	15
Tesoro Trinidad	15,660	2	36	8,533	0	20	24,193	3	16	218,700	0	00	975	0	00	-	-	-	219,675	0	00	4,601	3	01	248,470	2	17
Shell Trinidad Ltd.	63,591	2	10	5,239	2	24	68,831	0	34	-	-	-	-	-	-	-	-	-	-	-	-	988	0	08	69,819	1	02
Premier Consolidated Oilfields Ltd.	10,718	2	09	2,640	1	13	13,358	3	22	-	-	-	-	-	-	-	-	-	-	-	-	5,781	0	30	19,140	0	12
Trinidad Canadian Oils	6,996	2	31	-	-	-	6,996	2	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,996	2	31
Estate of Timothy Roodal	-	-	-	9	2	12	9	2	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	2	12
Amoco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,196,756	0	00	1,196,756	0	00	-	-	-	1,196,756	0	00
Belpecto	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18,680	0	00	18,680	0	00	-	-	-	18,680	0	00
Phillips Petroleum Co. Ltd.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	414,600	0	00	414,600	0	00	-	-	-	414,600	0	00
Deminex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	414,600	0	00	414,600	0	00	-	-	-	414,600	0	00
Occidental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	331,680	0	00	331,680	0	00	-	-	-	331,680	0	00
Amerada Hess	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	248,760	0	00	248,760	0	00	-	-	-	248,760	0	00
Oceanic Corporation of Trinidad Santa Fe Int. Corp. Texas, Trinidad	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	160,640	0	00	160,640	0	00	-	-	-	160,640	0	00
Total	224,926	2	34	49,918	2	21	274,845	1	15	560,086	0	00	255,042	0	00	2,785,716	0	00	3,600,844	0	00	92,862	3	27	3,968,552	1	02

Note: Table amended Re: Petroleum Act of Trinidad and Tobago No. 46 of 1969 2(3)

Assignments

By Deed dated 20th November, 1970 and registered No. 95/71 Cleary Petroleum Corporation assigned an undivided 25% share of its 52% interest in Licence No. 9720/70 over Block HH7 (which was granted to Cleary, Phillips and Apco) to Clear Creek Company Inc. By another Deed dated 20th November, 1970, Cleary Petroleum Corporation assigned 25% of its 52% interest in Licence No. 9683/70 over Blocks JJ10, JJ11, HH10, HH11 and Clear Creek Co. Inc.

By Deed dated 18th June, 1971, Oceanic Exploration and Development Corporation assigned 20% of its 40% interest in the Exploration and Production Licence over Blocks HH9 and JJ9 off the North Coast of Trinidad (granted to Oceanic, Santa Fee Drilling Corporation and Terra Trinidad and Tobago Ltd.) to Colarado Trinidad Oil Corporation.

By a second Deed dated 2nd July, 1970 Oceanic assigned its remaining 20% interest in the above mentioned Licence to Oceanic Exploration Company of Trinidad – subsidiary of Oceanic Exploration and Development Corporation.

**SPEECH in the House of Representatives by the Minister of Petroleum and Mines
in Connection with the East Coast Consortium**

Honourable Members will recall that the Prime Minister in concluding his address to the nation on Tuesday last October 19th made the following announcement:—

“Today the Government completed its arrangements for the establishment of a consortium to explore and exploit the valuable marine oil acreage we have off the south-east coast. The consortium comprises, Texaco, Shell and Trinidad/Tesoro and provides for substantial Government participation”.

I now have the honour to elaborate on this statement for the information of this Honourable House.

For some time now the Government of Trinidad and Tobago has been concerned with the declining production rates of the petroleum industry. Production which attained an average of 183,000 barrels of oil per day in 1968 declined to 157,000 bopd. in 1969, declined further to 140,000 bopd. in 1970 and as at June 1971 registered a still further decline to 128,000 bopd. Naturally this was a cause for great concern because of the important contribution which the petroleum industry makes to the revenue position of the country. In 1968, the industry contributed 96.1 million dollars to the country's revenue; 77.2 million dollars in 1969 and 70.9 million dollars in 1970, representing 36% in 1968 of the general revenue, 25% in 1969 and 24% in 1970.

It is against this background that efforts to spur activity within the industry were given priority attention by the Government through its Petroleum Committee. Last year a number of exploration and production licences were granted by the Government to companies in respect of activities in our northern and southern marine areas.

The allocation to the consortium covers an “L” shaped area comprising 187,400 acres off the south-east coast of Trinidad. In determining the allocation of this acreage the Government considered that the national interest would best be served if, in the allocation of what the Ministry of Petroleum and Mines considers to be very prospective acreage, the following criteria could be met:—

- (a) maximum national participation compatible with the Government's ability to finance such participation;
- (b) this participation to be obtained at the minimum cost to the nation;
- (c) maximum royalties on both oil and gas produced from the area;
- (d) permitting maximum revenue flows on a current basis;
- (e) optimising revenue per barrel of oil produced from the area through the licensees' ability to refine the crude oil locally and to upgrade crude products generally.
- (f) deriving maximum signature cash and production bonuses;
- (g) making possible the most rapid and efficient exploration and development programme for the area;
- (h) ensuring as far as possible that the licensee is:—
 - (i) financially able and capable of carrying out the obligations assumed under the licence; and
 - (ii) is able to sell his products in the world market.

Taking all of the above criteria into consideration the Government of Trinidad and Tobago concluded that the above-mentioned consortium, comprising as it does companies with a historic association with Trinidad and Tobago, or, as in the case of Trinidad/Tesoro, one in which the Government has a 50% equity interest, will best serve the national interest. Trinidad/Tesoro Petroleum Co. Ltd., the smallest company in the consortium has demonstrated its technical capabilities and its aggressive approach towards its recently acquired east coast acreage, and has not only maintained but increased the rate of production existing at the time it acquired its holdings in Trinidad and Tobago. These three (3) companies are already equally involved in an existing consortium — Trinidad Northern Areas Ltd. — in the Gulf of Paria in the Soldado field which to date has already produced over 200,000,000 barrels of crude oil.

The exploration and production licence granted the consortium requires that two wells should be drilled commencing within one year of the grant of the licence in an uninterrupted drilling contract.

The licence also requires that 50% of the acreage be returned to the Government within three (3) years of the effective date of the licence.

I am sure Honourable Members would wish to know the financial provisions contained in this licence. The Companies must deposit with the Minister of Petroleum and Mines within ten (10) days of the signing of the agreement i.e. from Tuesday 19th October, \$8,000,000 T.T. by way of signature bonus.

Production bonuses are provided for in the following manner:—

\$2,000,000 T.T. on the date that commercial production is established and \$2,000,000 T.T. whenever production for the first time attains the rates of 25,000; 50,000 bopd.; and 75,000 bopd.; \$4,000,000 T.T. at the rate of 100,000 bopd. and \$6,000,000 T.T. at the rate of 150,000 bopd.; \$8,000,000 T.T. at the rate of 200,000 bopd. For every additional increase of 50,000 bopd. an additional \$2,000,000 T.T. becomes payable. In other words this represents a total of \$26,000,000 T.T. should production rate from this area ever attain 2,000 bopd.

Royalty rates on oil and gas won and saved have for the first time in the country's history been fixed at rates of 15% consistent with the provisions of the petroleum regulations.

During the exploratory phase all expenditure will be borne exclusively by the members of the consortium. The option of the Government of Trinidad and Tobago to participate in the consortium can be exercised only when petroleum is discovered in commercial quantities as defined in the licence.

The members of the consortium have agreed to finance the Government's participating interest, if required to do so, with respect to all development expenditure incurred after commercial production is discovered, in the event that the Government exercises its right to participate. Should Government not exercise its right to participate the consortium is liable to pay an over-riding royalty of 10%.

Each member of the consortium has agreed to make available to the Government one continuing scholarship for a national of Trinidad and Tobago in an appropriate field associated with the petroleum industry.

Interests in the consortium are divided as follows for the purpose of exploration:—

Texaco Trinidad Inc., 37½%;
Shell Trinidad Ltd. 25%;
Trinidad/Tesoro Petroleum Co. Ltd. 25%.

On the attainment of commercial production and in the event that the Government of Trinidad and Tobago opts for participation in the consortium the new distribution will be as follows:—

Texaco Trinidad Inc. 30%;
Shell Trinidad Ltd. 37½ %.
Trinidad/Tesoro Petroleum Co. Ltd. 20%;
Government of Trinidad and Tobago 20%.

It should therefore be clear to Honourable Members that the Government of Trinidad and Tobago would be able to participate in this consortium in a meaningful way without having incurred any risks associated with the exploration phase of the development.

Mr. Speaker, I wish on behalf of the Government of Trinidad and Tobago to pay tribute to the negotiators for the cordial manner in which these negotiations were undertaken and in particular to the Government's representatives for their efficiency and sagacity in representing the Government's interest throughout these complex discussions.

Mr. Speaker I propose very shortly to make another statement to this Honourable House of a more general nature concerning developments in our petroleum industry.

Mr. Speaker the conclusion of this agreement between the Government of Trinidad and Tobago and the oil companies concerned is further evidence of the propitious investment climate prevailing in Trinidad and Tobago. The Government of this country recognises its duty and responsibility to the population to preserve this climate in the interest of natural development, which duty we are determined to discharge.

Thank you.

STAFF

1971 was a year of considerable activity and involvements in international matters for the Ministry. There were several new additions of staff and one resignation. Mr. Peter Bower M.Sc. (Geology) London resigned to take up an appointment in Ecuador with effect from 28th December, 1971.

Additions to Staff

Mr. David Lee Ying joined the staff of the Ministry in March, 1971, as a Petroleum Engineer, Reservoir II. Mr. Lee Ying, an Island Scholarship Winner 1965 from St. Mary's College, obtained his B.A. (Hons.) in Mech Sc. from Cambridge University in 1969 and was awarded a Diploma of Membership of the Imperial College and M.Sc. of London in Petroleum Reservoir Engineering in 1970.

Mr. Wayne St. Rose joined the staff of the Ministry as a Petroleum Inspector with effect from 10th March, 1971, and was allocated to the Development Sections, San Fernando.

Mr. Malcolm Jones joined the staff of the Ministry as a Petroleum Engineer II in December 1971. Mr. Jones holds a B.Sc. (Hons.) University of the West Indies and the M.Sc. (Chem. Eng.) from Queen's University, Canada.

Seminars, Conferences, Visits

Seminars

The Government of Trinidad and Tobago hosted a *United Nations Interregional Seminar on the Development of the Mineral Resources of the Continental Shelf* which was conducted at the Trinidad Hilton from 5th to 16th April, 1971.

The Seminar which was declared open by the Prime Minister, Dr. The Right Honourable Eric Williams, P.C., attracted participants hailing from a wide range of developing countries.

The Director of the Seminar was Mr. V. Baum, Head, Ocean Economics and Technology Branch of the U.N. and lecturers were drawn from the ranks of distinguished international experts in the oil industry, national governments and the United Nations.

Trinidad and Tobago officials participating in the Seminar were drawn from the Ministries of Petroleum and Mines, External Affairs, Legal Affairs and the Inland Revenue Division of the Ministry of Finance as well as the National Scientific Advisory Council.

Mr. Hugh C. Hinds, Ag. Chief Petroleum Engineer, represented the Ministry at the *Latin American Regional Seminar on the Problems of the Human Environment* which was held in Mexaco City from 6th to 11th September, 1971.

The Seminar presented an opportunity to Latin American Governments to exchange information relating to the causes of and remedies adopted in countering the various environmental problems.

Mr. Hinds also represented the Ministry at the United Nations Inter-Regional Seminar on the Development and Utilisation of Natural Gas which was held in Moscow from 12th to 28th October, 1971. The Ministry presented a paper on the natural gas industry of Trinidad and Tobago.

The Seminar enabled delegates of developing countries in particular to broaden their knowledge of the production and utilisation of natural gas universally and its several applications for social and economic development.

Conferences

In February 1971, Mr. Francis Prevatt, Minister of Finance, led a delegation consisting of Mr. Frank Rampersad, Permanent Secretary, Ministry of Finance, Mr. Eugenio Moore, Ministry of Planning and Development, Mr. Frank Barsotti, Permanent Secretary, Ministry of Agriculture and Mr. Ovid Fernandes the Acting Permanent Secretary, Ministry of Petroleum and Mines and Mr. Rodney Appleton, Senior Economist, Ministry of Petroleum and Mines, visited Washington to review the economic and social progress of Trinidad and Tobago during 1970, at the request of the Expert Committee of Alliance for Progress (C.I.A.P.) Assessments were made by International Lending Agencies i.e., World Bank, International Monetary Fund, I.D.A., I.R.D.B. etc.

Preliminary talks were held with these groups with a view to financing government's participation in an LNG project.

Mr. Rodney Appleton, Senior Economist in the Ministry of Petroleum and Mines, was a member of the Trinidad and Tobago delegation to the *United Nations Geneva Conference on the Resources of the Sea Bed and Ocean Floor* held at the Palais des Nations in Geneva 1st to 26th March, 1971.

In July, 1971, he also formed a part of the delegation from Trinidad and Tobago attending the Summer Session of the *Expanded Sea Bed Committee* held in Geneva to consider the Agenda for the proposed law of the Sea Conference scheduled for 1973. The leader of the Trinidad and Tobago delegation was the Attorney General and Minister for Legal Affairs, Mr. Karl T. Hudson-Phillips, Q.C.

Mr. Appleton also attended the meeting of *Commonwealth Caribbean Countries* held at the Barbados Hilton on 4th and 5th November, 1971, to consider a common approval to problems being discussed by the *United Nations Sea-Bed Committee* including territorial waters, the Regime of the High Seas, Fishing interests, pollution, etc.

Mr. Appleton was also a member of the Trinidad and Tobago delegation attending a *meeting of Ministers of Foreign Affairs of Caribbean Countries* held in Caracas during the week of November 22, 1971.

The Conference discussed matters of common interest to the Caribbean area (including Latin American nations bordering the Caribbean Sea). Topics included territorial waters, the proposed 200-mile economic zone for control of the resources of the continental shelf, trade, tourism, fishing and closer economic co-operation in the region.

The delegation was headed by the Honourable Minister of External Affairs, Mr. K. Mohammed.

The Ministry of Petroleum and Mines participated in an oceanographic conference arranged by the *International Co-ordinating Group for the Co-operative Investigation of the Caribbean and Adjacent Regions (CICAR)* and a Seminar on Engineering Education, both of which were held at the University of the West Indies, St. Augustine.

The Ministry was also represented at the 8th World Energy Conference held in Bucharest, Romania from 25th June to 8th July, 1971.

Visits

Mr. O.O. Fernandes, Ag. Permanent Secretary, visited New York and Washington D.C. from 17th to 26th March, 1971, and met with Mr. D. Alleyne, Permanent Secretary to the Prime Minister, Mr. H. Fraser, Commissioner of Inland Revenue and Mr. H. Legal of the Ministry of Finance which teams held talks with Government Consultants on recent developments in the Petroleum Industry.

Mr. U. Davidson, Economist I/II in the Ministry of Petroleum and Mines and Mr. H. Legall of the Ministry of Finance visited Caracas, Venezuela, from 13th to 19th March, 1971, for the purpose of holding discussions with representatives of the Ministry of Mines and Hydrocarbons in Caracas concerning recent developments in the industry there.

Eight World Petroleum Congress

Mr. Ovid Fernandes, Ag. Permanent Secretary, headed an official delegation comprising Mr. Hugh Hinds, Ag. Chief Petroleum Engineer, and Mr. Rupert Mends, Ag. Development Engineer, all of the Ministry of Petroleum and Mines, and Mr. V.C. McIntyre, Ag. Permanent Secretary in the Ministry of External Affairs. This delegation represented Trinidad and Tobago at the Eight World Petroleum Congress held in Moscow from 13th to 19th June, 1971.

The World Petroleum Congress provided an opportunity for Ministry experts to meet persons associated with the Oil Industry to exchange data, information, knowledge and to establish personal contacts with prominent scientists, technicians and petroleum management authorities of many nations represented.

The Congress centred around an extensive technical programme covering the significant current activities in different fields of the Petroleum Industry and included Panel Discussions on particular aspects of the science and technology of the Petroleum Industry in which there is significant activity and future potential.

After the Congress, the three officials of the Ministry of Petroleum and Mines undertook a study tour of various oil and gas industries including the celebrated Krasnodar' oilfields of Russia.

From Russia the team proceeded to Algeria to visit a liquefied natural gas processing plant at Arzew to make observations which might be beneficial to the Petroleum Industry in Trinidad and Tobago.

Caribbean Geological Conference

Two representatives of the Ministry of Petroleum and Mines, Mr. J. Harms, Chief Geologist and Mr. P. Bower, Petroleum Engineer II, attended the *6th Caribbean Geological Conference* held in Margarita Island, Venezuela, during the month of July, 1971, where the Ministry presented a paper entitled "The Caribbean Range Considered in the European Concept of a Geosyncline".

Research Projects and Studies

In July, 1971, Mr. David Lee Ying and Mr. Frank Look Kin both Petroleum Engineers II, boarded a United States Coast Guard oceanographic vessel as Ministry of Petroleum and Mines' observers on a research project conducted around the island of Trinidad. The main aim of the cruise was to study a natural environment, namely, the Gulf of Paria, in which oil seepages have occurred over a long period of time. It was felt that results of the study would help authorities in the monitoring and detection of marine oil pollution.

In August the Ag. Chief Petroleum Engineer, Mr. Hinds, spent a week in Venezuela following up a computerized study being conducted to determine how the oil recovery could be increased by objecting gas and water in reservoirs in the Soldado field. The study was being carried out for the Ministry of Petroleum and Mines by the Ministry of Mines and Hydrocarbons in Caracas at no cost to the Government of Trinidad and Tobago.

Scholarships, Awards and Training

Mr. John P. Scott was awarded a Government Scholarship and he commenced his studies in August 1971 leading to an M.Sc. Degree in Petroleum Geology at the Imperial College in the United Kingdom.

Training

Through the Ag. Permanent Secretary's former close association with Dr. David Donohue at the Penn State University (U.S.A.), a course in *Computer Technology for Petroleum Engineers* organized by Dr. Donohue and Dr. Paul Root of the Human Resources Development Company of the United States of America with Dr. Martin Essenfield (Guest Lecturer), was held at the Trinidad Hilton from September 20th to October 1st, 1971. The course provided an excellent opportunity to nationals of Trinidad and Tobago for advanced training in the application of the computer to reservoir engineering and other problems in the Petroleum Industry.

The course centred around programming techniques, computer technology, mathematical methods and their applications to newly developed engineering techniques. Five engineers from the Ministry of Petroleum and Mines attended the course together with four engineers from Texaco Trinidad Inc., one from Trinidad-Tesoro Petroleum Co. Ltd. and one Economist from the Ministry of Mines and Hydrocarbons of Venezuela.

Dominion Oil Co. which had carried out extensive exploratory activity in the Northern basin and maintained an office in Trinidad for the past eighteen years closed down its offices in October 1971. All exploratory data, well information, cores, logs etc. were surrendered to the Ministry of Petroleum and Mines for exclusive use of the Government of Trinidad and Tobago on 1st November, 1971.

FIG. 1

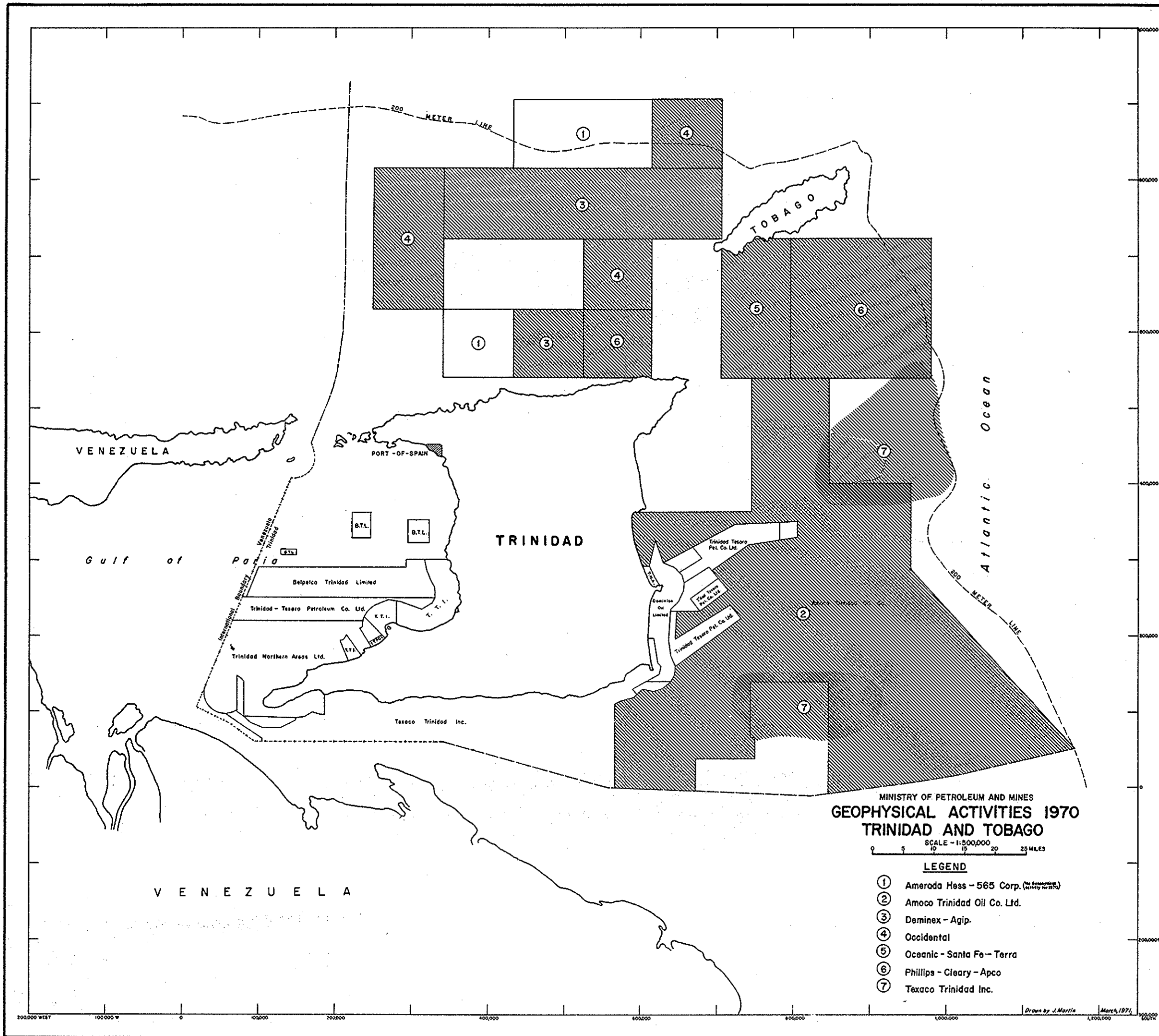
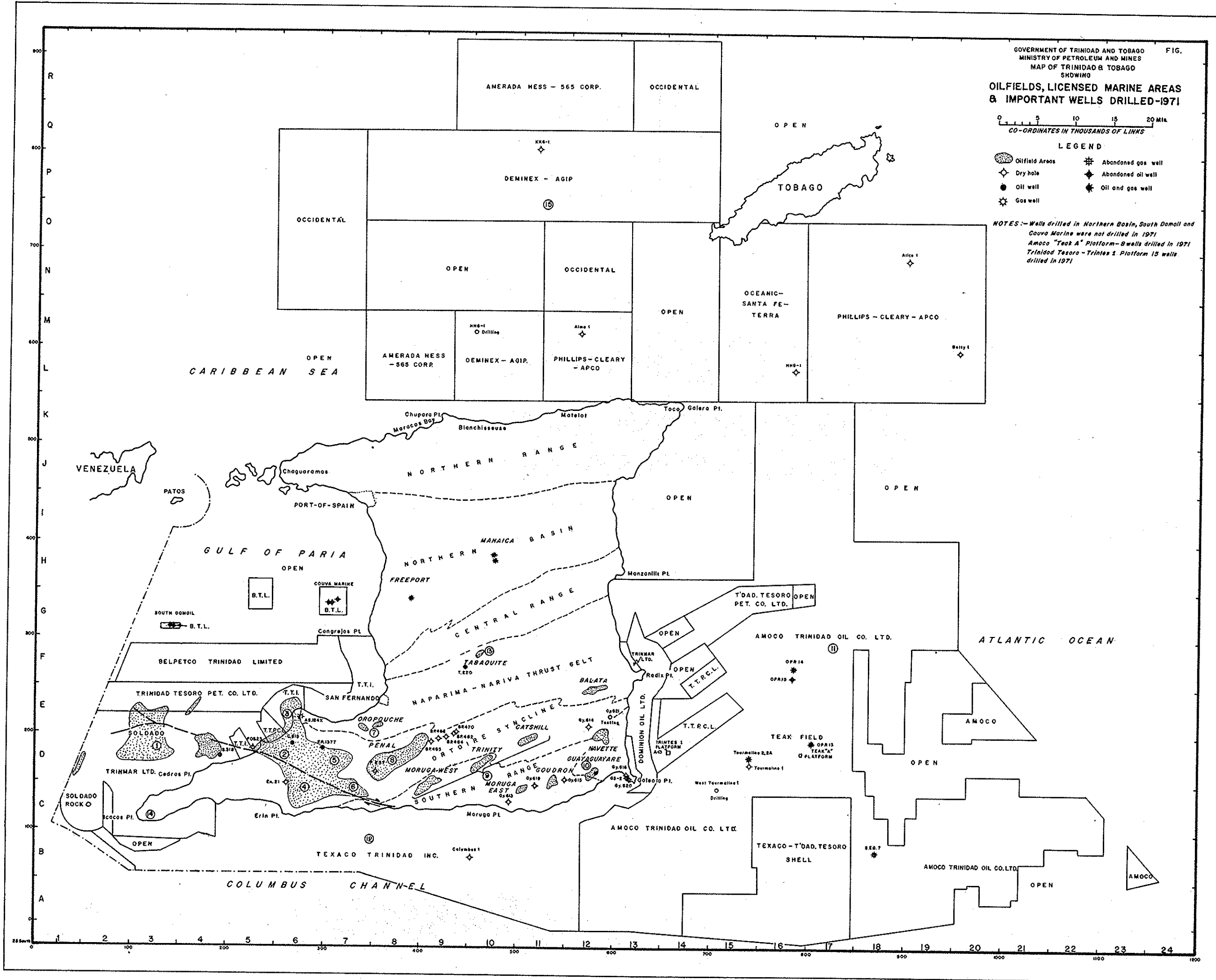
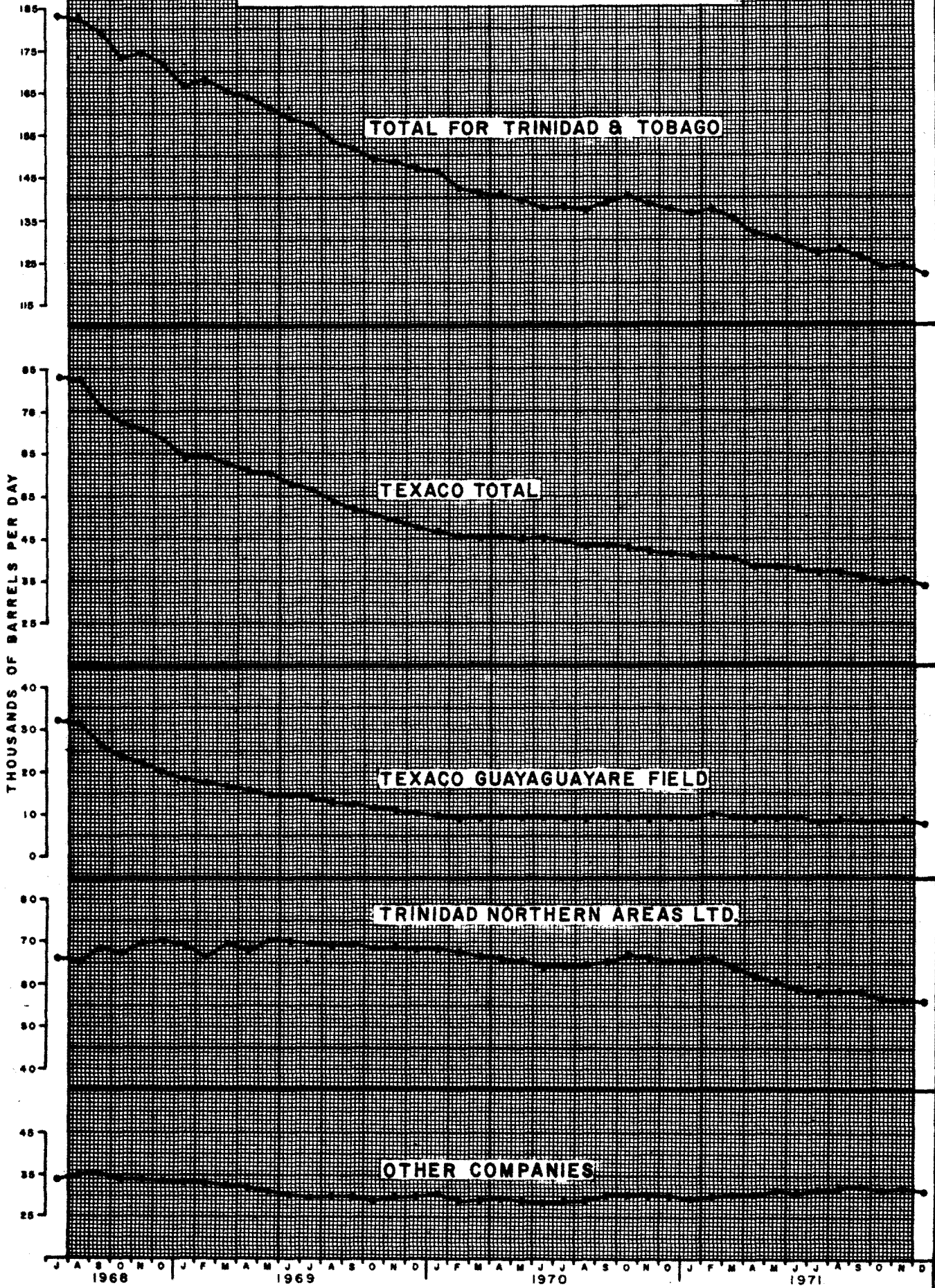


FIG. II



MINISTRY OF PETROLEUM AND MINES
CRUDE OIL PRODUCTION RATE BY MONTHS
JULY 1968 - DECEMBER 1971
 (BARRELS PER DAY)



MINISTRY OF PETROLEUM AND MINES
TRINIDAD AND TOBAGO CRUDE OIL PRODUCTION, 1971
DAILY AVERAGE BY MONTHS
 COMPLETIONS, RECOMPLETIONS AND OTHER WELLS

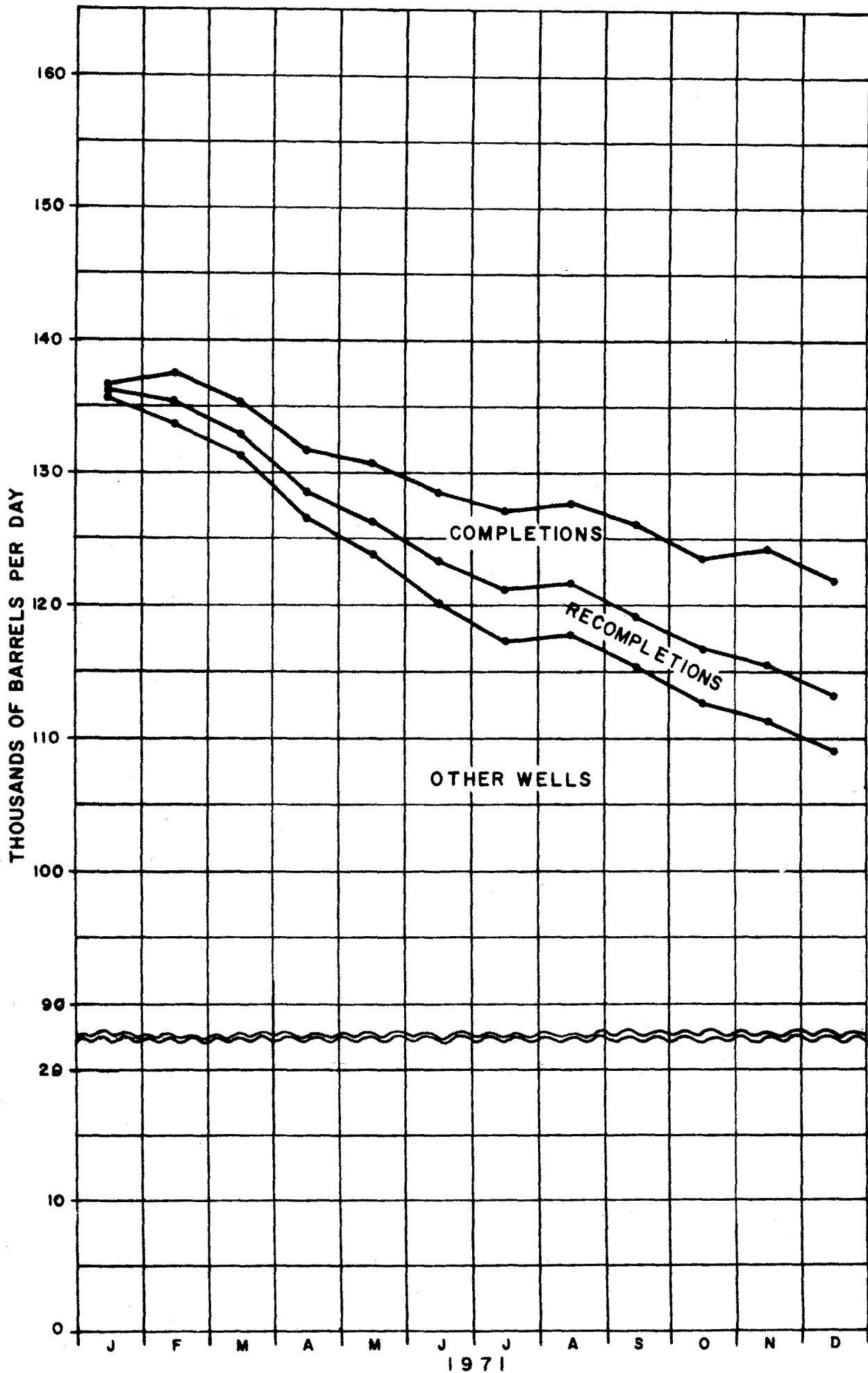


FIG. V
ANNUAL PRODUCTION AND INJECTION STATISTICS
FOR GAS AND WATER INJECTION PROJECTS
IN TRINIDAD AND TOBAGO
1957-1971

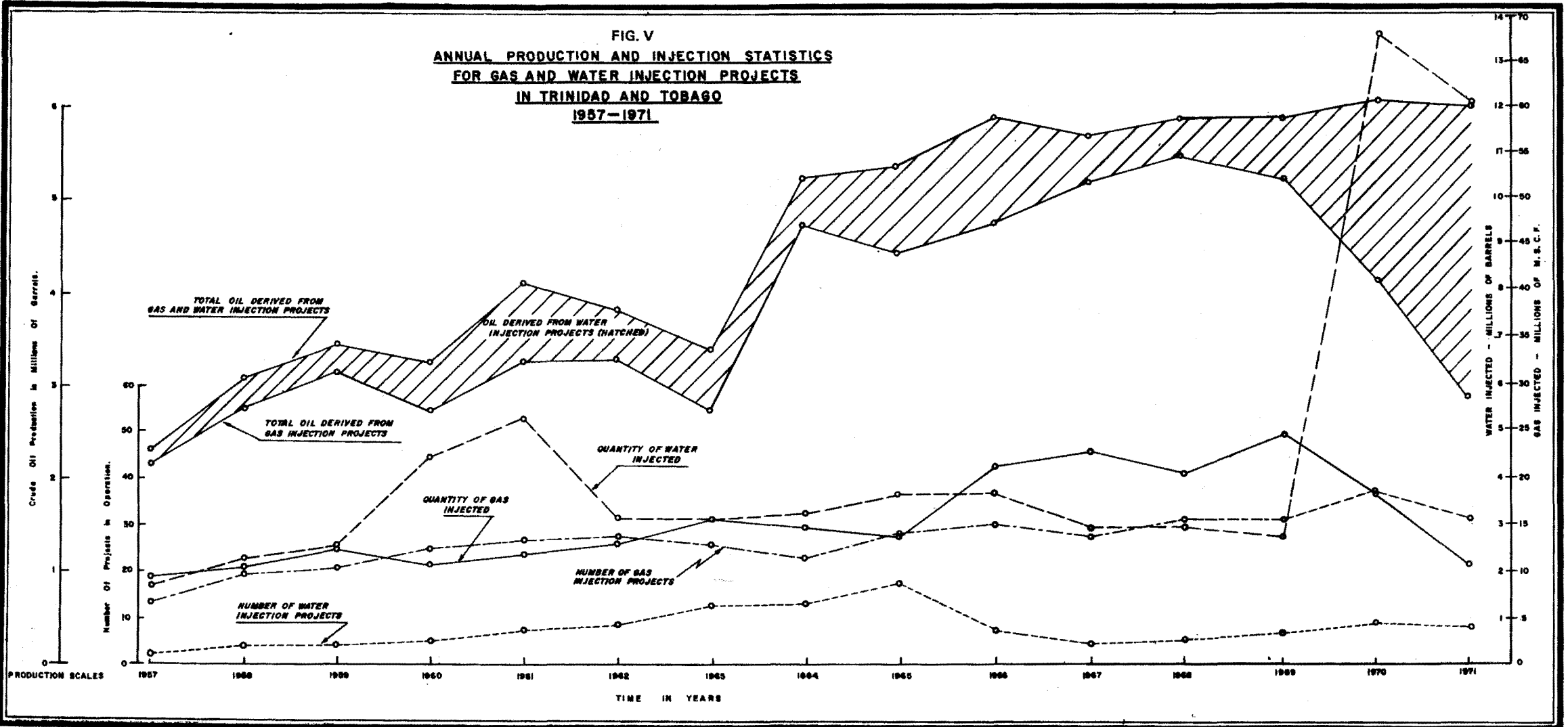


FIG. VI
 MONTHLY STATISTICS ON
 NATURAL GAS PRODUCED, UTILISED AND WASTED BY COMPANY
 FOR TRINIDAD AND TOBAGO
 FROM 1963 TO 1971

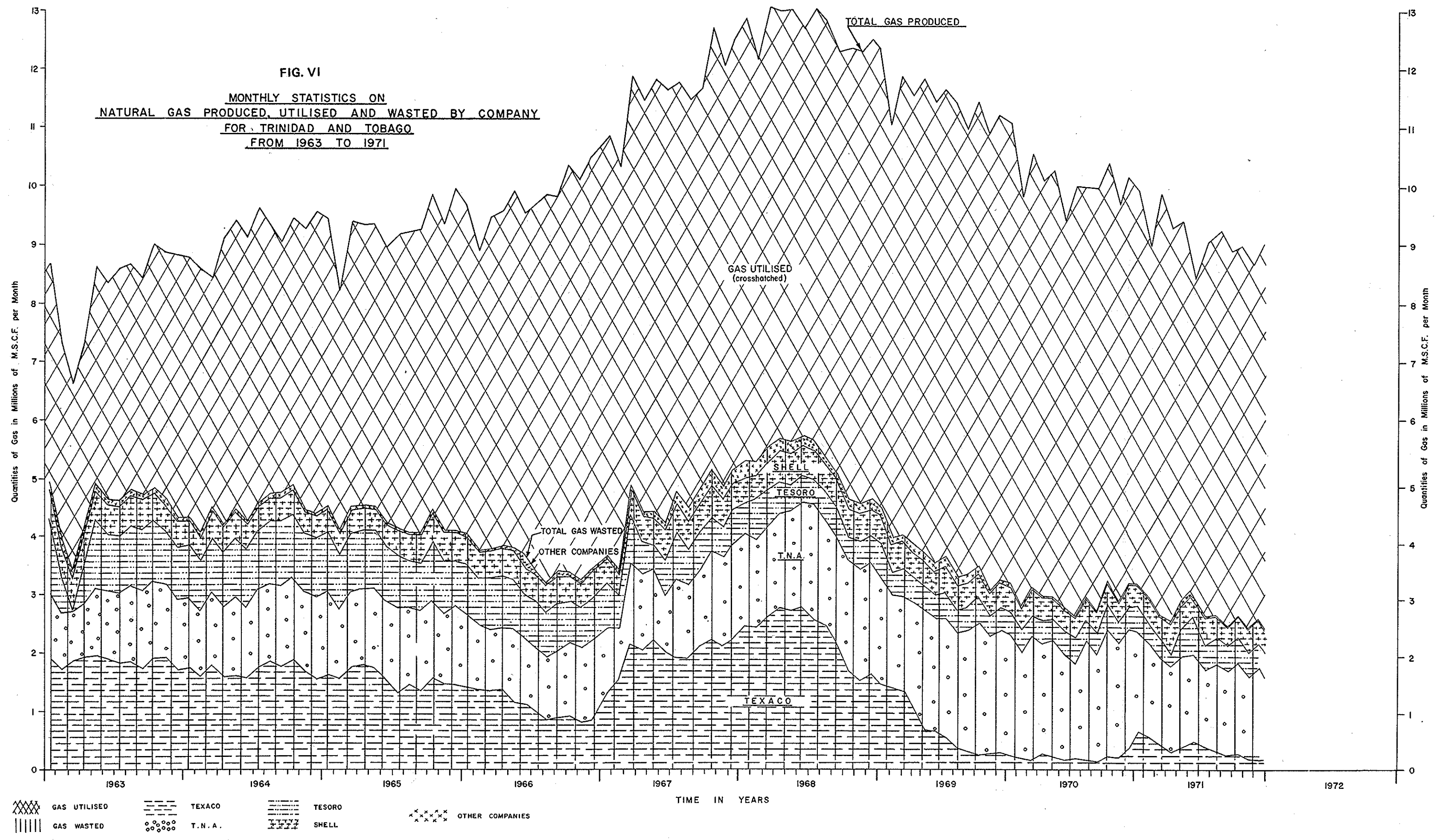
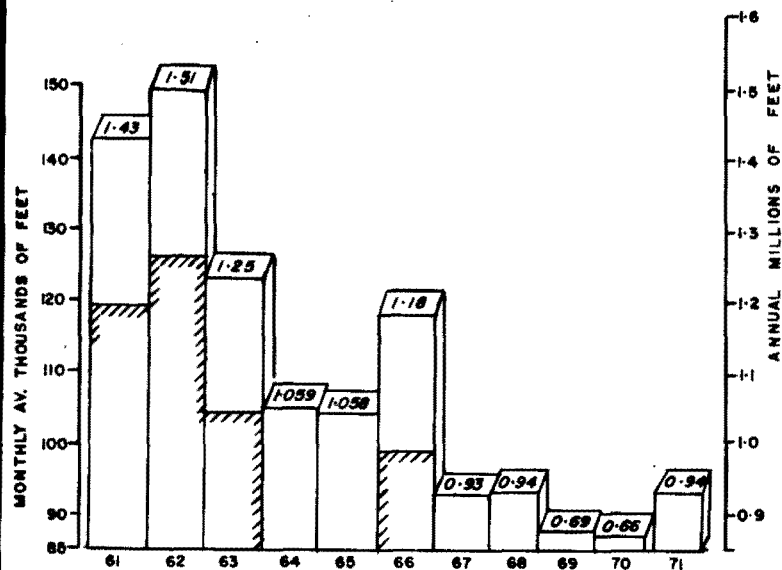
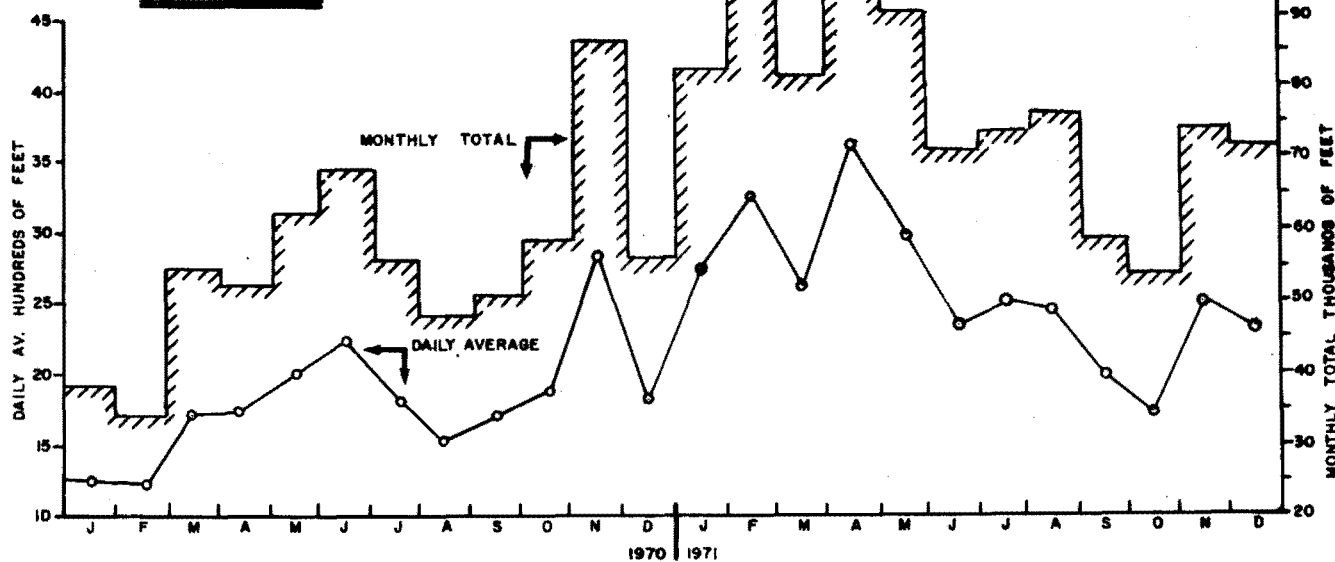


FIG. VII

STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD & TOBAGO



DRILLING



CRUDE OIL PRODUCTION

FIG. VIII

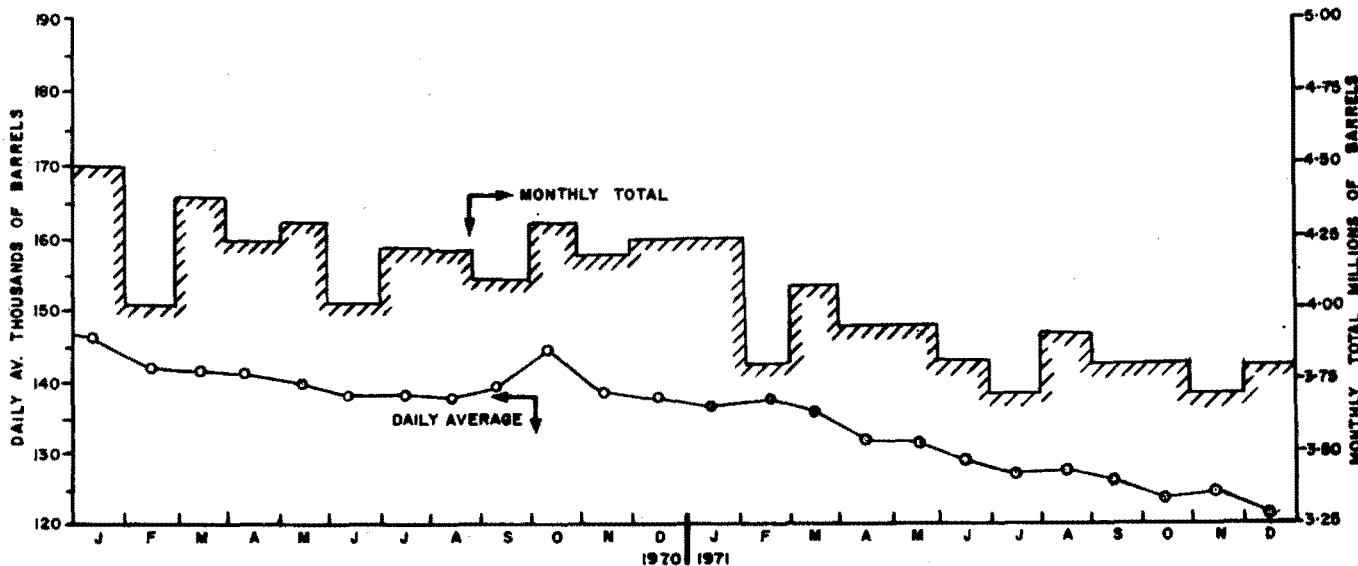
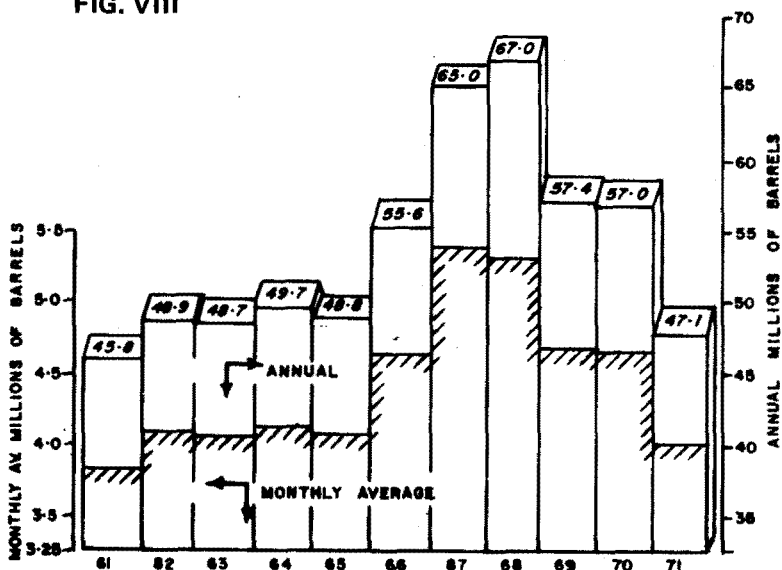
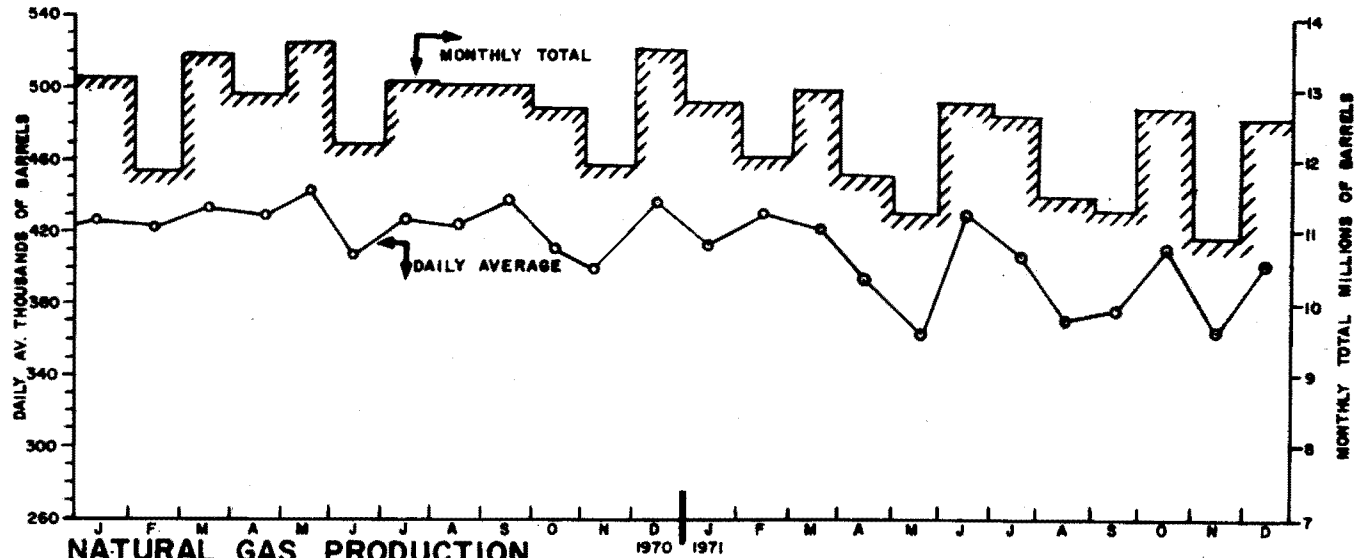
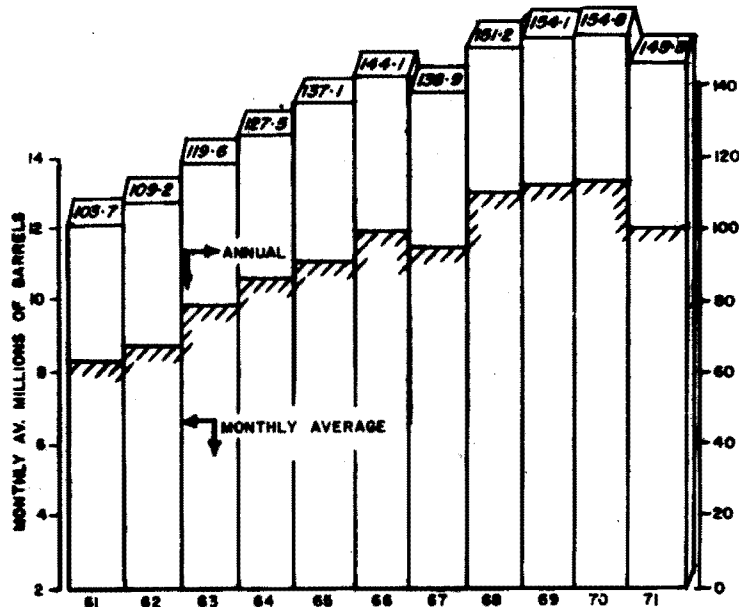


FIG. IX

STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD & TOBAGO

REFINERY THROUGHPUT



NATURAL GAS PRODUCTION

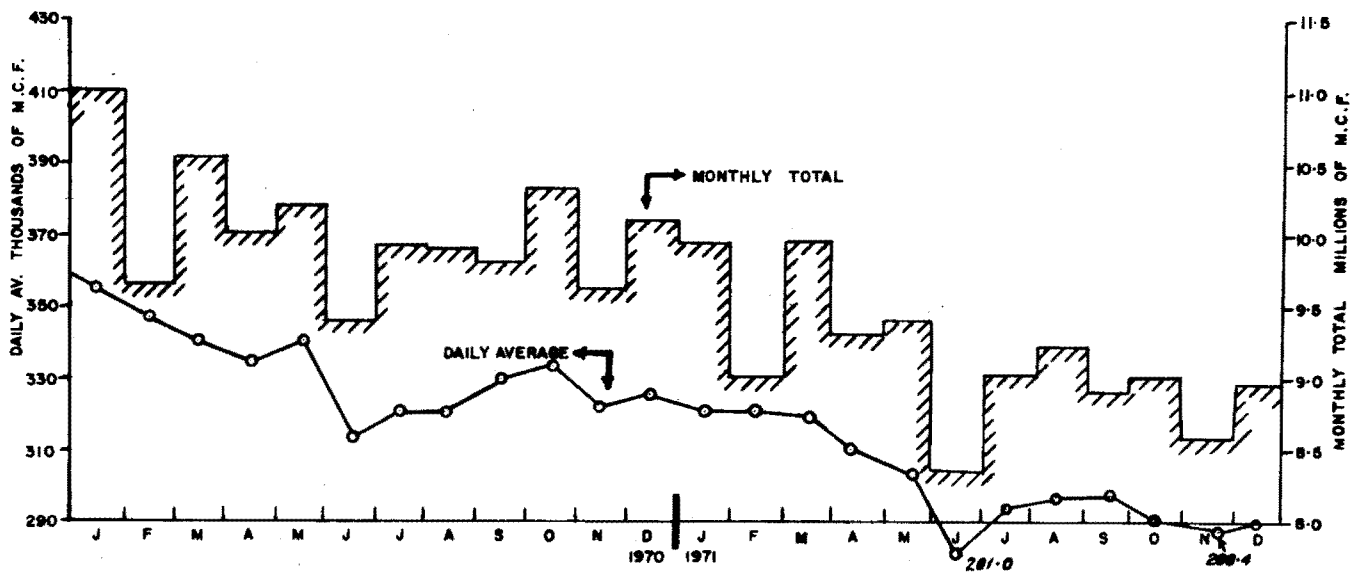
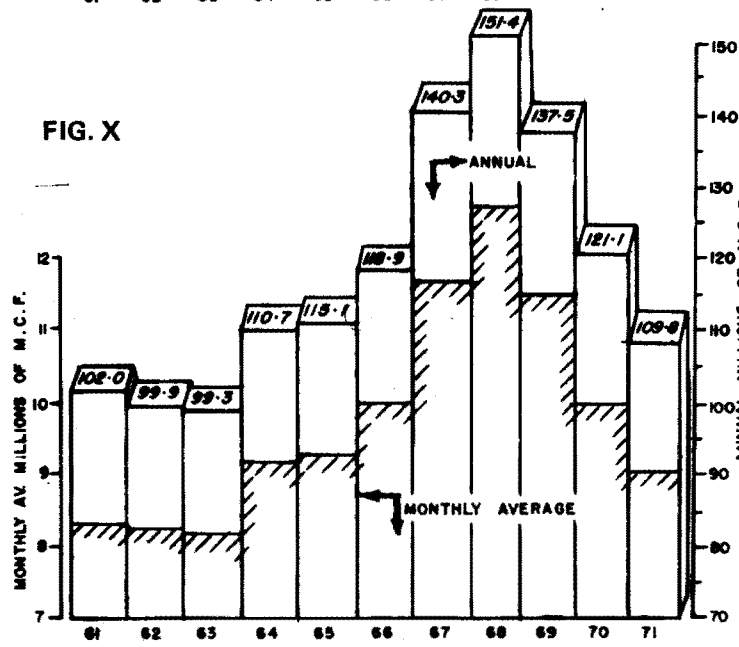
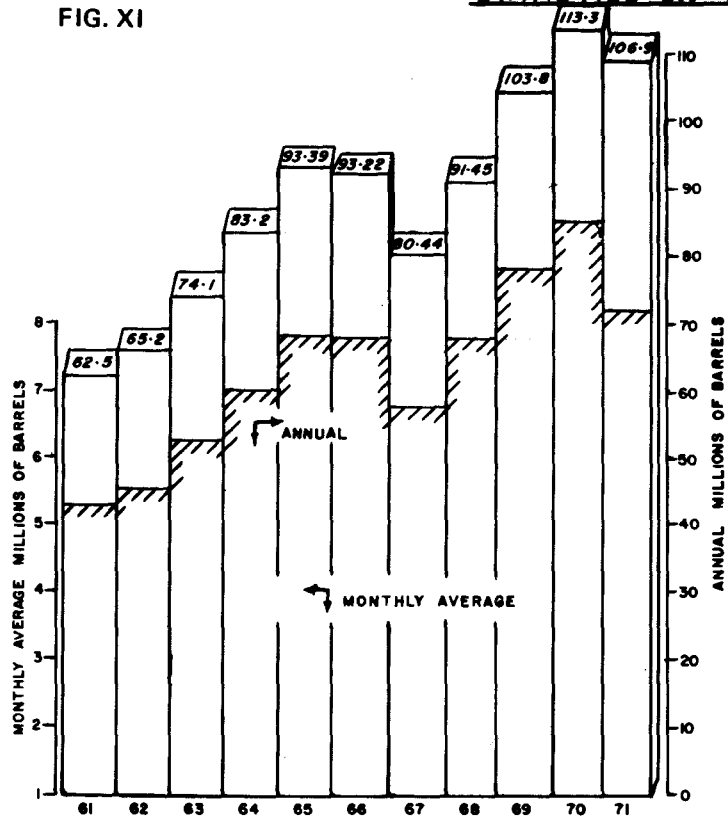


FIG. X

STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD & TOBAGO

FIG. XI



CRUDE OIL IMPORTS

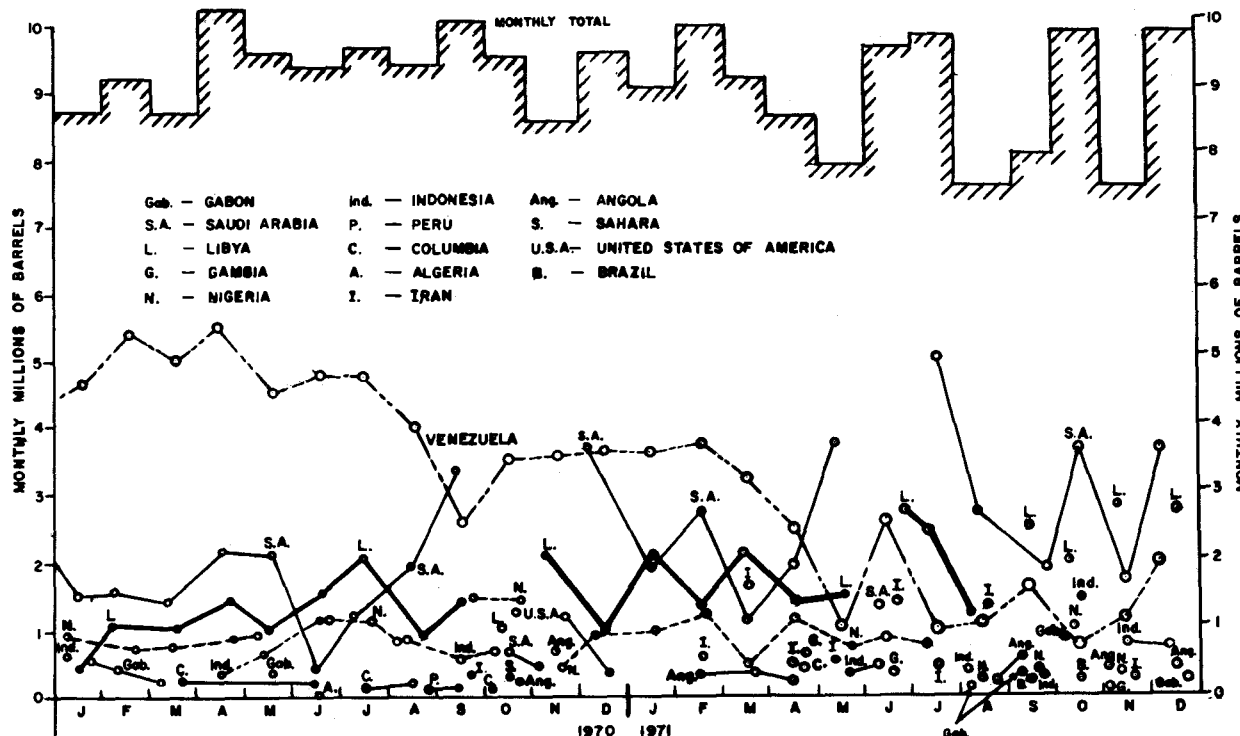
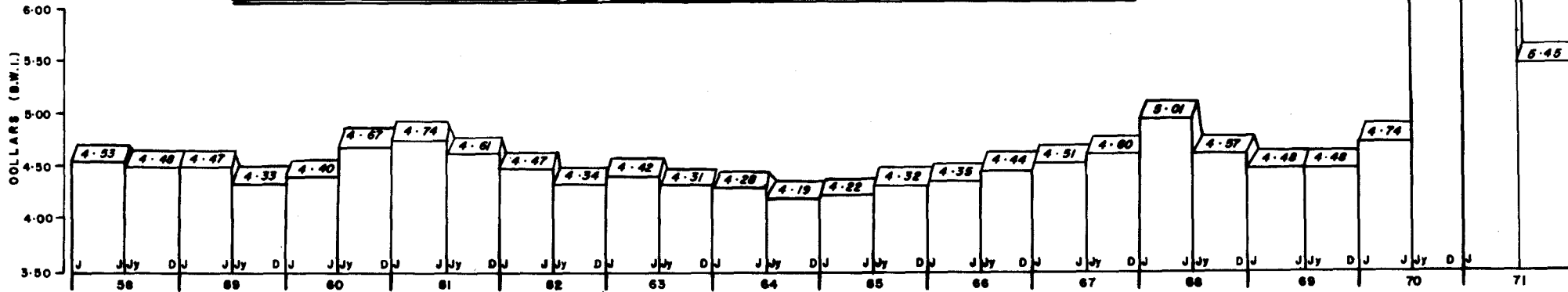


FIG. XII

AVERAGE VALUE* (For Royalty Evaluation) OF A BARREL OF CRUDE OIL



* AS DETERMINED BY THE METHOD OUTLINED IN THE LAND (OIL MINING) (AMENDMENT) REGULATIONS, 1953

APPENDIX I

Annual Statistics of Production, Drilling, Refining—Exports and Imports—1961-1971

Item	Unit	Percentage Difference 1971-1970	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962	1961
1. Crude Oil	'000 bbls	- 7.6	47,148	51,047	57,418	66,904	64,995	55,603	48,859	49,731	48,678	48,876	45,768
2. Casing head gasoline (C.H.P.S.)	'000 bbls	- 36.3	107	168	150	164	192	188	197	200	170	194	199
3. Total Crude Oil and Natural Gasoline (1+2)	'000 bbls	- 7.7	47,255	51,215	57,668	67,068	65,187	55,791	49,056	49,931	48,848	49,070	45,967
4. Crude Oil Production—Crown Oil Rights	'000 bbls	- 7.7	43,929	47,594	54,014	63,345	60,961	51,648	45,274	46,100	45,013	44,302	41,102
5. Crude Oil Production—Private Oil Rights	'000 bbls	- 6.7	3,219	3,452	3,405	3,559	4,034	3,955	3,585	3,631	3,665	4,574	4,666
6. Total Imports	'000 bbls	- 6.8	107,567	115,445	105,418	93,380	84,146	93,508	94,050	83,682	74,758	65,409	62,707
7. Imports of Refined Products	'000 bbls	+ 8.7	75	69	43	49	43	-	2	54	47	-	46
8. Imports of Crude Oil for Refining	'000 bbls	- 5.6	106,867	113,275	103,762	91,447	80,437	93,228	93,398	83,223	74,131	65,168	62,510
9. Imports of Other Oils for Refining and Blending	'000 bbls	- 70.2	625	2,101	1,613	1,884	3,666	280	650	405	580	241	197
10. Total Exports	'000 bbls	- 5.4	146,663	154,974	147,878	142,076	141,779	135,678	132,440	118,596	106,771	93,927	88,179
11. Exports of Crude Oil	'000 bbls	- 19.3	6,998	8,669	6,139	6,983	5,801	4,705	4,452	3,442	3,773	4,047	4,406
12. Exports of Refined Products	'000 bbls	- 4.5	139,665	146,305	141,648	135,093	135,978	130,973	127,988	115,154	102,998	89,880	83,773
13. Runs to Stills	'000 bbls	- 6.0	145,547	154,860	154,077	151,282	138,925	144,193	137,165	127,548	119,692	109,256	103,755
14. Number of Wells Started	As stated	+ 77.1	248	140	127	176	213	273	225	192	226	282	286
15. Total Number of Wells Completed	As stated	+ 63.0	220	135	130	176	221	275	224	194	232	280	288
16. Number of Drilling Wells Completed as Oil Wells	As stated	+ 63.5	175	107	99	151	197	244	201	170	199	255	245
17. Number of Drilling Wells Abandoned, &c.	As stated	+ 60.7	45	28	31	25	24	31	23	24	33	25	43
18. Total Footage Drilled (All Wells)	Feet	+ 41.5	939,259	663,743	690,671	942,686	928,210	1,187,202	1,058,736	1,056,337	1,246,248	1,506,187	1,426,002
19. Footage Drilled on Crown Oil Rights	Feet	+ 31.8	809,954	614,719	666,975	928,915	880,839	1,078,133	1,012,922	1,006,636	1,214,166	1,360,450	1,234,023
20. Footage Drilled on Private Oil Rights	Feet	+ 163.7	129,305	49,024	23,696	13,771	47,371	109,069	45,814	49,701	32,082	145,737	191,979
21. Average Depth of Completed Drilling Wells (15)	Feet	- 13.2	4,269	4,917	5,313	5,396	4,328	4,318	4,823	5,513	5,601	5,093	4,654
22. Total Number of Wells Producing (Average during year)	As stated	- 2.8	3,035	3,123	3,257	3,381	3,427	3,377	3,227	3,206	3,128	3,273	3,244
23. Number of Wells Produced by Flowing (Average during year)	As stated	- 10.7	559	626	708	795	891	934	920	1,010	1,007	1,026	1,047
24. Number of Wells Produced Artificial Life (Average during year)	As stated	- 0.8	2,476	2,497	2,549	2,586	2,536	2,443	2,307	2,196	2,121	2,247	2,197
25. Average Daily Production per Producing Well	Barrel	- 4.9	42.6	44.8	48.3	54.1	52.0	45.1	41.5	42.4	42.6	40.9	38.7
26. Average Daily Production Flowing Well	Barrel	- 4.6	114.4	119.9	125.2	137.3	117.6	96.3	88.9	92.3	93.5	93.4	85.8
27. Average Daily Production per Artificial Lift Well	Barrel	+ 1.5	26.4	26.0	26.9	28.5	28.9	25.6	22.6	19.4	18.5	33.0	16.2
28. Total Value of Domestic Exports	\$ '000	+ 6.0	1,000,940	944,131	934,658	910,636	755,100	717,170	678,313	686,254	627,717	579,658	579,548
29. Total Value of Petroleum Products (Item 28)	\$ '000	+ 20.4	804,831	668,439	644,676	725,430	593,653	580,947	563,319	573,903	525,690	494,343	193,918
30. Total Value of Lake Asphalt Products	\$ '000	- 10.8	3,561	3,991	2,764	3,209	3,368	3,570	3,139	4,086	3,276	3,024	2,661
31. Total Natural Gas Produced	MMCF	- 9.3	109,814	121,060	137,500	151,445	140,338	118,927	111,503	110,732	99,386	99,948	102,335
32. Used as Fuel	MMCF	- 1.1	55,865	56,490	58,348	56,410	53,846	48,692	41,517	37,892	28,623	23,814	24,412
33. Replaced in Formation	MMCF	- 36.3	12,112	19,018	24,728	21,324	22,625	19,841	13,866	14,688	15,824	13,177	11,841
34. Losses, Not Collected	MMCF	- 7.2	32,794	35,356	43,464	62,916	54,355	50,394	56,120	58,152	54,939	62,957	68,082

APPENDIX II
Ministry of Petroleum and Mines
Monthly Analysis of Drilling and Workover Wells, 1971
Trinidad and Tobago

Month	Rig/ Month	New Wells Started	Drilling Wells Completed										Closed in		Monthly Footage Drilled			Average Footage Drilled		Old Wells		
			Oil and Gas Producers		Injection and Observation Wells		Abandoned				Total	Aggregate Depth	Average Depth	No.	Aggregate Depth	Crown	Private	Total	/Day	/Rig /Day	Recompleted	Abandoned
			No.	Aggregate Depth	No.	Aggregate Depth	Dry Holes		Technical Causes													
							No.	Aggregate Depth	No.	Aggregate Depth												
January	13.42	23	9	49695			3	17783			12	67478	5623	4	14354	55881	26434	82315	2655	197.8	25	-
February	13.07	24	20	63218	1	325	4	29570			25	93113	3724	2	5050	73438	18687	92125	3290	251.7	22	-
March	12.66	25	17	79687			2	7450			19	87137	4586	-	-	70134	11615	81749	2637	208.3	16	1
April	14.15	27	14	33566			3	7900			17	41466	2439	3	11250	99819	8274	108093	3603	254.6	12	-
May	14.23	30	29	84242			4	22398			33	106640	3231	3	6212	67339	23096	90435	2917	205.0	29	-
June	10.84	20	15	50450	1	4100	5	17022	1	(a) 800	22	72372	3290	2	7425	47547	23570	71117	2371	218.7	27	-
July	11.04	20	11	34823			3	10321			14	45144	3224	3	4960	52876	25500	78376	2528	229.0	23	-
August	11.20	18	13	51772			2	14750			15	66522	4435	2	16387	57711	18305	76016	2452	218.9	10	-
September	10.77	14	12	36581			3	18160			15	54741	3649	1	11793	42125	16600	58725	1957	181.7	9	1
October	10.37	15	11	43545			4	16296	2	(b) 5482	17	65323	3842	2	16152	49943	3890	53833	1736	167.4	24	-
November	9.71	16	11	49872			2	15042			13	64914	4993	2	16384	64753	9542	74295	2476	255.0	13	-
December	9.52	15	9	44970			7	16578			16	61548	3847	1	7917	62218	9962	72180	2328	244.5	7	1
Total 1971	140.98	247	171	622421	2	4425	42	193270	3	6282	218	826398	3791	25*	117884	743784	195475	939259	2573	219.9	217	3
Total 1970	83.60	136	108	470141	-	-	24	172573	2	4485	134	647199	4830	-	-	566078	96899	662977	1816	217.2	256	23
% Increase 1971-1970	57.38	111	63	152280	2	4425	18	20697	1	1797	84	179199	-1039	25	117884	177706	98576	276282	757	2.7	-39	-20
Averages 1971	11.7	20.6	14.2	3639.9	-	2212.5	3.5	4601.7	-	209.4	18.2	3790.8	-	-	4715.4	61982	16289.6	78271.6	-	-	18.1	-
Averages 1970	7.0	11.3	9	4353.2	-	-	-	7190.5	-	2242.5	11.2	4829.8	-	-	-	47173	8075	55248	-	-	21.3	2

(a) T.T.P.C.L.-Galeota A 14-ABD Mechanical Reasons
(b) Amoco-Tourmaline 1 }
Tourmaline 2 } -ABD Mechanical Reasons

*Closed in Wells-17 wells drilled by T.T.P.C.L. } Platform wells waiting to be brought on production
8 wells drilled by Amoco }

APPENDIX IIA
Monthly Analysis of Footage Drilled
Land and Marine 1971

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Marine	28,371	31,082	32,266	35,898	17,593	14,817	21,961	19,119	12,394	5,123	28,867	18,108	265,599
Land	53,944	61,043	49,483	72,195	72,842	56,300	56,415	56,897	46,331	48,710	45,428	54,072	673,660
Total	82,315	92,125	81,749	108,093	90,435	71,117	78,376	76,016	58,725	53,833	74,295	72,180	939,259
Daily Average Footage ...	2655.3	3290.2	2637.1	3603.1	2917.2	2370.5	2528.3	2452.1	1957.5	1736.5	2476.5	2328.4	2573.3
Daily Average Footage Rig	194.4	243.0	208.3	255.5	205.4	192.7	225.7	211.4	170.2	168.5	257.6	245.1	
Marine % of Total ...	30.08	33.73	39.46	33.21	19.46	20.83	28.02	25.15	21.11	9.51	38.90	25.08	28.27

APPENDIX III
Analysis of Monthly Production for the Year Ending 31st December, 1971

MONTH	FLOWING				GAS/AIR LIFT				PUMPING				PLUNGER LIFT				OTHER METHODS				SALT WATER				BREAKDOWN OF TOTAL PRODUCTION										Average B.O.P.D.	Crown C.H.P.S.	Private C.H.P.S.	Total				
	No. of Wells	Quantity Barrels	% of Total Oil	Daily Av. Per Well Barrels	No. of Wells	Quantity Barrels	% of Total Oil	Daily Av. Per Well Barrels	No. of Wells	Quantity Barrels	% of Total Oil	Daily Av. Per Well Barrels	No. of Wells	Quantity Barrels	% of Total Oil	Daily Av. Per Well Barrels	No. of Wells	Quantity Barrels	% of Total Oil	Daily Av. Per Well Barrels	No. of Wells	Quantity Barrels	% of Total Oil	Daily Av. Per Well Barrels	No. of Wells Produced	No. of Idle Wells	No. of Wells Abd.	No. of Wells Drilling at Month End	Total No. of Wells Started	Daily Av. Per Producing Wells	Total Oil Production	CROWN							PRIVATE			
																																Daily Av. Per Producing Wells	No. of Wells	Quantity Produced (Barrels)					Daily Av. Per Producing Wells	No. of Wells	Quantity Produced (Barrels)	
January	593	2,256,095	53.3	122.7	1014	1,254,870	29.6	39.9	1346	679,364	16.0	16.3	120	44,681	1.1	12.0	4	59	—	0.5	1890	1,104,150	20.7	18.8	3077	4083	2396	13	9569	44.4	4,235,069	50.5	2525	3,953,420	16.4	552	281,649	136,615	7,981	1,497	9,478	
February	587	2,004,298	52.2	121.9	999	1,146,345	29.8	41.0	1325	654,896	17.0	17.7	117	37,510	1.0	11.4	4	54	—	0.4	1908	997,987	20.6	18.7	3032	4149	2401	10	9592	45.3	3,843,094	51.5	2482	3,580,872	17.0	550	262,222	137,253	6,863	1,315	8,178	
March	578	2,141,504	51.4	119.5	1007	1,256,319	30.0	40.2	1367	748,382	17.8	17.7	116	46,063	1.1	12.8	3	39	—	0.4	1884	1,209,692	22.4	20.7	3071	4130	2404	13	9618	44.0	4,192,307	50.1	2511	3,904,172	16.6	560	288,135	135,235	6,659	1,320	7,979	
April	566	1,973,835	50.0	115.4	981	1,190,977	30.1	40.5	1351	739,552	18.7	18.2	113	45,954	1.2	13.6	4	25	—	0.2	1842	1,181,062	23.1	21.7	3015	4211	2406	13	9645	43.6	3,950,343	49.4	2493	3,692,979	16.4	522	257,364	131,678	7,533	1,386	8,919	
May	571	1,971,385	48.7	111.4	1008	1,212,777	29.9	38.8	1393	824,453	20.3	19.1	113	43,431	1.1	12.4	4	66	—	0.5	1843	1,300,182	24.3	22.8	3089	4163	2408	10	9670	42.3	4,052,112	48.0	2543	3,786,275	15.7	546	265,837	130,713	7,155	1,803	8,958	
June	559	1,843,522	47.8	109.9	1030	1,173,402	30.4	38.0	1373	793,812	20.6	19.3	113	44,042	1.2	13.0	3	65	—	0.7	1720	1,221,219	24.1	23.7	3078	4189	2413	11	9691	41.7	3,854,843	47.3	2532	3,589,494	16.2	546	265,349	128,494	6,835	1,794	8,629	
Production Total 1st January - 30th June	576	12,190,639	50.5	116.9	1007	7,234,690	30.0	39.7	1359	4,440,459	18.4	18.0	115	261,681	1.1	12.6	4	299	—	0.4	1848	7,014,292	22.5	21.0	3060	4189	2413	—	9691	43.6	24,127,768	49.5	2514	22,507,212	16.4	546	1,620,556	124,349	43,026	9,115	52,141	
July	567	1,887,565	47.9	107.4	1012	1,185,667	30.1	37.8	1379	823,420	20.9	19.3	103	43,195	1.1	13.5	5	54	—	0.3	1645	1,288,633	24.6	25.3	3066	4217	2416	12	9711	41.5	3,939,901	47.0	2517	3,668,430	15.9	549	271,471	127,093	6,913	1,849	8,762	
August	548	1,912,404	48.3	112.6	994	1,168,918	29.5	37.9	1407	837,299	21.1	19.2	103	43,943	1.1	13.8	6	95	—	0.8	1681	1,243,653	23.9	23.9	3058	4245	2417	12	9729	41.8	3,962,659	47.8	2497	3,697,206	15.3	561	265,453	127,827	7,989	1,940	9,929	
September	545	1,813,775	48.0	110.9	972	1,085,873	28.7	37.2	1405	840,168	22.2	20.0	106	41,832	1.1	13.1	6	44	—	0.2	1644	1,231,943	24.6	25.0	3034	4276	2421	11	9742	41.6	3,781,692	47.1	2490	3,521,701	15.6	544	259,991	126,056	7,161	1,710	8,871	
October	546	1,866,825	48.8	111.7	972	1,089,089	28.4	37.9	1390	834,321	21.7	19.8	91	38,815	1.1	13.8	6	78	—	0.4	1603	1,276,168	25.0	25.7	3005	4313	2430	9	9757	41.1	3,829,128	46.4	2477	3,563,373	16.2	528	265,755	123,520	7,600	2,059	9,659	
November	529	1,831,094	49.1	115.3	955	1,036,504	27.8	36.1	1377	824,250	22.1	19.9	86	35,323	1.0	13.7	3	30	—	0.3	1628	1,226,810	24.7	25.1	2950	4380	2433	10	9773	42.1	3,727,201	47.8	2416	3,468,306	16.2	534	258,895	124,240	6,865	1,796	8,661	
December	527	1,830,995	48.4	122.0	951	1,042,186	27.6	35.4	1392	868,624	23.9	20.1	79	37,508	0.1	15.3	6	69	—	0.4	1607	1,261,757	25.0	25.3	2955	4385	2439	10	9789	41.3	3,779,382	46.9	2408	3,502,677	16.3	547	276,705	121,915	7,014	1,688	8,702	
Production Total 1st July - 31st December	544	11,142,658	48.4	111.3	976	6,608,237	28.7	36.8	1392	5,028,082	21.9	19.6	95	240,616	1.0	13.8	5	370	—	0.4	1635	7,528,964	24.6	25.0	3011	4339	2439	—	9789	41.5	23,019,963	47.2	2467	21,421,693	16.0	544	1,598,270	125,108	43,542	11,042	54,584	
Year's Production Total	—	23,333,297	49.5	—	—	13,842,927	29.4	—	—	9,468,541	20.1	—	—	502,297	1.0	—	—	669	—	—	—	14,543,256	23.6	—	—	—	2439	—	9789	—	47,147,731	—	—	43,928,905	—	—	3,218,826	129,172	86,568	20,157	106,725	
Daily Averages	—	63,927	—	—	—	37,926	—	—	—	25,941	—	—	—	1,376	—	—	—	2	—	—	—	39,844	—	—	—	—	—	—	—	129,172	—	—	120,353	—	—	8,819	—	237	55	292		
Averages during Year	559	—	—	114.4	991	—	—	38.3	1375	—	—	18.9	105	—	—	—	5	—	—	0.4	1741	—	—	22.9	3035	—	—	—	—	42.6	—	48.3	2490	—	—	545	—	—	—	—	—	—

APPENDIX III A
Ministry of Petroleum and Mines
Analysis of Production by Operating Companies, 1971

	FLOWING				GAS LIFT				PUMPING				PLUNGER LIFT				SALT WATER				Av. No. of Wells Prod.	Daily Av. per Producing Well	Total Oil Produced (Barrels)	Co.'s Prod'n as % of Trl. Prod'n	OIL RIGHTS		OIL RIGHTS	
	Av. No. of Wells	Quantity (Barrels)	% of Total	Daily Av. per Well	Av. No. of Wells	Quantity (Barrels)	% of Total	Daily Av. per Well	Av. No. of Wells	Quantity (Barrels)	% of Total	Daily Av. per Well	Av. No. of Wells	Quantity (Barrels)	% of Total	Daily Av. per Well	Av. No. of Wells	Quantity (Barrels)	% of Total	Daily Av. per Well					Crown Production (Barrels)	% of Total	Private Production (Barrels)	% of Total
Trinidad Tesoro Petroleum Company Limited ...	170	2,154,421	28.6	34.7	194	1,667,898	22.2	23.5	492	3,193,083	42.5	17.8	105	502,297	6.7	13.1	505	1,757,844	18.9	9.5	961	21.4	7,517,699	15.9	5,803,273	77.2	1,714,426	22.8
Texaco Trinidad Incorporated ...	137	3,217,009	23.4	64.3	698	7,404,860	53.8	29.1	464	3,141,279	22.8	18.5	-	-	-	-	819	7,182,285	34.3	24.0	1299	29.0	13,763,148	29.2	12,722,855	92.4	1,040,293	7.6
Shell Trinidad Limited ...	79	983,258	29.9	34.1	25	294,985	9.0	32.3	251	2,010,196	61.1	21.9	-	-	-	-	172	1,377,684	29.5	21.3	355	25.4	3,288,439	7.0	2,973,167	90.4	315,272	9.6
Premier Consolidated Oilfields Limited ...	4	13,672	7.2	9.4	1	1,470	0.8	4.0	106	174,552	92.0	4.5	-	-	-	-	40	54,831	22.4	3.7	111	4.7	189,694	0.4	40,859	21.5	148,835	78.5
Trinidad Canadian Oilfields Limited ...	8	84,884	21.8	29.1	5	61,740	15.9	33.8	59	242,194	62.3	11.2	-	-	-	-	45	236,782	37.8	14.4	72	14.8	388,818	0.8	388,818	100.0	-	-
Trinidad Northern Areas Limited ...	161	16,880,053	76.7	287.2	68	4,411,974	20.0	177.7	8	707,906	3.2	242.4	-	-	-	-	144	3,933,830	64.1	74.8	238	253.2	21,999,933	46.7	21,999,933	100.0	-	-
Total ...	559	23,333,297	49.5	114.3	991	13,842,927	29.4	38.3	1380	9,469,210	20.1	18.8	105	502,297	1.0	13.1	1725	14,543,256	23.6	22.9	3035	42.5	47,147,731	100.0	43,928,905	93.2	3,218,826	6.8
Total 1970 ...	626	27,386,848	53.7	119.9	1045	15,886,002	31.1	41.6	1331	7,179,942	14.1	14.8	121	594,101	1.1	13.4	1923	13,300,273	20.7	18.9	3123	44.8	51,046,893	100.0	47,594,412	93.2	3,452,481	6.8

Natural Gasoline C.H.P.S. Production

Company	Crown Oil Rights	Private Oil Rights	Total
	Barrels	Barrels	Barrels
Trinidad Tesoro Petroleum Company Limited ...	86,568	20,157	106,725
Total - 1970 ...	106,158	29,980	136,138

APPENDIX III B
Daily Average Production by Months for all Companies — 1971
(All Quantities in barrels)

Company	January	February	March	April	May	June	July	August	September	October	November	December	GRAND TOTAL	
													Crude	B.O.P.D.
T.T.P.C.L. ...	608,623	543,068	612,261	597,478	637,749	620,780	660,208	669,472	635,123	656,086	631,265	645,586	7,517,699	20,596
B.O.P.D. ...	19,633	19,395	19,751	19,916	20,573	20,693	21,297	21,596	21,171	21,164	21,042	20,825		
S.T.L. ...	260,191	253,709	276,493	274,329	287,856	261,785	276,753	276,123	262,326	282,727	290,649	285,498	3,288,349	9,009
B.O.P.D. ...	8,393	9,061	8,919	9,144	9,285	8,726	8,927	8,907	8,744	9,120	9,688	9,210		
T.T.I. ...	1,270,245	1,146,147	1,256,421	1,164,202	1,192,457	1,143,039	1,152,992	1,152,964	1,085,123	1,083,145	1,060,317	1,056,096	13,763,148	37,707
B.O.P.D. ...	40,976	40,934	40,530	38,807	38,466	38,101	37,193	37,192	36,171	34,940	35,344	34,068		
T.C.O. ...	33,940	30,974	34,996	32,587	32,701	32,139	33,564	32,962	31,255	31,186	29,906	32,608	388,818	1,065
B.O.P.D. ...	1,095	1,106	1,128	1,086	1,055	1,071	1,082	1,063	1,042	1,006	997	1,052		
P.C.O.L. ...	16,947	15,181	16,674	15,565	16,517	15,451	15,409	16,088	15,649	15,476	14,656	16,081	189,694	519
B.O.P.D. ...	546	542	537	519	533	515	497	519	521	499	489	518		
T.N.A. ...	2,045,123	1,854,015	1,995,462	1,866,182	1,884,832	1,781,649	1,800,975	1,815,050	1,752,216	1,760,508	1,700,408	1,743,513	21,999,933	60,274
B.O.P.D. ...	65,972	66,215	64,370	62,206	60,801	59,388	58,097	58,550	58,407	56,791	56,680	56,242		
Total 1971 ...	4,235,069	3,843,094	4,192,307	3,950,343	4,052,112	3,854,843	3,939,901	3,962,659	3,781,692	3,829,128	3,727,201	3,779,382	47,147,731	129,172
B.O.P.D. ...	136,615	137,253	135,235	131,678	130,713	128,494	127,093	127,827	126,056	123,520	124,240	121,915		
Total 1970 ...	4,533,060	3,982,108	4,377,220	4,224,826	4,322,175	4,132,537	4,278,712	4,251,320	4,171,333	4,354,218	4,161,867	4,258,313	51,046,893	139,854
B.O.P.D. ...	146,228	142,218	141,200	140,827	139,425	137,752	138,022	137,139	139,044	140,458	138,729	137,365		

APPENDIX IIIC
Marine Offshore, Land Production—1971
(All quantities in barrels)

Type of Well	January		February		March		April		May		June		January—June Sub-Total		July		August		September		October		November		December		July—December Sub-Totals		Grand Total	
	No. of Wells	Production	No. of Wells	Production	No. of Wells	Production	No. of Wells	Production	No. of Wells	Production	No. of Wells	Production	Av. No. of Wells	Production	No. of Wells	Production	No. of Wells	Production	No. of Wells	Production	No. of Wells	Production	No. of Wells	Production	No. of Wells	Production	Av. No. of Wells	Production	No. of Wells	Production
Marine																														
T.N.A. Soldado ...	223	2,016,382	229	1,821,182	226	1,964,672	224	1,833,344	227	1,843,966	224	1,744,539	225	11,224,085	223	1,758,804	220	1,778,395	221	1,722,088	230	1,729,980	214	1,672,214	222	1,709,537	221	10,371,018	223	21,595,103
.. Ft. 1, Ft. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Texaco ABM ...	103	126,403	103	117,334	106	117,026	105	103,025	110	108,245	110	96,039	106	668,072	112	95,664	104	100,327	107	89,106	104	92,061	97	84,893	92	89,680	103	551,731	105	1,219,803
.. A.L.M. ...	2	4,599	2	4,975	2	4,811	2	3,780	2	3,576	2	4,468	2	26,209	2	4,463	2	4,186	2	3,332	2	3,782	2	4,073	2	3,028	2	22,864	2	49,073
P.C.O.L. Couva Marine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tesoro North Marine	2	11,062	1	5,434	1	4,681	1	4,620	1	4,142	1	3,695	1	33,634	1	6,190	1	5,795	1	5,704	1	5,742	1	7,743	1	4,663	1	35,837	1	69,471
Tesoro 'G' Wells	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	330	2,158,446	335	1,948,925	335	2,091,190	332	1,944,769	340	1,959,929	337	1,848,741	334	11,952,000	338	1,865,121	327	1,888,703	331	1,820,230	337	1,831,565	314	1,768,923	317	1,806,908	327	10,981,450	331	22,933,450
Deviated from Shore																														
I.N.A.F.O.S.	13	28,741	16	32,833	13	30,790	13	32,838	16	40,866	17	37,110	15	203,178	18	42,171	17	36,655	18	30,128	16	30,528	12	28,194	14	33,976	16	201,652	15	404,830
Texaco AS	55	34,270	48	30,152	50	34,221	52	29,132	58	28,463	57	27,813	53	184,051	56	29,331	59	33,228	58	26,763	53	25,392	50	25,376	47	26,076	54	166,166	54	350,217
.. A.L.S.	5	10,460	5	8,783	4	10,131	4	8,184	4	7,304	4	6,901	4	51,763	3	6,044	2	6,200	2	5,585	2	5,517	2	5,207	3	6,169	2	34,722	3	86,485
Tesoro 'M' Wells	3	550	2	444	1	453	2	485	2	404	3	340	2	2,676	2	338	3	365	1	290	4	968	5	1,807	6	2,176	3	5,944	2	8,620
Total	76	74,021	71	72,212	68	75,595	71	70,639	80	77,037	81	72,164	74	441,668	79	77,884	81	76,448	79	62,766	75	62,405	69	60,584	70	68,397	75	408,484	74	850,152
Marine and Deviated	406	2,232,467	406	2,021,137	403	2,166,785	403	2,015,408	420	2,036,966	418	1,920,905	408	12,393,668	417	1,943,005	408	1,965,151	410	1,882,996	412	1,893,970	383	1,829,517	387	1,875,305	402	11,389,934	405	23,783,602
Land	2,671	2,002,602	2,626	1,821,957	2,668	2,025,522	2,612	1,934,935	2,669	2,015,146	2,660	1,933,938	2,652	11,734,100	2,649	1,996,896	2,650	1,997,508	2,624	1,898,696	2,593	1,935,158	2,567	1,897,694	2,568	1,904,077	2,609	11,630,029	2,630	23,364,129
Total Production	3,077	4,235,069	3,032	3,843,094	3,071	4,192,307	3,015	3,950,343	3,089	4,052,112	3,078	3,854,843	3,060	24,127,768	3,086	3,939,901	3,058	3,962,659	3,034	3,781,692	3,005	3,829,128	2,950	3,727,201	2,955	3,779,382	3,011	23,019,963	3,035	47,147,731

APPENDIX IV

Production and Disposal of Natural Gas — 1971

(All figures of Gas Production in MCF)

(M — 1,000 Standard Cubic Feet)

Half Yearly Totals	Crude Oil Production	Average G.O.R. Cu. Ft. barrels	Natural Gas Production	Natural Gas Disposal													Inter Oil Company Sales	Used for the Manufacture of Petrochemicals
				Sales to other Companies	Replaced into Formation	Converted to CHPS	Used as Fuel		Vented to Atmosphere			Pipeline Losses and unaccounted for	Not Collected	Natural Gas Recovery				
							In Fields	In Refineries	After Utilisation	Without Utilisation	Total			Natural Gas Treated	Average Plant Recovery IG/MCF	Natural Gasoline Produced barrels		
January ...	4,235,069	2,345	9,932,523	2,520,906	1,037,268	9,944	719,484	2,334,095	1,388,305	863,779	2,252,084	267,921	790,821	1,971,693	246	13,840	1,681,461	849,168
February ...	3,843,094	2,339	8,987,851	2,190,383	1,112,690	8,581	648,358	2,090,270	1,200,245	831,957	2,032,202	202,943	702,424	1,769,868	237	12,012	1,657,404	747,481
March ...	4,192,307	2,357	9,880,167	2,821,837	1,293,738	8,373	718,101	2,391,762	841,947	847,316	1,689,263	226,455	730,638	1,940,005	195	12,089	2,165,577	1,052,507
April ...	3,950,343	2,353	9,296,019	2,688,254	1,085,551	9,358	689,583	2,283,639	1,023,099	650,046	1,673,145	200,355	666,134	1,659,286	259	12,291	2,036,695	1,017,123
May ...	4,052,112	2,322	9,410,134	2,376,166	1,162,050	9,398	694,652	2,279,383	1,057,518	836,757	1,894,275	269,273	724,937	1,804,875	253	13,056	2,020,066	739,284
June ...	3,854,843	2,187	8,432,134	1,220,617	1,240,927	9,053	624,105	2,267,315	987,119	1,159,974	2,147,093	187,691	735,333	1,076,299	324	10,606	1,848,100	175,841
Half-Year Total ...	24,127,768	2,318	55,938,828	13,818,163	6,932,224	54,707	4,094,283	13,646,464	6,498,233	5,189,829	11,688,062	1,354,638	4,350,287	10,222,026	253	73,894	11,409,303	4,581,404
July ...	3,939,901	2,303	9,074,344	2,370,316	1,018,200	9,048	648,152	2,381,974	946,116	888,533	1,834,649	173,759	638,246	1,582,833	270	12,215	1,999,024	725,203
August ...	3,962,659	2,328	9,224,010	2,696,209	852,665	10,367	673,451	2,339,684	770,862	1,019,559	1,790,421	167,966	693,247	645,886	535	9,882	1,972,038	94,964
September ...	3,781,692	2,353	8,898,871	2,705,996	856,925	9,308	640,132	2,240,581	684,505	899,928	1,584,433	214,625	646,871	736,709	421	8,871	1,848,381	911,336
October ...	3,829,128	2,349	8,993,868	2,699,671	720,264	10,134	642,698	2,274,207	691,598	989,410	1,681,008	247,769	718,117	1,780,125	263	13,403	1,809,833	904,527
November ...	3,727,201	2,322	8,654,796	2,652,667	808,005	9,087	668,602	2,091,604	755,957	821,325	1,577,282	128,789	718,760	1,708,144	246	12,039	1,786,763	875,475
December ...	3,779,382	2,389	9,029,108	2,645,096	923,782	9,131	723,675	2,142,936	686,054	1,288,125	1,974,179	111,295	499,014	1,585,165	242	10,981	1,821,848	838,313
Half-Year Total ...	23,019,963	2,340	53,874,997	15,769,955	5,179,841	57,075	3,996,710	13,470,986	4,535,092	5,906,880	10,441,972	1,044,203	3,914,255	8,038,862	293	67,391	11,237,887	4,349,818
Year Total ...	47,147,731	2,329	109,813,825	29,588,118	12,112,065	111,782	8,090,993	27,117,450	11,033,325	11,096,709	22,130,034	2,398,841	8,264,542	18,260,888	271	141,285	22,647,190	8,931,222
Percentage disposal for Year ...	—	—	—	26.9	11.0	0.1	7.4	24.7	10.1	10.1	20.2	2.2	7.5	16.6	—	0.1	20.6	8.1

APPENDIX V
Destination of Exports of Crude and Refined Products from Trinidad and Tobago - 1971
(All Quantities in bbls.)

	Totals	% of Total Exports	Crude Petroleum Exported	L.P.G.	Aviation Turbine Fuel	Aviation Gasoline	Motor Gasoline	Kerosines	Gas and Diesel Oils	Fuel Oils	Lubes and Greases	Asphaltic Products	Other Refined ¹ & Petrochemicals
North America													
Canada ...	1,467,404	1.060	—	—	—	—	—	—	84,170	1,119,275	263,959	—	—
U.S.A. ...	73,481,139	53.088	—	—	7,914,201	—	5,294,663	3,204,164	1,339,155	55,149,726	44,280	—	534,950
Total N.A.	74,948,543	54.148	—	—	7,914,201	—	5,294,663	3,204,164	1,423,325	56,269,001	308,239	—	534,950
Central America													
Canal Zone ...	2,277,556	1.645	—	—	68,867	10,060	—	—	611,110	1,583,119	4,400	—	—
Costa Rica ...	39,831	0.029	—	—	—	113	—	13,955	—	—	25,763	—	—
Honduras ...	2,000	0.001	—	—	—	2,000	—	—	—	—	—	—	—
Other C.A. ² ...	154,558	0.112	—	—	—	12,340	7,456	3,496	71,213	—	47,532	—	12,521
Total C.A.	2,473,945	1.787	—	—	68,867	24,513	7,456	17,451	682,323	1,583,119	77,695	—	12,521
South America													
Brazil ...	4,256,721	3.075	—	—	141,030	—	3,634,982	—	—	—	480,709	—	—
French Guiana ...	450,297	0.325	—	14,888	—	7,439	107,477	17,836	302,375	—	243	—	39
Guyana ...	3,972,376	2.870	—	31,036	64	32,612	315,995	227,980	921,049	2,432,301	171	9,406	1,762
Peru ...	153,831	0.111	—	—	—	—	153,831	—	—	—	—	—	—
Surinam ...	3,375,957	2.439	—	19,803	31	20,593	226,430	124,415	1,340,537	1,614,063	2,143	27,199	743
Uruguay ...	6,609	0.005	—	—	—	—	—	—	6,609	—	—	—	—
Other S.A. ³ ...	80,493	0.059	—	—	—	8,305	8,615	21,165	13,996	—	28,412	—	—
Total S.A.	12,296,284	8.884	—	65,727	141,125	68,949	4,447,330	391,396	2,584,566	4,046,364	511,678	36,605	2,544
West Indian Islands													
British ⁴ ...	2,340,270	1.691	—	78,375	183,362	47,503	312,696	447,966	398,636	633,042	190,974	45,363	2,353
French ⁵ ...	510,679	0.369	—	64,884	—	39,468	58,750	56,065	125,855	139,474	16,566	9,250	367
Netherlands ⁶ ...	3,087,951	2.231	—	—	88,903	1,093,979	1,405,387	300	499,382	—	—	—	—
Puerto Rico ...	2,461,428	1.778	267,819	—	—	—	917,877	1,003,449	—	540,102	—	—	—
Virgin Islands ...	2,080,740	1.503	6,730,470	480	—	20,614	277,590	180,573	525,756	1,074,663	(94)	1,132	26
Other W.I. Islands ⁷ ...	148,469	0.107	—	—	—	189	18	—	3,303	137,481	7,478	—	—
Total W.I. Isls.	10,629,537	7.679	6,998,289	143,739	272,265	1,201,753	2,972,318	1,688,353	1,552,932	2,524,762	214,924	55,745	2,746
Europe													
Belgium ...	141,335	0.102	—	—	—	—	101,035	—	—	—	4,817	—	35,483
Denmark ...	195,719	0.141	—	—	—	—	—	—	—	195,719	—	—	—
France ...	684,871	0.495	—	—	497,893	—	179,500	—	—	—	—	—	7,478
Italy ...	491,745	0.355	—	—	—	—	—	—	—	—	—	—	491,745
Netherlands ...	1,091,607	0.789	—	—	—	—	63,203	—	402,487	464,465	—	—	161,452
Norway ...	123,443	0.089	—	—	—	—	123,443	—	—	—	—	—	—
Spain ...	910,138	0.658	—	—	665,900	—	—	—	—	244,238	—	—	—
Sweden ...	14,851,096	10.729	—	—	1,428,432	—	3,356,017	—	5,175,835	4,882,812	8,000	—	—
U.K. ...	5,784,028	4.179	—	—	269,171	127,056	3,785,302	16,803	527,956	960,471	—	—	97,269
Total Europe	24,273,982	17.537	—	—	2,861,396	127,056	7,608,500	16,803	6,106,278	6,747,705	12,817	—	793,427
Others													
Africa ⁸ ...	1,811,121	1.309	—	—	125,252	11,906	222,250	197,966	540,114	656,990	56,643	—	—
Canary Islands ...	1,063,495	0.768	—	—	—	—	—	—	252,528	810,967	—	—	—
Malta ...	199,675	0.144	—	—	—	—	—	—	—	199,675	—	—	—
Philippines ...	4,917	0.004	—	—	—	—	—	—	—	—	4,917	—	—
Total Others	3,079,208	2.225	—	—	125,252	11,906	222,250	197,966	792,642	1,667,632	61,560	—	—
Total Cargoes ...	127,701,499	92.260	—	209,466	11,383,106	1,434,177	20,552,517	5,516,133	13,142,066	72,838,583	1,186,913	92,350	1,346,188
Foreign Bunkers	10,712,556	7.740	—	—	116,098	10,549	—	—	1,307,921	9,261,676	16,303	—	9
Total Exports	138,414,055	100.000	6,998,289	209,466	11,499,204	1,444,726	20,552,517	5,516,133	14,449,987	82,100,259	1,203,216	92,350	1,346,197

Total Fuel (Fuel Oils) Transhipped - 384,950 bbls.

- (1) Total Exports of "Other Refined Products" was 4,260 bbls: 39 French Guiana; 1,762 Guyana; 743 Surinam; 7,323 British West Indies; 367 French West Indies; 26 Virgin Islands; Foreign Bunkers 9.
- (2) Other Central America: El Salvador (41,537); Guatemala (13,830); Nicaragua (99,191).
- (3) Other South America: Colombia (80,493).
- (4) British: Antigua, Bahamas, Barbados, Bermuda, Dominica, Grande Cayman, Grenada, Jamaica, Monserrat, St. Kitts, St. Lucia, St. Vincent.
- (5) French: Guadeloupe, Martinique, St. Barths, St. Maarten.
- (6) Netherland: Curacao, Saba, Aruba.
- (7) Other West Indian Islands: Cuba (108,146); Dominican Republic (36,813) and Haiti (3,510).
- (8) Africa, Azores, Congo, Da Homey, Ghana, Guinea Ivory Coast, Liberia, Nigeria, Republic of Congo, Senegal, Sierre Leone, Tojo.

APPENDIX VI
Movement of Refinery Products—1971
(Quantities in barrels)

Inventory Name	Opening Inventory	Production	Imports	Total	Purchases, etc. from other Pet. Markets	Sales, etc. to other Petroleum Markets	Local Consumption				Exports		Gains and Losses	Closing Inventory	Totals
							Own Use	Retails, etc.	Local Bunkers	Total	Cargoes	Foreign Bunkers			
Liquified Gases ...	15,050	380,523	—	395,573	261,455	261,455	694	184,109	—	184,803	209,466	—	(4,613)	5,917	395,573
Aviation Gasolines ...	138,882	1,389,705	18,407	1,546,994	113,508	113,508	31	7,107	12,636	19,774	1,434,177	10,549	89	82,405	1,546,994
Motor Gasolines ...	1,410,167	21,748,612	143,422	23,302,201	2,338,243	2,351,942	14,110	1,408,517	—	1,422,627	20,552,304	—	951	1,312,620	23,288,502
Domestic Gasolines ...	47	—	—	47	13,699	—	4	13,470	—	13,474	213	—	24	35	13,746
Aviation Turbine Fuels ...	476,441	11,675,471	144,109	12,296,021	992,477	1,001,882	38	208,516	192,689	401,243	11,383,106	116,098	55	386,114	12,286,616
Kerosine ...	143,412	5,632,978	79,616	5,856,006	780,145	770,740	690	254,057	—	254,747	5,497,056	—	606	113,002	5,865,411
White Spirit ...	2,392	10,586	—	12,978	4,560	4,560	3,013	4,609	—	7,622	2,274	—	—	3,082	12,978
Vapourizing Oil ...	10	16,802	—	16,812	—	—	—	—	—	—	16,803	—	—	9	16,812
Gas Oil ...	1,305,976	13,847,902	38,186	15,192,064	3,070,124	3,079,943	76,326	368,256	210,770	655,352	12,842,048	404,279	6,101	1,274,465	15,182,245
Marine Diesel ...	136,753	1,043,534	16,318	1,196,605	992,352	994,173	368	14,623	12,684	27,675	115,737	903,642	(1,825)	149,555	1,194,784
Fuel Oils ...	3,334,484	82,920,279	180,025	86,434,788	9,281,393	9,285,359	73,961	263,065	7,028	344,054	72,838,583	9,261,676	(34,525)	4,021,034	86,430,822
Tucupita Fuels ...	*18,679	—	*382,626	*401,305	—	—	*5,264	—	—	*5,264	*384,950	—	*417	*10,674	*401,305
Lubes and Greases ...	102,003	1,269,371	76,802	1,448,176	27,252	27,252	14,008	50,406	255	64,669	1,186,913	16,303	708	179,583	1,448,176
Asphalt Products ...	20,000	175,159	437	195,596	170,862	170,862	8,341	78,825	—	87,166	92,350	—	59	16,021	195,596
Unfinished Oils ...	959,200	(132,648)	13,583	840,135	—	—	1,883	—	—	1,883	—	—	1	838,251	840,135
Petrochemicals ...	301,139	1,204,235	9,612	1,514,986	5,138	5,138	1,503	5,292	—	6,795	1,343,109	—	—	165,082	1,514,986
Other Finished Products ...	11,605	8,115	2,033	21,753	11,770	11,770	1,509	13,494	—	15,003	3,079	9	286	3,376	21,753
Total ...	8,357,561	141,190,624	722,550	150,270,735	18,062,978	18,078,584	196,479	2,874,346	436,062	3,506,887	127,517,218	10,712,556	(32,083)	8,550,551	150,255,129

*Not included in any Total.

APPENDIX VII

Movement of Crude and C.H.P.S. year ended 31st December, 1971

(All quantities in barrels)

Month	Production	Imports	Decrease in Inventories	Totals	Purchases and Exchanges from other Companies	Sales and Exchanges to other Companies	Own Use	To Refining	Exports	Gains and Losses	Total
January	4,244,713	9,147,875	606,723	13,999,311	2,815,403	2,815,403	531	12,860,957	939,370	198,453	13,999,311
February	3,865,755	9,959,070	(1,180,203)	12,644,622	2,545,889	2,545,889	600	12,029,080	461,901	153,041	12,644,622
March	4,200,286	9,102,627	403,345	13,706,258	2,746,641	2,746,641	669	13,047,982	479,984	177,623	13,706,258
April	3,979,082	8,649,237	(44,390)	12,583,929	2,586,048	2,586,048	540	11,806,587	641,857	134,945	12,583,929
May	4,061,070	7,800,316	152,014	12,013,400	2,597,983	2,597,983	527	11,268,732	641,840	102,301	12,013,400
June	3,863,472	9,633,017	218,692	13,715,181	2,370,136	2,370,136	547	12,840,055	749,891	124,688	13,715,181
July	3,948,663	9,817,843	(719,271)	13,047,235	2,559,269	2,559,269	584	12,615,958	320,937	109,756	13,047,235
August	3,972,588	7,509,711	548,437	12,030,736	2,478,480	2,478,480	661	11,488,263	472,956	68,856	12,030,736
September	3,797,206	8,038,817	5,143	11,841,166	2,492,850	2,492,850	338	11,311,195	478,805	50,828	11,841,166
October	3,854,753	9,842,451	(246,837)	13,450,367	2,505,517	2,505,517	324	12,736,414	579,968	133,661	13,450,367
November	3,735,862	7,552,243	207,128	11,495,233	2,346,221	2,346,221	303	10,907,405	604,310	(16,785)	11,495,233
December	3,803,502	9,814,046	(228,250)	13,389,298	2,443,199	2,443,199	293	12,634,971	626,470	127,564	13,389,298
Total	47,326,952	106,867,253	(277,469)	153,916,736	30,487,636	30,487,636	5,917	145,547,599	6,998,289	1,364,931	153,916,736

APPENDIX VIII

Summary of Crude Oil Assessed for Crown Royalty with Prices and Analysis — 1971
 (For half-yearly Assessment Periods Ending 30th June and 31st December)
 1 Barrel = 34,9726 I.G.

Company	Net Royalty Production Barrels	Royalty		Sub Division of (Royalty) Crude into Products as per R.L.E.I. Analysis												Crude Oil Weighted Av. Gravity A.P.I.
		10% Assessed Barrels	Value \$	Average Price \$/Bls.	Light Fractions			Gas Oil					Fuel Oil			
					Quantity Barrels	Percentage	Tetra Ethyl Lead to blend to 70/72 Octane Gas. Mls.	53-57 D.I. Barrels	48-52 D.I. Barrels	43-47 D.I. Barrels	No. 2 Fuel Barrels	Total Gas Oils Barrels	Percentage	Quantity Barrels	Percentage	
Trinidad Tesoro Petroleum Co. Ltd. ...	2,718,849	271,885	1,652,641.00	6.08	27,305	10.04	223,936.57	95	—	322	73,059	73,476	27.03	171,104	62.93	21.8
Premier Consolidated Oilfields Ltd. ...	19,638	1,964	12,496.00	6.36	408	20.77	7,431.94	—	233	—	377	610	31.06	946	48.17	27.3
Estate of Timothy Roodal ...	264	26	158.00	6.08	—	—	—	—	—	—	8	8	30.77	18	69.23	20.4
Shell Trinidad Ltd. ...	1,452,632	145,263	903,081.00	6.22	37,961	26.13	—	15,711	—	8,260	4,704	28,675	19.74	78,627	54.13	27.4
Tricentrol Ltd. ...	197,338	19,734	120,349.00	6.10	3,951	20.02	88,308.38	141	535	—	3,295	3,971	20.12	11,812	59.86	24.6
Trinidad Northern Areas Ltd. ...	11,427,263	1,142,726	6,738,814.00	5.90	187,669	16.42	6,251,630.36	79,734	78,056	—	—	157,790	13.81	797,267	69.77	24.8
Texaco Trinidad Inc. ...	6,614,836	661,484	4,180,295.00	6.32	105,674	15.98	2,375,404.00	78,553	35,363	—	101,530	215,446	32.57	340,364	51.45	26.9
Total and Averages ...	22,430,820	2,243,082	13,607,834.00	6.07	362,968	16.18	8,946,711.25	174,234	114,187	8,582	182,973	479,976	21.40	1,400,138	62.42	25.2
Trinidad Tesoro Petroleum Co. Ltd. ...	3,000,481	300,048	1,639,624.00	5.46	30,360	10.12	212,098.98	104	—	6,121	75,993	82,218	27.40	187,470	62.48	20.3
Premier Consolidated Oilfields Ltd. ...	20,784	2,078	12,124.00	5.83	460	22.14	8,160.66	—	218	—	413	631	30.36	987	47.50	27.7
Estate of Timothy Roodal ...	274	27	146.00	5.33	—	—	—	—	—	—	8	8	29.63	19	70.37	19.8
Shell Trinidad Ltd. ...	1,515,761	151,576	855,678.00	5.65	40,219	26.53	965,627.23	16,360	—	9,096	5,051	30,507	20.13	80,850	53.34	27.5
Tricentrol Ltd. ...	191,480	19,148	105,020.00	5.48	3,664	19.14	81,007.54	102	953	—	2,675	3,730	19.48	11,754	61.38	24.4
Trinidad Northern Areas Ltd. ...	10,572,670	1,057,267	5,532,783.00	5.23	176,454	16.69	5,746,484.10	—	142,998	—	—	142,998	13.52	737,815	69.79	24.7
Texaco Trinidad Inc. ...	6,061,664	606,167	3,491,593.00	5.76	97,854	16.14	2,237,256.13	35,730	65,695	6,253	85,403	193,081	31.85	315,232	52.01	33
Total and Averages ...	21,363,114	2,136,311	11,636,968.00	5.45	349,011	16.34	9,250,634.64	52,296	209,864	21,470	169,543	453,173	21.21	1,334,127	62.45	27.0
Years Totals and Averages ...	43,793,934	4,379,393	25,244,802.00	5.76	711,979	16.26	18,197,345.89	226,530	324,051	30,052	352,516	933,149	21.31	2,734,265	62.43	26.1

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 1969, 1970 and 1971 is shown in the following Table:—

Source of Revenue	Assessment for Half-yearly Period Ending					
	31.12.71	30.6.71	31.12.70	30.6.70	31.12.69	30.6.69
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Royalty on Natural Gas	350,055.00	344,037.00	287,358.00	284,309.00	333,810.31	328,528.93
Royalty on Natural Gasoline	31,927.00	32,462.00	32,002.00	33,552.00	41,806.82	38,347.71
Minimum Rent not Offset by Royalty on Crude Oil	723,661.00	701,001.00	801,885.00	505,527.00	450,113.36	450,113.37
Royalty on Crude Oil	11,636,968.00	13,607,834.00	14,733,503.00	11,224,211.00	11,655,812.48	12,431,348.36
Half-Yearly Total	12,742,611.00	14,685,334.00	15,854,748.00	12,047,599.00	12,481,542.97	13,248,338.37
Yearly Totals	27,427,945.00		27,902,347.00		25,729,881.34	

The Volumes upon which the above assessments were made are as follows:—

Substance assessed for Royalty	Unit	Half-yearly Period Ending					
		31.12.71	30.6.71	31.12.70	30.6.70	31.12.69	30.6.69
Natural Gas	M.C.F.	23,337,038	22,935,788	19,157,183	18,953,950	22,254,020	21,901,927
Natural Gasoline	I.G.	1,481,476	1,467,072	1,769,967	1,878,133	2,026,487	1,952,690
Crude Oil — Gross	bbl.	21,421,693	22,507,212	23,686,131	23,878,410	26,013,197	27,826,620
Crude Oil used free of Royalty	bbl.	58,586	76,392	200,060	216,177	23,715	28,363
Crude Oil Net	bbl.	21,363,107	22,430,820	23,486,071	23,662,233	25,989,482	27,798,257
Crude Oil Average Royalty Value	\$T.T.	5.45	6.07	6.10	4.72	4.48	4.48

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 Casing Head Petroleum Spirit for each of these periods are shown in the following Tables:—

Product	Average Price in T. & T. Currency per Barrel of 34.9726 I.G. for Half-year Ended					
	31.12.71	30.6.71	31.12.70	30.6.70	31.12.69	30.6.69
Bunker C Grade Fuel	4.863252	5.815735	6.236736	3.55913	2.983673	2.922059
No. 2 Fuel	7.987711	8.253590	7.984711	7.904080	7.659501	7.971725
43—47 D.I. Gas Oil	7.987711	8.311493	8.094081	8.019716	7.765212	8.102075
48—52 D.I. Gas Oil	7.987711	8.311493	8.129755	8.124895	7.870924	8.207874
53—57 D.I. Gas Oil	8.090118	8.361869	8.164854	8.230074	7.976636	8.313673
70—72 Oct. M. Leaded Motor Gas	7.664908	7.872583	7.510376	7.411376	8.029491	7.619505
Average Middle rate for sight draft on New York in Trinidad & Tobago currency per U.S. \$1.00	1.950601	1.996298	2.017465	2.003416	2.013556	2.026262
Value of Tetra-Ethyl Lead in T.T. cents per millimetre	0.430055	0.408039	0.406388	0.399139	0.370277	0.361108
Royalty in T.T. cents per gallon on natural gasoline (casing head Petroleum Spirit)	2.154208	2.212712	2.108736	2.080698	2.257247	2.139413

The half-yearly volume of products to which the above average prices for 1971 were applied respectively in calculating royalty on Crude Oil, will be found in Appendix VIII.

APPENDIX X

The Asphalt Industry

The following table shows, for the year 1969, 1970, and 1971, the quantity of Asphalt extracted from the Pitch Lake and the quantities of derived products which were exported and consumed locally.

						TONS		
						1969	1970	1971
NATURAL ASPHALT								
Extracted by Works and Hydraulics Department for local use	...	...	...	...	...	50,800	47,595	36,160
Extracted by the Trinidad Lake Asphalt Company	...	...	...	...	...	71,695	80,723	85,743
Total	...	...	...	...	...	122,495	128,318	121,903
Derived Products Manufactured by the Company								
<i>Exported</i> — Crude Asphalt	...	...	...	...	...	—	—	—
Dried Asphalt	...	...	...	...	...	52,238	61,511	54,179
Cement Asphalt	...	...	...	...	...	1,190	1,199	1,015
Total	...	...	...	...	...	53,428	62,710	55,194
<i>Local Sales</i> — Crude Asphalt	...	...	...	...	...	168	1,102	636
Dried Asphalt	...	...	...	...	...	275	567	518
Cement Asphalt	...	...	...	...	...	123	108	234
Total	...	...	...	...	...	566	1,777	1,388

NOTE:—The above tabulations 1 long Ton = 2240 lb.

GOVERNMENT PRINTERY, TRINIDAD,
TRINIDAD AND TOBAGO
1972