REPORT OF THE

COMPTROLLER AND AUDITOR GENERAL OF INDIA

UNION GOVERNMENT (COMMERCIAL)

1973

PART IV

COCHIN REFINERIES LIMITED

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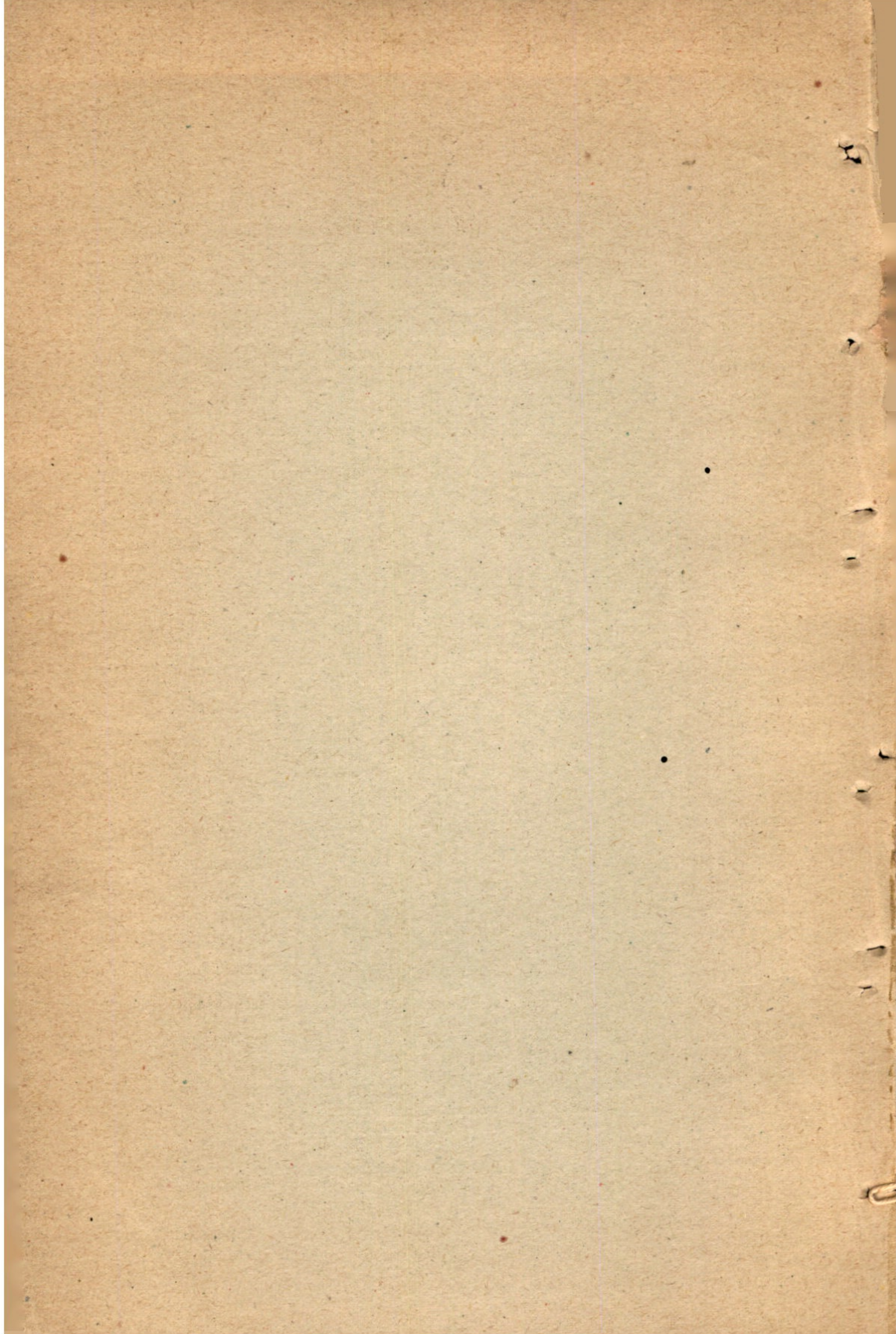

ERRATA

Page No.	Reference	*for*	*read*
14	last line—second sub-para-	to make payments.	to make payments.''
14	last line	exchange variation clause.	exchange variation clause."
25	11th line	finding	findings
26	last line	ocomotive	locomotive
29	5th line from below	and	Unit
30	9th line	Controls	Control
35	1st line	rated attainable	rated/attainable
35	Table—Actual Production 1968-69—weight %—	35.3	35.8
37	4th line from below	February, 1974	(February, 1974)
38	10th line	on accounts of	on account of
39	Para 5.2.7—line 3	operaions	operations
43	Para 6.2—line 1	The total expenditure incurred by the Company up to September, 1973	The production of liquefied Petroleum Gas (L.P.G.) was not included in
44	line 4 from bottom	Government as	Government and as
46	line 8	exempted	exempt
46	Para 7.2.3—Table—Item 5—year 1971-72	51.78	51.78*
56	Para 7.3.6—Table—Item 1	metric tonne	metric ton
63	line 10	seem to have	seem to have been
63	Para 11.1—line 3	export	exports
66	line 3 from bottom	This	The

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PREFATORY REMARKS

A reference is invited to the prefatory remarks in Part I of the Report of the Comptroller and Auditor General of India—Union Government (Commerical), 1973 wherein it has been mentioned that the Report of the Comptroller and Auditor General of India—Union Government (Commerical) in respect of the undertakings selected for appraisal by the Audit Board will be brought out in several parts.

2. This part contains the results of the appraisal undertaken by the Audit Board of the working of the Cochin Refineries Limited. In this case, the Audit Board consisted of the following members :—

(1) Shri R. P. Ranga, Chairman, Audit Board and *Ex-Officio* Additional Deputy Comptroller and Auditor General (Commerical).

(2) Shri S. Sethuraman, Member, Audit Board and *Ex-Officio* Director of Commercial Audit, Madras.

(3) Shri R. Chinnappa, Member, Audit Board and *Ex-Officio* Director of Commercial Audit, Bangalore.

(4) Shri L. Kumar, Adviser (Project Appraisal Division), Planning Commission, New Delhi.

(5) Dr. M. G. Krishna, Director, Central Fuel Research Institute, Dhanbad.

3. The Report was finalised by the Audit Board after discussions with the representatives of the Ministry of Petroleum and Chemicals and the Company on 28-29th June, 1974.

4. The Comptroller and Auditor General of India wishes to place on record his appreciation of the work done by the Audit Board and acknowledges with thanks the contribution, in particular, of the two members who are not officers of the Indian Audit and Accounts Department.

1. INTRODUCTION

The Government of India entered into a tripartite agreement (known as the Formation Agreement) on 27th April, 1963 with M/s. Phillips Petroleum Company, U.S.A. and M/s. Duncan Bros. & Company, Calcutta for the formation of a new company for constructing and establishing a Petroleum Refinery in Southern India. In pursuance of this agreement the Cochin Refineries Limited was incorporated as a public Limited Company on the 6th September, 1963.

The refinery is located in Ambalamugal at a distance of about 14 kms. from the Cochin Port and went on stream on 19th September, 1966.

As the refinery commenced production in September, 1966, the Company decided to change its financial year from 1st April—31st March to 1st September—31st August, with effect from 1-9-1966.

2. CAPITAL STRUCTURE

2.1 Equity capital

The Formation Agreement contemplated that the authorised equity capital of the Company would be Rs. 15 crores (approx.) comprising 15 lakh equity shares of Rs. 100 each (with provision for the issue of preference shares, if desired) and the initial issued and subscribed capital would be approximately Rs. 7 crores.

The authorised and paid-up capital of the Company as on 31st August, 1972 stood at Rs. 15 crores and Rs. 7 crores respectively. No preference shares have so far been issued (January, 1973).

The equity participation as stipulated in the Formation Agreement and that actually existing on 31st August, 1972 is indicated below :—

(Rupees in lakhs)

Parties	As provided in the agreement		As on 31st August, 1972	
	Percentage	Amount (Rs.)	Percentage	Amount (Rs.)
1. Government of India	51	357.00	52.831	369.82
2. M/s. Phillips Petroleum Co. (paid in U.S. dollars)	25	175.00	26.430	185.01
3. M/s. Duncan Brothers and Company	2	14.00	0.014	0.10
4. Others	22	154.00		
(*a*) Kerala Govt.			7.143	50.00
(*b*) Life Insurance Corporation of India			6.586	46.10
(*c*) Unit Trust of India			1.000	7.00
(*d*) General Insurance Companies and banks			1.306	9.14
(*e*) Other private parties			4.690	32.83
			100.00	700.00

The ratio of actual shareholdings by the various parties differs from the stipulated ratio on account of the following reasons:—

(i) In terms of the agreement, M/s. Duncan Brothers and Company initially subscribed for 14,000 shares of the value of Rs. 14 lakhs representing 2 per cent. of the paid-up capital but subsequently sold in 1968-69 13,900 shares for an amount of Rs. 34.65 lakhs.

The Ministry informed the Estimates Committee (*vide* paragraph 7.25 of their 50th Report April, 1968) that M/s. Duncan Brothers and Company were allowed participation in the share capital of the Company as they were responsible for bringing M/s. Phillips Petroleum Company to the discussion table and were their associates during all the negotiations. The Committee were further informed in October, 1968 that as a portion of the shareholding was open to the Indian public, Government did not consider it objectionable to give a small share of 2 per cent. to M/s. Duncan Brothers and Company.

(ii) When the question regarding issue of prospectus was being considered by the Company and the Government of India, an offer was received on 19th December, 1963 from M/s. Phillips Petroleum Company to buy as many shares as were not subscribed by the public. This fact was mentioned in the prospectus issued on 14th February, 1964 inviting the public to subscribe between 24th February, 1964 and 27th February, 1964. In the meantime, Government of India also intimated its willingness on 25th February, 1964 to purchase as many shares as were not subscribed by the public. Out of the shares offered to the public, 19,630 were either not subscribed or the applications were subsequently withdrawn. These became available for re-allotment. As a result, 9,623 shares were allotted to the Government of India and 10,007 to M/s. Phillips Petroleum Company in April, 1964. While considering the allotment of these additional shares to M/s. Phillips Petroleum Company, the relative merits of allowing an increased equity participation to the foreign collaborator and raising of equal amount in foreign exchange in the form of loan were considered by Government. Although raising of additional foreign exchange by way of loan rather than as equity was considered to be more advantageous to the Company in the long run, equity participation by M/s. Phillips Petroleum Company was allowed as the increase was considered to be marginal and also taking into account other factors.

On 28th October, 1965, 3,195 shares originally issued to the public were forfeited and were allotted to the Government of India in June, 1966.

The Agreement also provides that M/s. Phillips Petroleum Company will not sell their equity holdings during the first ten years of the Agreement (*i.e.* up to 26-4-1973) or until all the foreign exchange loans are repaid in full, whichever is later. Thereafter, if M/s. Phillips Petroleum Company choose to sell their shares, the Government of India will have the first option to buy them.

2.2 **Loan capital**

The estimated cost of the refinery and related facilities was indicated in the Formation Agreement as Rs. 17 crores (including foreign exchange of Rs. 9.37 crores). As the equity capital was to be Rs. 7 crores (approx.), the balance amount was to be financed out of loans to be raised in and outside India.

Apart from the contribution of their share of equity capital (Rs. 1.75 crores) in U.S. dollars, M/s. Phillips Petroleum Company were responsible for arranging the foreign exchange necessary for building the refinery by raising loans from such sources and on such terms and conditions as agreed to by the Government of India. The rupee requirements (including working capital) in excess of the equity capital contributed by parties other than M/s. Phillips Petroleum Company were to be met through loans to be raised by the Company with the Government of India's assistance.

The formation Agreement contemplated that drawals upon the loan capital (both foreign exchange and rupee) would be made only after the equity capital had been fully subscribed and paid and also utilised. The ratio between the loan capital and the equity capital was to be 3 : 2. The Company raised rupee loans to the extent of Rs. 6.7 crores during 1965-66 and 1966-67 from the Government of India and dollar loans aggregating Rs. 15.08 crores during 1964-65 to 1968-69 (Rs. 13.50 crores from three U.S. Banks at the rate of 5¾% in terms of an agreement dated 14-8-1964 and Rs. 1.58 crores from M/s. Phillips Petroleum Company at 6% per annum under an agreement of 31st December, 1967). The position of loans outstanding as on 31st August, 1972 was as follows :—

	(Rs. in crores)
Loans from Government of India	5.04
Dollar loans from banks in U.S.A.	6.11
Dollar loans from M/s. Phillips Petroleum Company .	0.51
Total	11.66

The debt equity ratio as on 31st August, 1972 was 1.67 : 1.

2.3 Appointment of registrars and share transfer agents

In January, 1964, the Company entered into an agreement with a firm to act as its agent in respect of the issue of 1,04,000 shares of Rs. 100 each to be issued to the public and as registrars in respect of the subsequent work of transferring and preparing and issuing dividend warrants in connection with the said shares. The remuneration for the work was fixed as under :—

Initial work

Rs. 2.90 per application for the first 10,000 applications or less (subject to a minimum of Rs. 30,000)

Rs. 1.90 per application for the next 10,000 applications and

Re. 0.90 per application for all applications in excess of 20,000.

Subsequent work

Rs. 2.90 per shareholder per annum for the first 10,000 shareholders or less (subject to a minimum of Rs. 30,000)

Rs. 1.90 per shareholder per annum for the next 10,000 shareholders and

Re. 0.90 per shareholder per annum for all shareholders in excess of 20,000.

The initial proposal to offer 1,04,000 shares to the public was revised in January, 1964; 46,000 shares were offered to the Life Insurance Corporation and allotted in April, 1964. The balance 58,000 shares were offered to the public out of which only 38,370 shares were subscribed by and allotted to the shareholders by April, 1964. The Agreement was to be in operation for a period of two years from the date of completion of allotment letters but as the total number of shareholders was not as large as the Company had originally expected, it was decided in January, 1965 that the subsequent work connected with share registers and transfers could be handled by the Company itself. Accordingly, a notice of intention to terminate the agreement on the expiry of six months from 1st February, 1965 was served on the firm in January, 1965. Although there were only 60 cases of transfer of shares (beside the forfeiture of 3,195 shares) during April, 1964 to February, 1965, the Company, after discussions

with the firm in March, 1965 agreed to the following revised terms for the subsequent work :—

(i) A rebate of 50% of the rates mentioned in the agreement was allowed from 1st March, 1965 and the agreement was extended for three years *i.e.* up to 28th February, 1968.

(ii) The reduced charges were subject to alteration if the Company declared any dividend in any year during the next three years.

(iii) The agreement could be terminated by giving six months' notice at any time.

On 22nd August, 1966 the Company gave notice of its intention to terminate the agreement on the expiry of six months from 1st September, 1966 (*i.e.* with effect from 1st March, 1967). The agreement was accordingly terminated from 1st March, 1967. The Company had, however, deputed one of its assistants to the firm from April, 1964 to August, 1964 for training in the share issue and transfer work as contemplated in the original agreement.

The Management stated that this work was not taken from the registrars earlier as it was expected that the Secretariat Department would be fully busy with the legal and secretarial preliminaries connected with the commencement of operations. It was further stated (May, 1972) that it was on a reasonable assessment of the quantum of work involved both initially and subsequently that the fees were originally fixed. Handling of this work departmentally at that stage was expected to be more costly for the Company.

During the currency of the agreement, the firm handled initial work in respect of 2,164 applications and subsequent work for 194 shareholders (60 cases during May, 1964 to February, 1965 and 134 cases during March, 1965 to February, 1967). On the basis of the work handled the firm would have been entitled to a payment of Rs. 6,644 but an amount of Rs. 85,000 representing the minimum fee payable under the agreement was paid to it.

The work was taken over by the Company from 1st March, 1967. The number of applications for transfer of shares handled by the Company during 1967-68 to 1971-72 is indicated below :—

Year	No. of share transfer applications handled
1967-68	97
1968-69	662
1969-70	542
1970-71	236
1971-72	154

It will be seen that the quantum of work handled by the Company was much larger than that handled by the firm during the initial period of three years.

3. AGREEMENTS

3.1 Formation Agreement

As already mentioned, the Cochin Refinery has been set up with technical collaboration and financial participation of M/s. Phillips Petroleum Company of U.S.A. with whom an agreement, known as Formation Agreement, was entered into by the Government of India on 27th April, 1963. The agreement was to be effective for the period up to which M/s. Phillips Petroleum Company and the Government of India continued to be the shareholders in the new company except in relation to those provisions of the agreement wherein the specified time limit had been stipulated. On 20th December, 1968 it was agreed to modify the Formation Agreement and accordingly a Modified Formation Agreement was entered into on 26th February, 1969. The important provisions of the original Formation Agreement and those of the Modified Agreement are discussed below :—

3.1.1 *Pattern of financing*

This aspect has been dealt with in paragraph 2.

3.1.2 *Internal organisation*

According to the agreement, the Board of Directors of the Company is to consist of 9 members—5 nominated by the Government of India, 2 by M/s. Phillips Petroleum Company (as long as their equity holding remains 25% or more and one if the equity holding is reduced up to 12½% and none if it falls below 12½%) and 2 representing the other shareholders. The Chairman is to be a nominee of the Government of India but the Managing Director is to be nominated by M/s. Phillips Petroleum Company from amongst its two Directors for a period of 10 years from the formation of the Company or until all long-term foreign exchange debts of the company are repaid whichever is later.

3.1.3 *Construction of the Refinery*

According to the Formation Agreement, the Refinery was to be constructed by M/s. Phillips Petroleum Company on turn-key basis on a fixed consideration of Rs. 12,92,85,454 for which a separate contract,

known as Refinery Construction Contract, was entered into on 27th September, 1963. The fixed amount did not include the cost of land, interest on borrowed capital during construction, ocean freight, warehouse stores and supplies, spare rotating elements and special equipment, import duties and dock facilities.

According to the original agreement, the refinery was to have a capacity of refining 50,000 barrels of Light Iranian export type crude oil of 34.1° API gravity per stream day with an inbuilt excess provision up to 10%. The stream factor was not mentioned in the agreement and the actual capacity over a year has, therefore, not been specified.

According to the Ministry, "actual production in the second year of operation *i.e.* 1967-68 was 2.632 million tonnes equal to 53,040 barrels per calendar day. Even though no major modifications to the Refinery had been effected, in view of the capacity actually achieved, the Refinery throughput was revised to 53,500 barrels per calendar day (2.642 million tonnes per year) under the modified agreement of 1969".

In the construction of the Refinery, M/s. Phillips Petroleum Company utilised in their designs the patents of a foreign firm for platforming process and merox processes. There arose a difference of opinion between M/s. Phillips Petroleum Company and the Government of India regarding the liability for the payment of royalty charges in respect of these processes. M/s. Phillips Petroleum Company held that the whole of the royalty amounting to $ 3,42,543 was payable by the Company, whereas the Government of India considered that this was to be borne by M/s. Phillips Petroleum Company out of the fixed sum stipulated in the Formation Agreement. The Refinery Construction Contract did not specifically provide for such payments to the contractor, according to which M/s. Phillips Petroleum Company were to engineer, design, prepare plans, etc. for the construction of a complete and operable refinery. However, after discussion, it was agreed (in November, 1967) that this difference of opinion could be reasonably considered as a *bona fide* difference in the interpretation of the contract and the Company would bear 50% of the royalties (Rs. 12.84 lakhs). As a result, the Company also decided to withdraw the case already referred to the Ex-Attorney General of India (in May, 1967) for opinion.

The Ministry have stated (June, 1974) that "there were six items of differences/disputes between Phillips and Government of India/Cochin

Refineries Limited. This issue was one of them. After detailed discussion .... this matter was settled as a package deal.....................".

3.1.4 *Technical services*

Another agreement as envisaged in the Formation Agreement and entered into with M/s. Phillips Petroleum Company in September, 1963 is the 'Technical Services Agreement' for obtaining necessary technical services and assistance in the operation of the Refinery. This agreement provided for technical services in and outside India and was assigned to another company *viz*. M/s. Phillips Petroleum International Corporation, on 30th March, 1964 and 27th April, 1964, so far as it related to the provisions of skilled and technical personnel, and the technical services to be rendered in India. This agreement is to run for a period of fifteen years from the date of commercial operation *i.e.* 26th May, 1967.

With the modification of the main Formation Agreement, a new Technical Services Agreement was executed on 26th February, 1969 by the Company with M/s. Phillips Petroleum Company and M/s. Phillips Petroleum International Corporation. While the fee payable for technical services and research outside India remained unchanged, those payable for the technical services required for the operation of the Refinery in India were revised as follows :—

(a) Under the original agreement a fee of the rupee equivalent of 2.5 U.S. cents was payable for each barrel of crude oil which the refinery charged each month for a period of six years after the commencement of commercial operations. This was increased to 2.6 cents per barrel from the date of the new agreement (*i.e.* from 26th February, 1969) till 25th May, 1973.

(b) For the subsequent three years, a fee equivalent of 1.25 U.S. cents per barrel was to be paid under the original agreement but this was reduced to 1.10 cents.

(c) The quantum upon which such fee is payable (both under the original and the revised agreements) is the number of barrels of crude oil actually charged at the refinery each month, but not averaging less than 40,000 barrels per day and not more than 55,000 barrels per day. After the expiry of the first nine years of commercial operations of the refinery the amount of technical services fees payable is to be determined afresh by the Company and M/s. Phillips.

For the technical services to be rendered including technical achievement and experience and for further technical developments and research conducted outside India relating to refinery operations, the Company is required to pay the following fees to M/s. Phillips Petroleum Company :—

(a) 1,10,000 U.S. Dollars per quarter for the first five years from the date of commissioning of the refinery.

(b) 1,00,000 U.S. Dollars per quarter for a further period of five years subsequent to the first five years period.

(c) 90,000 U.S. Dollars per quarter for the next five years subsequent to the period specified in (b) above.

The total payments to be made under this clause amount to $ 6 millions. The first such sum which was payable on the first day of the first calendar month after the commencement of commercial operations of the refinery (26th May, 1967) was paid on 9th September, 1967. Subsequent payments are to be made on the first day of each quarter commencing after the initial payment. With regard to the details of technical development and research results actually provided by M/s. Phillips Petroleum Company, the Company has stated (February, 1974) as follows :—

"M/s. Phillips are involved in considerable research and development activity related to Petroleum refining. The fruits of this research are being transmitted to CRL. An example of this is the material published under the nomenclature of Phillips Standards, which is really a compilation of engineering standards and physical data. This is constantly being updated with fresh information as and when this becomes available. These standards are frequently referred to for obtaining guidance concerning all aspects of operation and maintenance of the Refinery.

Besides, Phillips are consulted from time to time on problems where we feel their experience and achievement in the field would be of help. To quote some specific instances, we were able to get their assistance on techniques and procedures in connection with the welding problems that were encountered when renewing the tubes in the complex Reformer heater. Serious corrosion problems with the crude tower overhead airfin condenser banks were referred to Phillips and they were able to inform us of the remedial action applied to similar problems in U.S. refineries. In several cases, notably with Fractionation problems, we have had recourse to the various computer programmes available with them to evaluate our data."

The fee on account of technical services, both in and outside India paid during the period ending 31st August, 1972 amounted to Rs. 352.42 lakhs as indicated below :—

(Rs. in lakhs)

	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	Total
Technical services fee for services outside India* .	8.34	33.21	33.35	33.21	33.12	31.88	173.11
For services in India@ .	8.63	36.04	35.77	36.17	35.94	26.76	179.31
	16.97	69.25	69.12	69.38	69.06	58.64	352.42

*These payments are not subject to income tax in India.

@These amounts were paid in rupees to M/s. Phillips Petroleum Company, New Delhi and tax thereon was deducted at source. The quantum which they have converted into foreign currency under the Exchange Regulations is not known.

For the skilled and trained personnel (not exceeding 12 including the Managing Director who will be the employee of the Company) deputed by M/s. Phillips Petroleum Company in terms of the Technical Services Agreement, the Company is required to reimburse to M/s. Phillips Petroleum Company a sum equivalent to 135% of wages, salaries or compensation which M/s. PPC pay to their employees engaged in performance of this contract. Besides other costs incurred on the deputationists, the agreement also provided for the re-imbursement of costs of vacation travel not more than once after completion of two years of service in India.

As M/s. Phillips Petroleum Company changed their policy, with effect from 1-1-1965, relating to travel facility entitling all their overseas employees to such facility after 12 months service, the Company reimbursed the vacation travel expenses amounting to Rs. 2.64 lakhs during the period from May, 1964 to December, 1966 to 11 of the technicians even before they completed two year's service in India.

3.1.5 *Process margin*

The original Formation Agreement provided that the Company would have a margin of the rupee equivalent of 1.35 U.S. dollars per barrel of crude charged during the first ten years of commercial operations based on the contemplated yield pattern and volumes as given therein. The process margin was to be reduced to 1.30 U.S. dollars per barrel for the subsequent period of 5 years. The initial landed cost of the crude oil plus the process margin was, however, not to exceed the average product prices ex-Refinery

as detailed in the Oil Price Committee Report and in force on the date of the Agreement. If during any year the process margin actually available was less than the stipulated margin, Government of India was to make such arrangements as to ensure the minimum stipulated process margin.

The above provision was made on the assumption that (i) crude and product prices would not fluctuate sharply during the next 10 years and (ii) the internal prices of petroleum products would be determined only after ensuring a reasonable tax free return to the refinery. These assumptions, however, proved incorrect by the time the refinery went on stream on account of the reduction in prices of crude and petroleum products, the inability of M/s. Phillips Petroleum Company to export surplus gasoline at reasonable prices and the devaluation of the rupee which reduced the dollar equivalent of the rupee earnings of the Refinery. As a result, large deficits in the process margin were expected by the Government of India. Negotiations were, therefore, initiated with M/s. Phillips Petroleum Company for the modification of the Formation Agreement. As part of a package deal *inter alia* covering a fresh Technical Services Agreement (referred to in para 3.1.4) and expansion of the Refinery etc., the provisions regarding process margin were modified as under :—

(a) "The Government of India will ensure that Cochin will declare and pay dividends out of its profits and free reserves of at least an amount sufficient that Phillips will receive from Cochin annually, commencing with a dividend for financial year 1967-68, a dividend which results in a net after tax dividend to Phillips of not less than the rupee equivalent (according to the International Monetary Fund) of U.S. $ 388,270.24, so long as the equity of Phillips is not reduced by a voluntary act of Phillips and in the event Phillips equity is so reduced, the above specified amount of net after tax dividend shall be reduced only proportionately to the reduction in equity."

(b) "The net after tax dividend shall be convertible to U.S. dollars for remittance to the account of Phillips in New York. If and in the event that in a particular financial year, Cochin incurs a loss or the net profits and/or free reserves are insufficient to permit Cochin to declare and pay dividends sufficient to enable Phillips to receive the net after tax dividend, such maximum dividend (short of that necessary to enable Phillips to receive the net after tax dividend) as is possible shall be declared and paid. In such particular financial year no further

action shall be required of Government of India if the total dividends relating to all financial years beginning from financial year 1967-68 received by Phillips including the particular financial year and including such dividends if any, whether declared or proposed to be declared for the said particular financial year, when converted to U.S. dollars at the I.M.F. parity rates in effect at time of payment of dividends by Cochin for each financial year and divided by the number of financial years from 1967-68 to and including the said particular financial year results in a figure not less than U.S. $ 388,270.24 which is hereinafter referred to as the Average Net Dividend. Phillips will report and substantiate to Cochin the dollars actually received as a result of each dividend.

If however, the said Average Net Dividend has not been achieved as set forth in the preceding paragraph, then for the particular financial year the Government of India shall arrange for the income of Cochin to be made up and for Cochin to pay dividends to the extent necessary so that the aggregate net after tax dividends received by Phillips after conversion of all dividends commencing from financial year 1967-68 divided by the number of years from 1967-68 and including the particular financial year at least equal said Average Net Dividend calculated as above. Provided, however, the maximum payment to be made by the Government of India in any particular financial year shall be limited to the amount determined as follows :—

(i) Calculate the average sale income (without deduction of non-recoverable excise duty to be borne by Cochin) per barrel of crude charged in the particular financial year less the average landed cost of crude per barrel in that particular year. The difference is hereinafter called "the Margin".

(ii) Subtract the margin from the Rupee equivalent of U.S. $ 1.35/ $ 1.30 and multiply the resulting figure by the number of barrels of crude actually charged in the particular financial year subject to a maximum of 50,000 barrels of crude multiplied by the number of stream days in the particular financial year.

(iii) The figure of U.S. $ 1.35 shall apply for a period of 10 financial years commencing with financial year 1967-68 and after such ten year period the figure U.S. $ 1.30 shall apply for the next five financial years.

(iv) The figure $ 1.35/1.30 used in sub-paragraph (iii) above will :

(1) increase by as many cents per barrel as the CIF cost of crude per barrel decreases in the particular financial year, or decrease by as many cents per barrel as the CIF cost of crude per barrel increases in the particular financial year, and

(2) increase or decrease by as many cents per barrel as are added to or deducted from the present levels of non-recoverable excise duties borne by Cochin, or other Government of India taxes and duties and charges and levies, direct or indirect, in India now or hereinafter imposed, other than income taxes.

Provided that even if after a maximum payment referred to above has been made by the Government of India to Cochin, Cochin is not able to declare and pay for any particular financial year any dividend at all or a dividend of at least an amount sufficient to enable Phillips to achieve the Average Net Dividend, then and in such event the amount by which the dividends declared and paid fell short of an amount sufficient to enable Phillips to achieve the Average Net Dividend shall be carried forward to the succeeding year or years and dividends declared and paid in such succeeding financial year or years shall be such that when totalled with previous dividends including those for the particular financial year dividends will have been declared and paid by Cochin sufficient that Phillips has received an amount equal to the Average Net Dividend of $ 388,270.24 calculated as above multiplied by the number of financial years from 1967-68 to and including the particular financial year and the obligation of the Government of India to arrange for the income of Cochin to be made up shall be increased sufficient to enable the shortage of dividends to be made up limited in each financial year, however, to the maximum amount determined in accordance with sub-paragraphs (i) through (iv) above.

Provided also that where the Government of India arranges for any payments as above, and in the event that at the end of any subsequent financial year or years Cochin makes net profits in excess of those required to declare and pay as aforesaid dividends for such financial year sufficient that when totalled with previous dividends including those for the particular

financial year dividends will have been declared and paid by Cochin sufficient that Phillips has received an amount equal to the Average Net Dividend of $ 388,270.24 calculated as above multiplied by the number of financial years from 1967-68 to and including the particular financial year, then Cochin shall pay to Government of India an amount from such excess as will in the aggregate equal the payments which the Government of India has made to Cochin, less any taxes including income taxes, duties, levies or other charges, if any, which Cochin may have paid on said payments from the Government of India to Cochin.

The Government of India's obligation to make payments hereunder shall be discharged in full by making payments to Cochin . for each financial year as hereinabove provided and the fact that Phillips may not have received an amount equal to the Average Net Dividend multiplied by the number of financial years from 1967-68 to and including 1981-82 by the time this paragraph terminates......... notwithstanding payments to Cochin made by the Government of India hereunder shall not extend the said obligation of the Government of India to make payments.

The provision of a guaranteed process margin as it existed in the original Formation Agreement and its expression in terms of the currency of the country of the minority partner but without suitable clause for periodical review so as to give an option to the Government to modify the terms if subsequently found disadvantageous were not liked by the Estimates Committee vide paragraphs 7.69—7.71 of their Fiftieth Report (Fourth Lok Sabha—April, 1968). The Committee also recommended that all financial provisions in the contract should invariably be expressed in Indian currency. These observations were noted by Government in October, 1968.

It will be seen that the Modified Formation Agreement which was entered into in December, 1968 again stipulates the payment of a dividend in the currency of the country of the minority partner and does not contain any provision for the review of these terms.

In this connection, the Ministry have stated (June, 1974) that "even if the process margin had been expressed in terms of rupees and not in dollar, any foreign collaborator would have invariably insisted for inclusion of an exchange variation clause in the agreement. The net result would be the same. It may be added that in all international contracts or loans, the practice is to provide an exchange variation clause.

In regard to the provision of Average Net Dividend in the Modified Formation Agreement, the Oil Prices Committee (Shanti Lal Shah Committee) made the following observations in their Report submitted in October, 1969.

"The modified agreement contains extraordinary incentives and concessions to Phillips in as much as it provides 10 per cent. return on Phillips shareholding in dollars regardless of any increase in processing cost at the refinery and free of (a) income tax (b) variations in $ rupee exchange rate and (c) variation in ex-refinery prices. The guaranteed net average dividend is payable in foreign currency although the income is earned in India. Even variations in the rates of non-recoverable duties and any new taxes and duties other than income tax, that the Government of India may impose hereafter, will have a bearing on the maximum payment to be made by the Government in any particular year to make up the shortfall, if any, in the average net dividend payable to Phillips. This stipulation places Cochin Refineries Limited outside the pale of taxation. Above all, if the C.I.F. of crude per barrel decreases (as it is likely to happen from year to year), the amount of the process margin to be taken into account to determine the maximum payment to Cochin Refineries Limited shall also go up by as many cents per barrel..........". (Paragraph 5.3.20).

"The amount of minimum dividend payable to Phillips has to come out of the prices received by CRL for its products. If the prices do not yield the minimum dividend, the difference has to be made up by the Government of India. Consequently, the guarantee of a minimum dividend introduces an element of rigidity in the effective prices payable in respect of CRL's products. This is another instance of the difficulties created by our agreements with foreign companies in the way of determining prices of petroleum products on a rational basis. In our view, it is most undesirable in principle to assure any foreign collaborator of a minimum return in foreign exchange out of income earned in India". (Paragraph 28.11).

The Management have claimed (January, 1972) that if the Formation Agreement had not been modified, Government would have paid to the Company upto 31st August, 1970 a sum of Rs. 15 crores approximately by way of make up difference between actual sale income realised and process margin plus landed cost of crude oil.

3.1.6 *Other modifications in the Formation Agreement*

The other important modifications made in the Formation Agreement are indicated in Annexure 'A'.

3.2 **Crude oil supply contract**

3.2.1 The Formation Agreement envisaged that M/s. Phillips Petroleum Company would act as the agent for the import of crude oil for a period of 15 years from the commencement of commercial operations. Accordingly, with the help of M/s. Phillips Petroleum Company, the Company entered into a crude oil supply contract with an American firm (M/s. Standard Oil Company of California) on 15th November, 1963 for the supply of Crude Oil for a period of 15 years from the date of commencement of commercial operations as per details given below :—

(i) Period	Quantity
First year of commercial operations . .	35,000—55,000 barrels per day averaged over the year at the option of the C.R.L.
Later years	50,000 barrels per day averaged over a year, 10% more or less at CRL's option.

In the event of indigenous crude being available, the Company had the right to reduce the quantities of crude oil to be purchased under the contract.

(ii) At the end of the first three years of deliveries or at any time thereafter, either party had the right to terminate the agreement by giving 365 days' notice.

(iii) The firm was to supply light Iranian Crude Oil and if this was not available, the stabilised Arabian Crude Oil. The API gravity of the oils were to be 32.0°—35.9° for the Iranian Crude and 32.0°—36.9° for the Arabian Crude. Water and sediment by centrifuge was not to exceed 1% by volume and sulphur content 1.6% by weight (1.8% for Arabian Crude).

(iv) The price of the Iranian Crude Oil was to be $ 1.57 per barrel and that of the Arabian Crude $ 1.59 per barrel at the existing API gravity of 34.0°—34.9°. If the API gravity was outside this range, the price for each barrel was to be the respective price specified above and increased/decreased by two cents per barrel for each whole degree above the minimum/below the maximum gravity in such range. The prices were to remain firm for a period of 4 years from the date of commencement of commercial operations. The date of commencement of commercial operations was reckoned as 10th October, 1966.

(v) The invoice quantity was to be determined at the loading port from measurements made by gauging the shore tanks from which the vessel was to be loaded. This was to be adjusted in the manner specified in the agreement and the water and sediment was to be deducted therefrom. However, the buyer had the right to get the quantity and quality of crude oil determined at the loading port by M/s. E. W. Saybolt and Company or Charles Martin and Company whose findings were to be final, conclusive and binding upon both the parties subject to the condition that the buyer's intention was to be intimated in writing at the time of giving notice of the scheduled arrival of a ship and that half the charges of the inspecting firm were to be borne by them.

The Company did not exercise the afforesaid right to get the base sediment and water determined by either of the two inspecting firms at the loading point during the currency of the contract for the entire period of 4 years (upto October, 1970). However, the tests of the crude oil samples conducted by the Company at its own laboratory from 19th July, 1966 (supply of crude prior to 10th October, 1966 was for trial runs) onwards revealed that all the shipments contained about 0.1% of base, sediment and water. On this basis the Company claimed a refund of $ 97,384.50 (Rs. 7.30 lakhs) for the entire period of 4 years but the suppliers gave credit only for an amount of $ 48,692.25 *i.e.* 50% (full payment was initially made by the Company for all the shipments as stipulated in the contract). The claim for the balance amount (Rs. 3.65 lakhs) was not pursued by the Company. It may be mentioned that the inspection report submitted by M/s. E. W. Saybolt in connection with

the causes of transit losses also indicated the base, sediment and water content as 0.1%.

The Management have stated (January, 1972) as follows :—

"The suppliers in their crude analysis statement enclosed to the invoices had claimed that only traces of B.S.&W. were found in the Crude Oil whereas our Laboratory analysis showed 0.1%. We use ISI P 41 method for testing and this method allows up to 0.4% difference in duplicate tests when these are in respect of reproducibility. The contract calls for ASTM Standard D 96 to be used. Even here, the repeatability allowance is 0.2%. It will be, therefore, noted that neither the supplier should be dogmatic about there being a trace only of B.S&W. in the oil. The supplier had informed us that no other purchasers of light Iranian Crude had demanded any deduction towards B.S.&W. They had implicitly accepted the statement of the supplier of there being a trace only of B.S.&W. in the oil. Nevertheless as a goodwill gesture, they agreed to pay 50% of our claim.

There is a reference in the audit appraisal, to Messrs Saybolt & Company having indicated in their inspection reports that the B.S.&W. was 0.1%. We had engaged Messrs E.W. Saybolt & Company for checking on ocean loss for a period of 3 months. Other procedures witnessed by them in the course of check on ocean losses were purely routine and incidental to the main purpose. Had we called upon them to check on B.S.&W. as such, they would have had to undertake lab tests themselves both in this country and in their own laboratory abroad. We had not invoked para 11.02 of the contract regarding engagement of Saybolt & Company to check on quantity and quality of oil and, therefore, the question of placing a claim on the suppliers based on some incidental corroboration of the B.S.&W. by Messrs Saybolt & Company did not arise".

The reasons for which the ASTM standard D.96, as stipulated in the contract, was not used in the laboratory tests conducted by the Company during the entire period of 4 years are not clear. Had this been done, the Company could have ascertained the base, sediment and water content in the crude oil according to the stipulations in the contract and then considered the desirability of employing either of the two inspecting firms

for that purpose or for the posting of their representative at the loading point. The purpose of undertaking the tests in the Company's own laboratory is also not clear when such tests could not serve as the basis of lodging the claims against the suppliers. The management have stated (February, 1974) that they were following uniformly ISI method and that even use of ASTM standard would not have resulted in any other conclusion.

3.2.2 The Government of India advised M/s. Phillips Petroleum Company in August 1965 that a provision should be made in the contract for tying up the crude price to the lowest price paid by the Private Refineries in India. Accordingly, as a result of negotiations with the supplier a price of $ 1.40 per barrel was agreed to and the same was also linked with price actually paid by any of the private oil refineries in India.

In accordance with the above amendment, the crude oil was imported during 1966 to 1970 at the following prices :—

From 10th October, 1966 at $ 1.40 per barrel.

From 1st May, 1968 at $ 1.38 per barrel.

From 1st August, 1969 $ 1.34 per barrel.

From 1st February, 1970 at $ 1.28 per barrel.

During the continuance of the above supply contract, the Company was informed by M/s. Phillips Petroleum Company that they were able to locate a supplier who would be prepared to supply light Iranian Crude at $ 1.30 per barrel FOB loading station. Taking advantage of this offer, the Company imported in August, 1969 a quantity of 4,11,775 barrels from the new firm at the rate of $ 1.28 per barrel as against $ 1.34 per barrel under the regular contract. Although the invoice was made by the new firm, the supply of 2,10,510 barrels out of the above quantity was in fact made by the regular supplier (M/s. Standard Oil Company of California) with whom the Company had entered into a 15 year contract. As the crude price under the agreement was linked with the price paid by the private oil refineries in India and not with the lowest price charged by the suppliers from any of its other customers, the Company could not obtain the benefit of reduction in price in respect of 14,56,617 barrels of crude oil imported under the regular contract during the same month of August, 1969 and 65,57,664 barrels imported during the later months upto 31st January, 1970 when the price under the regular contract was reduced to $ 1.28 per barrel from 1st February, 1970.

The Management have stated (January, 1972) as follows:—

"In the international crude oil market whereas the practice is for long term contracts to be entered into for purchase and sale, spot purchases are often made and depending upon the supply and demand factors at the given time, the price payable for spot purchases is determined. In the present case, there were apparently some arrangements between our regular suppliers, Chevron* Oil Trading Company and a firm from whom we bought the quantity of 4,11,775 barrels on spot basis. It is possible that this firm could not find a purchaser for the crude readily at that time and, therefore, were willing to sell it to us at $ 1.30 per barrel. In any case, whatever arrangements there were between Chevron and this firm, these did not give CRL a handle to call upon Chevron to bring down the price from that stipulated in the long term contract with them. Contrarily it would not have given Chevron a handle to ask CRL to pay a higher price where they in a position to sell crude on a spot basis to some purchaser at a higher price".

The Ministry have stated (July, 1974) that the prices payable under long term contracts and those payable for spot purchases are not strictly comparable.

3.2.3 Based on an indication given by M/s. Phillips Petroleum Company in July, 1969 that it was possible to get abundant supply of crude at prices not exceeding or even less than the existing contract price, the Company served a notice on 30th September, 1969 on the existing suppliers for the termination of the contract with effect from 10th October, 1970. As directed by the Government, M/s. Phillips Petroleum Company invited offers from several suppliers for the supply of crude oil after October, 1970. Six offers including that of a supplier recommended by Indian Oil Corporation Limited were received. In may, 1970, the Company entered into a contract with the firm (Total International Limited) recommended by I.O.C. Limited, as their offer was considered to be the best, for supply of 11,000 barrels of crude per day during the period from 1st May, 1970 to 10th October, 1970 and 50,000 barrels a day (plus or minus 10% at buyers' option) for a period of two years from 11th October, 1970 with a provision to renew/terminate the contract

*Chevron Oil Trading Company is the wholly owned subsidiary of Standard Oil Company of California. The crude supply contract was assigned on 15-10-1966 to the Subsidiary Company.

thereafter by giving six months notice, at a price of $ 1.26 per barrel FOB loading point; the price could be increased in case such increases were caused due to any action of Iranian Government or local Iranian authorities but the Company had the right to terminate the contract if the increase was not acceptable.

The seller notified the following increases in prices and these have been accepted by the Company.

Effective from	34°API $	33°API $
1st May, 1970	1.26	1.24
14th November, 1970	1.32713	1.30651
15th February, 1971	1.60	1.58
1st June, 1971	1.662	1.642
1st January, 1972	1.646	—
20th January, 1972	1.763	—

In order to enable the Government of India to have more time to take a decision on the crude price, the suppliers proposed on 27th March, 1972 that the date of issue of notice for the termination of the contract could be postponed from 10th April to 10th July, and that during the extended delivery period from 10th October, 1972 to 10th January, 1973 the price of crude would be $ 1.85 per barrel. This offer was accepted by the Company on 7th April, 1972. The contract was extended upto 31st December 1973 according to which the supplier was to supply crude at the rate of 40,000 barrels per day upto 30th September, 1973 and 66,000 barrels per day thereafter at a price of $ 1.90 per barrel.

3.3 **Contract of Affreightment**

3.3.1 The Formation Agreement envisaged that M/s. Phillips Petroleum Company would act as agents in making arrangements for chartering tankers to transport the imported crude oil. M/s. Phillips Petroleum Company invited tenders from Indian Shipping Companies and foreign tanker owners. After negotiations with the tenderers, the revised offer of M/s. Triton Shipping Inc., U.S.A. was found to be the lowest. A contract of affreightment for transportation of crude oil from ports of loading (Bandar Mashur, IRAN, Kharg Island, Iran and Ras Tanura, Saudi Arabia) to Cochin was accordingly entered into on 12th August, 1964 by M/s. Phillips Petroleum Company with M/s. Triton Shipping Inc., U.S.A. The agreement was ratified by the Company on 13th October, 1964.

The contract was to run for an initial period of five years from the date of commencement of operations of the Refinery (reckoned as 10th October, 1966) and could be extended for another period of five years on yearly basis, provided the Company gave written notice to the owners at least six months prior to the commencement of any such extension. The quantity to be lifted and the freight to be paid were as follows :

(i) *Quantity transported*

First year of commercial operations	35,000—55,000 barrels per day at Company's option.
Later years.	50,000 barrels per day—10 per cent. more or less at Company's option.

(ii) *Freight rates*

Loading Port	For vessels limited to 30ft. draft in salt water at Cochin	For vessels with a draft not exceeding 38 ft. in salt water at Cochin
	($)	($)
Bandar Mashur, Iran	0.2175	0.1775
Kharg Island, Iran	0.2010	0.1640
Ras Tanura, Saudi Arabia	0.1930	0.1580

The quantity actually lifted during 10th October, 1969 to 9th October, 1970 and 10th October, 1970 to 9th October, 1971 worked out to 45,504 barrels per day and 45,262 barrels per day respectively as against 50,000 barrels per day with 10 per cent. more or less at Company's option as specified in the contract. Thus a quantity of 33,70,523 barrels (based on 50,000 barrels per day) was short lifted by M/s. Triton during the above period. In the meantime the Company had to arrange transportation of 41,37,644 barrels of crude through ships chartered on spot basis at an average freight of 48.02 cents per barrel (against 20.1 cents per barrel payable to M/s. Triton).

During a discussion between M/s. Phillips Petroleum Company and M/s. Triton in September 1969, the latter is stated to have taken the stand that according to the terms of the contract they were not required to lift more than 50,000 barrels per day and that "............Because of anticipated fluctuations in quantities with respect to the suppliers and the refinery runs, section 1.02 described the quantity after the first year as 50,000 b/d, 10 per cent. more or less, charterers' option."

The matter was discussed by the Company with M/s. Phillips Petroleum Company also and the latter advised in October, 1969 that in arbitration

proceedings, it would be difficult to establish the Company's claim on Triton to lift 55,000 barrels per day. The Company decided in November, 1969 that in view of the rise in freight rates it would be desirable to maintain good relationship with Triton and expressed readiness for negotiations so that it would get at least a lifting of crude oil between 50,000 and 55,000 barrels per day.

In February, 1971 the Company exercised option for the extension of the agreement for one year from 10th October, 1971 but after negotiations with Triton a revised agreement was entered into in March, 1972 (in modification of the original agreement) whereby the firm agreed to carry a quantity upto 77,000 barrels per calendar day, out of which the under-lifted quantity of 33,70,523 barrels during January 1, 1972 to October 9, 1972 was to be at the rate of U.S. 20.1 cents per barrel and the balance quantity at U.S. 26.5 cents per barrel. The contract also provided for the lifting of 77,000 barrels per calendar day during 10th October, 1972 to 9th October, 1976; the first 18,250,000 barrels per year at U.S. 26.5 cents per barrel and the balance at U.S. 29.5 cents per barrel in each of the years commencing lifting after 10th October, 1972. The rates were subject to escalation with WS on the basis of current WS computation formula. The above rates were applicable on Kharg Island/ Cochin voyage and were to be adjusted for loading at other ports.

The Management have stated (May, 1972) as follows:—

> "We did take legal opinion which indicated that we were entitled to ask for a lifting of 50,000 BPCD plus 10% at our option. However, it was decided to negotiate in view of the consideration that the contract was an extremely favourable one to CRL and that it was in the circumstances absolutely necessary that the contract should be continued and that no excuse should be given to Triton to back-out of it for any reason whatsoever. These negotiations continued till March, 1972 when an agreement was arrived at between Triton and CRL which in CRL's opinion is in the best interests of CRL".

During the period from 1st January, 1972 to 30th May, 1973 a total quantity of 1,91,93,024 barrels were transported by Triton (an average of 37,196 barrels per calendar day). After setting off the shortlifted quantity of 33,70,523 barrels mentioned which was also carried during this period, the net quantity of crude lifted in the period worked out to 1,58,22,501 barrels or an average of 30,664 barrels per calendar day. As this quantity was not adequate to its requirements, the Company had

to transport an additional quantity of 37,44,528 barrels of crude through other ships chartered on spot basis at an average freight rate of 49.784 cents per barrel. This resulted in an extra expenditure of Rs. 75,90,904 (in U.S. dollars).

Triton broke the revised agreement of March 1972 from 30th May, 1973 on ground of alleged delay in settlement of freight bills. The Company has filed a suit on 11-1-1974, in a court in New York claiming damages amounting to U.S. dollars 4,50,07,749 for breach of contract. The Company in the meanwhile is transporting its entire crude requirement on spot charter basis.

3.3.2 *Payment of dead freight*

The contract entered into with M/s. Triton on 12th August, 1964 provided for two different freight rates, one based on 30 feet draft facilities and the other on draft not exceeding 38 feet at Cochin Port. The provision regarding the availability of 30 feet draft at the port was made on the basis of a letter dated 25th April, 1964 addressed by the Cochin Port Trust to a private Shipping Company with copies to the Ministry of Transport, the Ministry of Petroleum and Chemicals and the Cochin Refineries Limited wherein it was *inter alia,* indicated that "the Port can take tankers upto 30 or 31 feet draft in the existing tanker berths with minor improvements........; it appears that in the early stages it will be necessary to use the existing berths and it would be desirable to decide as early as possible, what improvements or additional facilities should be made therein. I suggest that a discussion with the concerned parties may be arranged, preferably at Cochin, at an early date."

As the Company could not ensure even 30 feet draft facilities at the Cochin Port all the time, it had to pay dead freight to M/s. Triton to the extent of Rs. 22.33 lakhs in respect of 196 shipments (out of 272 shipments) made during the period from July, 1966 to October, 1969.

In July, 1966 when the Company took up the matter with Cochin Port Trust inviting reference to their letter of 25th April, 1964, the latter took the stand that the availability of 30 feet draft was subject to discussion amongst the concerned parties and, therefore, could not be taken as a firm commitment.

3.4 Contract for ancillary civil works

For the execution of civil works not covered by the turn-key refinery construction contract with M/s. Phillips Petroleum Company, the Company entered into a cost plus contract with M/s. Pacific Procon Inc.,

U.S.A. in October, 1964, the same contractor with whom M/s. Phillips Petroleum Company had entered into a contract for the construction of the Refinery. The Company was to issue specific work orders describing in detail the scope of each job required to be done by the contractor who was obliged to keep separate cost records for each work order and to have the cost estimates therefor approved by the Company before proceeding to execute the job.

The Company issued 8 work orders, and these were executed during 1964-65 at a cost of Rs. 44.55 lakhs. In order to satisfy itself regarding the reasonableness of the cost, the Company conducted an Engineering Audit in 1968 and based on the finding of such audit objected to items aggregating about Rs. 4.88 lakhs. But the contractor did not accept the claims (May, 1970) as the queries were raised long after the completion of jobs. Ultimately, the Management felt in June, 1970 that they did not have a legally strong case to enforce the findings and, therefore, decided not to pursue the matter further.

The Management stated (January, 1972) as follows :—

> "The Engineering Audit was started in good faith with a view to establish, if possible, the accuracy of some of the contractor's billings. Findings of the Engineering Audit were not conclusive being conjectural and have been challenged by the Contractor's counter Engineering personnel. This is because the audit was done so much after the time and not concurrently."

4. PROJECT ESTIMATES

4.1 According to the Refinery Construction Contract entered into by the Company on 27th September, 1963, M/s. Phillips Petroleum Company were to design and construct the Refinery for a fixed sum of Rs. 1292.85 lakhs. This sum, however, did not include the cost of land, facilities and supply of water and electric power. The total cost including these items was estimated at Rs. 1785.19 lakhs in December 1963 but later on revised to Rs. 2981.10 lakhs in June, 1966. The actual cost, however, amounted to Rs. 2824.51 lakhs when the Refinery went on stream on 19th September, 1966.

The table below indicates the original estimate, revised estimate and the actual cost of the Refinery on completion :—

(Rupees in lakhs)

	Initial estimate (December, 1963)	Revised estimate (June, 1966)	Final cost on completion
1	2	3	4
1. Land & initial facilities	43.86	111.16	119.57 (15.04) (relating to site prepration and fencing)
2. Housing and township	46.00	48.48 (2.48)	48.67
3. Marine loading and unloading facilities .	60.95 (40.46)	204.81 (71.76)	144.83 (61.76)
4. Railway siding (including land) . .	20.05	144.11	134.23
5. Shipping, freight and insurance . .	30.95 (25.23)	68.90 (33.60)	58.08 (31.66)
6. Import duty	40.47	242.00	142.37
7. Fixed sum contract (original amount) .	1292.85 (774.08)	1292.85 (1015.87)	1292.85 (985.19)
8. Fixed sum contract (additional amount) .	—	13.15	22.44
9. Interest and loan commitment fee . .	66.73 (66.73)	99.48 (29.76)	118.09 (29.73)
10. Furniture, equipment and motor vehicle .	—	5.20	6.66
11. Pre-operative expenses and deferred revenue expenses	102.38 (34.75)	88.06 (8.78)	107.98 (6.10)
12. Locomotives	—	6.84 (3.84)	8.22 (6.23)
13. Administrative building	—	8.00	8.17
14. Spares and special equipment . . .	80.95 (80.95)	65.52 (65.52)	117.19 (85.50)
15. Catalysts and chemicals	—	49.12 (22.80)	23.05 (15.76)
16. Maintenance equipment	—	6.38	4.22 (2.72)
17. Increase due to devaluation . . .	—	526.14 (526.14)	467.98 (467.98)
Total .	1785.19 (1022.20)	2981.10 (1780.55)	2824.51 (1707.67)

Notes: 1. Figures in brackets indicate the foreign exchange component.

2. Locomotives are stated to have be:n imported on account of non-availability of special type flame-proof diesel ocomotive indigenously.

The revised estimates of Rs. 2981.10 lakhs were sent to Government in March 1967 for approval. Government's approval for the total cost of the Refinery at Rs. 2824.51 lakhs was accorded on 9th July, 1971.

The following are the reasons for increase in the actual cost over the initial estimates:—

		(Rs. in lakhs)
(*i*)	Cost of land having to be paid for (against the assumption of a free gift from the State Govt.). Construction of two miles road and cost of levelling and preparation of site which was higher due to the hilly topography of the site finally chosen	75.71
(*ii*)	Cost of housing and township	2.67
(*iii*)	Cost of pipeline from shore to Refinery due to the site being 8 miles away from the water front instead of an assumed length of about one mile or so	83.88
(*iv*)	Cost of construction of a private railway siding of a total length of 7 miles (against less than ½ mile originally planned for)	114.18
(*v*)	Additional shipping freight incurred	27.13
(*vi*)	Increase in import duty over the initial provision	101.90
(*vii*)	Additional contracts performed due to increase in the size of key vessels, correction of contour maps and increased facilities for water and power for housing colony	22.44
(*viii*)	Interest payment on loans and commitments fee	51.36
(*ix*)	Pre-operative expenses	12.26
(*x*)	Unforeseen expenditure due to purchase of a locomotive, additional accommodation construction for administrative building and purchase of maintenance equipment retained due to hilly terrain of Refinery	20.61
(*xi*)	Increase in the cost of initial stock like warehouse stock, spare parts, chemicals, and catalysts	59.29
(*xii*)	Effect due to devaluation of the rupee in that when the dollar loans are repaid, there will be more outgo of rupees at the post-devaluation conversion rate,	467.89
	Total	1039.32

4.2 Change in location of the Refinery

4.2.1 At the time of signing the Formation Agreement it was expected that the Refinery would be set up near the coast. A Site Selection Committee appointed by Government in April, 1963, however, unanimously recommended on 13th May, 1963, after examining 9 possible sites inculding 2 by the seaside, the present site at Ambalamugal which is at a distance of about 14 kms. from the Cochin port. This necessitated the laying of longer crude and product pipelines than originally envisaged.

4.2.2 After selection of the site, contour data were obtained from the Town Planner of Ernakulam on 7th August, 1963 on the basis of which M/s. Phillips Petroleum Company undertook the preparation of layout

plans for the Refinery. There was some delay in the acquisition of site and in the meantime, in February, 1964, M/s. Phillips Petroleum Company became aware that the contour data were erroneous, particularly in respect of the area where the main process plant was to be erected. The revised and corrected contour data were made available to M/s. Phillips Petroleum Company on 25th May, 1964. In July, 1965, M/s. Phillips Petroleum Company informed the Company that they had to make an additional payment of $ 28,600 (Rs. 2.14 lakhs) to their sub-contractors for the revision of the plant layout; the amount was reimbursed by the Company in September, 1968.

4.2.3 The products of this Refinery are sold to Indian Oil Corporation Limited—another Government of India undertaking, at ex-Refinery prices. In April, 1965 the Company, however, decided at the instance and with the approval of Government to construct a broad gauge and metre gauge railway siding at the Refinery with facilities for filling tank wagons within the Refinery. This was in addition to the installation of the product tanks at the Company's cost.

The cost of the rail road was estimated at Rs. 106·61 lakhs (approximately) by the Railways in March, 1965 out of which works valued at Rs. 34.04 lakhs required to be done by the Company were entrusted to a foreign firm in April, 1965 (in the interest of co-ordination and timely completion although the Company was under no obligation to award the work to the foreign firm) which was then working as sub-contractor of M/s Phillips Petroleum Company for the construction of Refinery so as to have the railway facility by January, 1966. The foreign firm could complete only a portion of the work by the scheduled date for which a payment of Rs. 15.94 lakhs was made. The balance work was got executed through Railways at an estimated cost of Rs. 39.67 lakhs. Thus, the cost of the work which was originally estimated at Rs. 34.04 lakhs increased to Rs. 56.77 lakhs and the siding was completed in September, 1966 as against January, 1966.

The increase in the cost estimates of the Refinery was considered by the Estimates Committee vide paras. 7.27—7.33 of their 50th Report (Forth Lok Sabha—April, 1968) wherein the necessity for the preparation of the cost estimates after selection of site and on a more realistic basis was emphasised.

5. PERFORMANCE ANALYSIS

According to para 4.2 of the Refinery Construction contract, construction of the plant was to be completed within 30 months from the date of the Formation Agreement (*i.e.* by October, 1965). Due to delay in the

selection of site and acquisition of land (200 acres out of the total requirement of 570 acres were obtained by the Company in early March, 1964 and the remaining 370 acres in May, 1964), construction of the Refinery was finally completed in September, 1966 and it went on stream on 19th September, 1966. The performance test was, however, completed on the 26th May, 1967 when the plant and each segment thereof was operated for a continuous period of 7 days.

The Management stated (June, 1971) that "the delay was caused by a change in the proposed location of the site and the consequent problems of provision of extended pipe and rail lines as well as water and power connections. The site was handed over to M/s. Phillips Petroleum Company only in March, 1964 and the construction of the refinery was completed within 30 months from that date".

5.1 **Unit-wise performance**

The Refinery has a Crude Distillation Unit of 50,000 barrels per stream day with Desalter Catalytic Reforming Unit consisting of the following :—

(i) 10,000 B/SD Naphtha HDS Pretreater and Feed Prefractionator.

(ii) 6,000 B/SD Case Charge-Reforming Section.

(iii) Reformate Stabilising Facilities.

(iv) 10,500 B/SD Distillate Hydro Treating Unit.

(v) 7,500 B/SD Vacuum Distillation Unit.

(vi) 15,200 B/SD Vis Breaking Unit.

No review of performance of each of the units showing operating efficiency, input-output relationship, consumption of utilities and chemicals, deliberate non-utilisation of units in accordance with the market demands or for optimisation of product-mix, losses due to various factors such as idleness and operational problems, was attempted by the Company. The Management stated (October, 1971) that the Refinery is not equipped to ascertain input/yield of each unit. They further stated in January, 1972 that the Refinary "...... is a completely integrated and, ..., the identity of each unit exists only as a conventional nomenclature and not for the assessment of their performance. However, each unit is continuously under performance evaluation by Process and Mechanical Engineers for operational problems......". In February, 1974 it was also stated that

at the time the performance test of the Refinery was conducted in May, 1967, the Refinery as a whole as well as its each unit was tested and it was found that the Refinery fulfilled the requirements specified in the Refinery Construction Contract.

In July, 1974 the Management clarified that (i) yield statement is prepared from the data recorded in 'Daily Transfer Sheet', (ii) the Refinery's key concern is to achieve optimisation of high value products, (iii) balancing of three factors, *viz.*, temperature, pressure and flow controls is continuoulsy being monitored in the central process control room, (iv) samples are drawn from each unit and are analysed for quality control performance and (v) the effect of other unusual happenings on plant performance, such as :

(a) power dips and failures,

(b) use of substitute chemical or equipment,

(c) trouble shooting when consistent misbehaviour is evident and not traceable are also assessed and analysed.

A statement for the year 1972-73 showing the effect of operational problems, non-availability of crude and shut down or suspension of work on account of expansion, on the production of different products was also furnished by the Management who claimed that in view of the foregoing explanation, it would not be correct to state that unit performance was not measured. No such analysis for the years upto 1971-72 was furnished nor did the analysis for 1972-73, as made available, bring out the input-output relationship actually realised in each unit or the performance of each unit in regard to yield, consumption of utilities, capacity utilisation, etc. The analysis merely brought out the reduced throughput on account of various factors and the loss of products consequent on reduced input.

5.2.1 According to the Formation Agreement (Original) the Refinery was to refine approximately 50,000 barrels of crude oil each stream day with an in-built provision up to 10 per cent. The Modified Formation Agreement indicated that the product pattern would be based on a throughput of 53,500 barrels per calendar day; the stream efficiency was not mentioned in either of these agreements.

The Refinery went on stream on 19th September, 1966 and started commercial production with effect from 26th May, 1967. The capacity

actually achieved during the five years ending 31st August, 1972 as compared with the designed capacity is given in the following table :—

(Figures in barrels)

Year	Capacity per calendar day		Percentage efficiency
	As per Modified Formation Agreement	Actual	
1967-68	49,500@	53,040	107.15
1968-69	51,500@	52,588	102.11
1969-70	53,500	49,381	92.30
1970-71	53,500	50,149	93.72
1971-72	53,500	45,756	85.53

Notes : 1. The company does not maintain account of slops arisings which are reprocessed along-with the crude. This is stated to be due to the "receipt of slops into tanks which also charge into the units and hence accurate measurement is not possible."

2. @The capacity for 1967-68 has been calculated on the basis of 55,000 BPSD (including 10% extra capacity provided). As the Modified Formation Agreement came into force in February, 1969, the capacity for 1968-69 has been calculated 50% as per Original Agreement and 50% as per Modified Agreement.

During 1969-70 to 1971-72 the Company was not able to achieve the capacity of 53,500 barrels per calendar day on which the product pattern was based. The Management have stated (January, 1974) that "for the period 1969-70 and 1970-71 the crude charged was low due to low crude throughput through the unit. The low throughput was a consequence of tanker slippage, poor lifting by Triton and unscheduled shutdown of downstream units, to attend to equipments that were damaged by thermal shocks caused by power failures and dips. Such down stream unit shutdowns do not reflect in the stream factor but all the same result in low crude throughput in the crude unit and consequent lower BPSD".

The low throughput during 1971-72 has been attributed to (i) shortage of crude created by Indo-Pakistan conflict, (ii) frequent power failure, (iii) tie-ins for expansion work and (iv) plant shutdown due to repairs and maintenance, some of which were partly due to the above reasons.

5.2.2 As mentioned in para 5.2.1 the stream efficiency was not indicated either in the Original Formation Agreement or the Modified Formation Agreement. The Modified Formation Agreement, however, envisaged the expansion of the Refinery's capacity to 70,000 barrels per stream day so as to ensure production from a crude charge of 66,000 barrels per

calendar day. On this basis, the stream efficiency would work out to 344 days in a year. The Management have, however, contended that the reasonable and attainable stream efficiency should be taken as 330 days in a year based on 90% stream factor as against 347 days reckoned by the Government of India for the purpose of assessing the quantum upon which technical services fee will be payable in India.

The Refinery started commercial production with effect from 26th May, 1967. The table below indicates the attainable stream days and the actual stream days during the last five years :—

Year	Attainable stream days	Actual stream days	Excess or shortfall
1967-68	330	346	(+)16
1968-69	330	324	(—) 6
1969-70	330	327	(—) 3
1970-71	330	334	(+) 4
1971-72	330	323	(—) 7

The Refinery went off stream during these years for the following reasons :—

	1968-69	1969-70	1970-71	1971-72
(*i*) Delay in lifting the products by IOC Ltd.	7½	—	—	—
(*ii*) Lack of crude	11½	11½	14	11
(*iii*) Operational problems	22	26½	17	32
Total	41	38	31	43

Note : During 1967-68 the Refinery went off stream for 20 days for which cause-wise details have not been maintained by the Refinery.

Lack of crude was attributed to a storm at the crude loading point during 1968-69 and to disruption in tanker schedule in 1969-70. In this connection, the Management have stated (July, 1971) that shutdowns for operational reasons, lack of crude and delay in movement of products by the marketing company (IOC) are normal in refining industry and cannot be considered exceptional. They have, therefore, not considered necessary to make any claim on the IOC Ltd. for the loss in production due to delay in movement of products. The shutdown periods are also stated to have been utilised to carry out scheduled maintenance/overhaul of the units.

5.2.3 *Product pattern*

The product-mix envisaged in the Original Formation Agreement (on the basis of 50,000 barrels of crude charge per stream day) and the Modified Formation Agreement (on the basis of 53,500 barrels of crude charge per calendar day) at the attainable 90% stream efficiency as per the Managements contention (*vide* para 5.2.1) are given below :—

(per annum)

Products	Original Agreement (Qty. in MT)	Weight % age	Modified Agreement (Qty. in MT)	Weight % age
Naphtha (Export)	—	—	1,64,339	6.2
Motor Spirit 79 RON (Local)	3,12,846	12.7	1,61,688	6.1
Motor Spirit 92—95 (Export)	96,071	3.9	26,506	1.0
Superior Kerosene	4,65,573	18.9	6,62,656	25.0
High Speed Diesel & Light Diesel Oil	5,98,594	24.3	5,03,618	19.0
Furnace Oil	6,92,202	28.1	8,98,561	33.9
Bitumen Grades 5.90 & 5.35	1,69,971	6.9	95,423	3.6
Loss and fuel	1,28,094	5.2	1,30,000	5.2
Total	24,63,351	100.0	26,42,791	100.0

The revised product-mix includes Naphtha which was relatively low priced item and reduced quantum of Gasoline, Diesel Oil and Asphalt which were relatively higher priced products.

The Management have stated (May, 1972) that the optimum product-mix of the Refinery is the one which was laid down in the Original Formation Agreement.

Though the capacity of the Refinery was increased from 55,000 to 59,444 barrels per stream day, the net realisation of the Refinery increased only to the extent of Rs. 0.038 lakh per stream day because of the unfavourable product-mix. The company could have increased the net realisation by Rs. 0.99 lakh per stream day if the optimum product-mix and the weight percentage as envisaged in the original agreement were retained.

5.2.3 Product pattern

The product mix envisaged in the Original Formation Agreement (on the basis of 50,000 barrels of crude charge per stream day), in the Modified Formation Agreement (on the basis of 53,500 barrels of crude charge per [illegible]) at the [illegible] 90% of an efficient [illegible] [illegible] (see para [illegible]) [illegible] given below :

[illegible]

The revised product mix included Naphtha which was relatively low priced item and reduced quantum of Gasoline, Diesel Oil and Asphalt [illegible] relatively higher priced products.

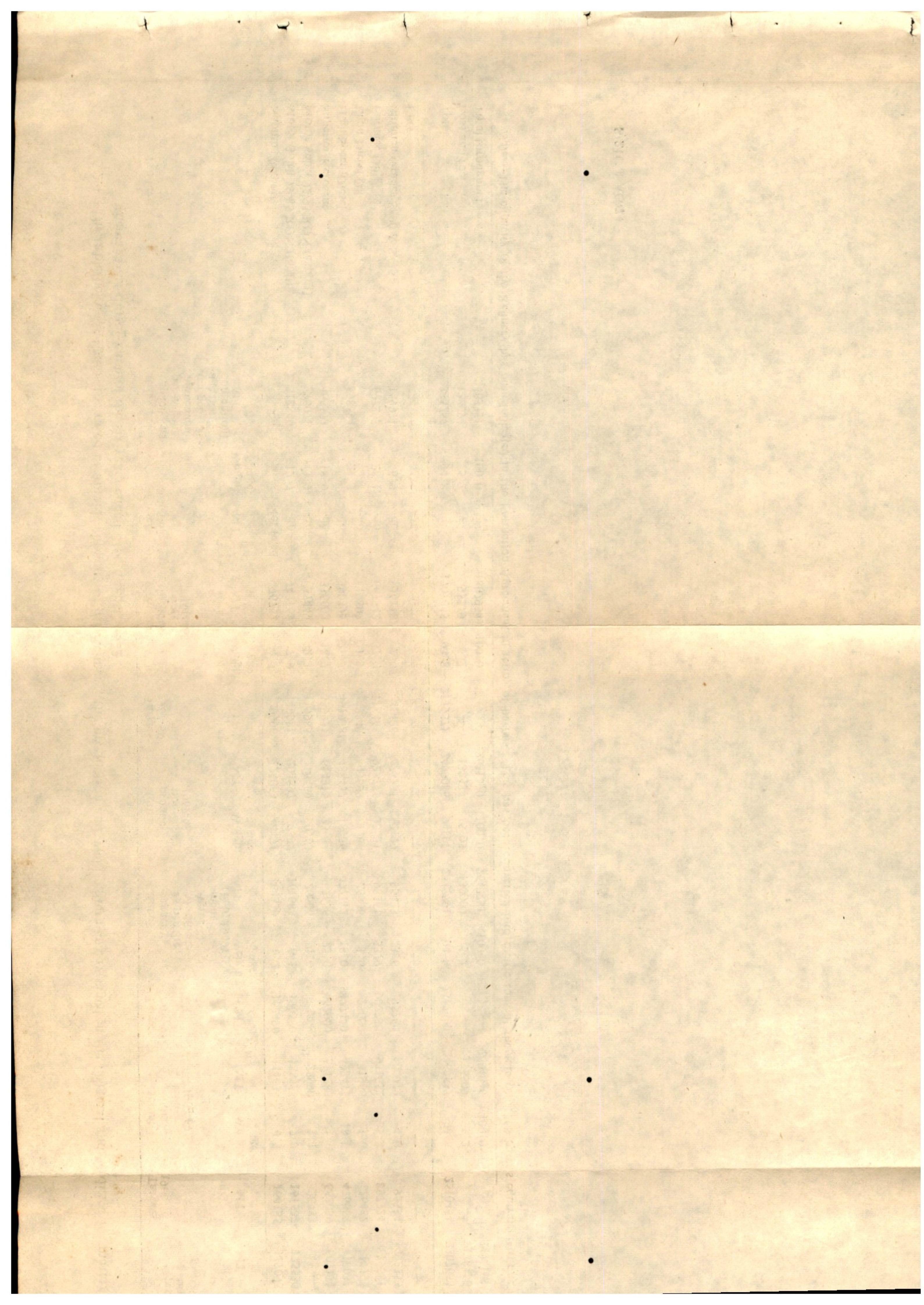
[illegible] that the [illegible] of the Refinery is the one which was laid down in the Original Formation Agreement.

Though the capacity of the Refinery was increased from 50,000 to 59,444 barrels per stream day, the net realisation of the Refinery increased only to the extent of Rs. 0.038 lakh per stream day because of the unfavourable product mix. The company could have increased the net realisation by Rs. 0.99 lakh per stream day if the optimum product mix and the weight percentage as envisaged in the original agreement were retained.

5.2.4 The table below indicates the rated attainable capacity of the Refinery, the production and yield pattern as envisaged in the Original and Modified Formation thereagainst during each of the six years ended 31st August, 1972 :—

Products	Attainable capacity as per original agreement (as per management's contention)		Targets 1966-67	Actual production 1966-67		Targets 1967-68	Actual production 1967-68		Rated capacity as per the Modified Agreement (Feb. 1969)		Targets 1968-69	Actual production 1968-69		Targets 1969-70	Act pro tion 196
	MT	Weight % age	MT	MT	Weight % age	MT	MT	Weight % age	MT	Weight % age	MT	MT	Weight % age	MT	MT
Naphtha (export)	—	—	Not fixed	76752	4.3	29996	124063	4.71	164339	6.2	162490	111639	4.3	164185	117095
Motor Spirit 79-85 RON (local)	312846	12.7	—do—	142169	7.9	149981	204597	7.77	161688	6.1	190580	188555	7.2	161537	175530
Motor Spirit 92-95 RON (export)	96071	3.9	—do—	37449	2.1	119985	16469	0.63	26506	1.0	—	28990	1.1	26482	—
Superior Kerosene	465573	18.9	—do—	336602	18.7	539931	614315	23.34	662656	25.0	662000	571283	21.9	662039	607171
High Speed Diesel	598594	24.3	—do—	390398	21.7	491938	488437	18.56	477112	18.0	477440	492473	18.9	476668	418031
Light Diesel Oil			—do—	19805	1.1	47849	43699	1.66	26506	1.0	27080	41966	1.6	26482	17792
Furnace Oil	692202	28.1	—do—	667342	37.0	718465	928775	35.31	898561	33.9	902730	931652	35.3	897724	879681
Bitumen Grades S. 90 & S. 35	169971	6.9	—do—	36118	2.0	81426	78731	2.99	95423	3.6	95280	100979	4.0	95334	92353
LPG	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	2335257	94.8	—	1707655	94.8	2179571	2499086	94.97	2512791	94.8	2517600	2467537	94.8	2510451	2307653
Loss and fuel	128094	5.2	—	95279	5.2	—	132484	5.03	130000	5.2	—	136509	5.2	—	138456
Total throughput	2463351	100.0	—	1802934	100.0		2631570	100.0	2642791	100.0	—	2604046	100.0		2446109

Note.—The capacity of the Refinery has been indicated in the Formation Agreement in terms of barrels. This has been converted into metric tons at the rate of 7.368 barrels equivalent to one n



(i) The actual production was always less (except in 1967-68) than the attainable capacity. The loss of products on account of "Loss and Fuel" was more during 1969-70 to 1971-72 than that envisaged in the Modified Agreement even though the actual throughput was less. This has been attributed by the Management to the following reasons:—

1969-70

1. Flaring of gas due to limited compressor capacity.
2. Power dips/failures resulting in frequent shutdowns and start-ups.

1970-71

1. Limited capacity of compressors.
2. Limited overhead cooling capacity.
3. High temperature of crude heater.

1971-72

1. Limited capacity of compressors.
2. Power dips/failures resulting in frequent shutdowns and start-ups.
3. Sludge accumulation due to non-availability of imported demulsifier.
4. High severity operation of reformer unit since March for the production of 93 RON Gasoline.

(ii) The production of naphtha and superior kerosene during these years was less than that envisaged in the Modified Formation Agreement.

The Management have stated (January, 1972) that "the achieved product pattern was the result of changes made in marketeers' demands as approved by the Petroleum Ministry and plant limitations over which there was no control."

On being asked (October, 1971) to indicate changes made in the product-mix from time to time, the Company replied in October, 1971 as follows:—

> "Our production is based on product-mix demanded by the Ministry at the monthly co-ordination meetings. This varies from month to month".

The plant limitations referred to above have been explained February, 1974 by the Management as follows:—

(1) High fractionating column pressures caused by overhead condensor fouling which in turn occurred due to thermal shocks

resulting from frequent power dips and failures. The net result was high gas make and downgradation of products. The compressor was not able to handle the increase in gas make thus increasing the loss.

(2) Non-availability of imported demulsifier lowered the efficiency of desalter operation causing water carry over to the crude column. This in turn increased column pressures leading to the same results as mentioned at 1 above.

(3) Power failures also lead to unscheduled shutdowns of some of the Units on accounts of equipment failures. During these periods the product pattern was below optimum levels.

(4) Erratic crude supply forced the Company to run the plant at varying crude charge rates. At high charge rates the product pattern was spoiled on account of equipment limitations.

5.2.5 *Shortfall in revenue due to variations in throughput and deviations from product pattern*

Due to variation in throughput and deviation from the product pattern as envisaged in the Modified Formation Agreement, there was shortfall in revenue as detailed below:—

April 1969 to August 1969 . . .	Rs. 24.42 lakhs.
1969-70	Rs. 38.58 lakhs.
1970-71	Rs. 46.08 lakhs.
1971-72	Rs. 74.10 lakhs.

Note : Prior to April 1969, the company had not worked out the shortfall/increase in revenue.

5.2.6 *Consumption of utilities and chemicals*

No norms have been fixed either by the foreign collaborators (M/s. Phillips Petroleum Company) or by the Company for the consumption of utilities like water, electricity, compressed air, fuel, etc. and chemicals, catalysts and TEL (Tetra Ethyl Lead). The actual consumption of utilities in the various units is not separately recorded. The Management have stated (February, 1974) that "the consumption of utilities like water, steam, electricity, compressed air, fuel, etc. are under constant scrutiny at CRL. Meters have been provided to determine the overall consumption of water, steam and electricity.

In an effort at closely monitoring the consumption of fuel (both liquid and gas) in the various process heaters, CRL has installed metering devices

on the fuel lines to the major heaters. Readings are being taken at periodic intervals and this data is used to evaluate the operating efficiencies on these heaters. These efficiency figures are used to balance operation of the heaters to minimise the consumption of fuel."

The Ministry stated (June, 1974) that they "would issue suitable instructions to establish norms and monitor".

TEL is used as an additive for motor spirit. There were marked variations in the consumption of TEL per tonne of motor spirit produced from year to year as shown below:—

Year	Quantity of Motor Spirit produced (M. Tons)			TEL Consumed		TEL consumed per M.T. of Motor Siprit produced	
	79 Octane local	95 Octane export	Total	Qty. (Kg.)	Value (Rs. in lakhs)	Qty. (Kg.)	Value (Rs.)
1966-67 .	142169	37449	179618	1,68,406	—	0.94	—
1967-68 .	204597	16469	221066	1,51,984	11.94	0.69	5.40
1968-69 .	188555	28990	217545	1,51,018	12.02	0.69	5.52
1969-70 .	175530	—	175530	53,774	4.43	0.31	2.52
1970-71 .	222918	—	222918	1,68,406	14.43	0.76	6.45
1971-72 .	201572*	—	201572	1,32,342	13.72	0.66	6.70

Note: This comprises MS 79 (97385 M. tons), MS 83 (103820 M. tons) and MS 85 (367 M.tons)

The Management have stated (January, 1972) that "TEL consumption is a matter of need as a supplement to the use and availability of Reformate in the manufacture of Motor Spirit. The more the Reformate, the less TEL required. This is a highly technical process involving the blend of several naphtha grade products and TEL can be considered as the last ingredient added to meet specifications. For this reason the consumption will never be on a set rate".

5.2.7 *Power failures and loss of production*

(i) The Refinery obtains power from Kerala State Electricity Board. The supply of power is stated to have been very unreliable resulting in frequent failures and voltage dips, thereby affecting the operaions and the equipments considerably. The number of power failures and the consequent loss of production are indicated below:—

Year	No. of power dips	No. of complete power failures	Hours lost	Loss in production (Rs. in lakhs)
1966-67	—	—	72	22.08
1967-68	67	19	39	18.58
1968-69	78	28	73	32.92
1969-70	71	29	56	23.92
1970-71	45	18	40	18.54
1971-72	36	22	142	43.45

The Company has a small stand-by generator only for emergency lighting and unlike the Madras Refienry is exclusively dependent on the State Electricity Board for Refinery power. Repeated representations were made to the State Government authorities concerned since 1966-67 by the Company and the other major power users in the area drawing their attention to the severe damage caused to costly equipment by such power failures and the consequent fire hazards.

(ii) A specific instance of loss arising from the frequent power shutdowns is mentioned below:—

On 6th January, 1969, severe corrosion on the roof plates of tank No. 11 was noticed during inspection survey. M/s. Phillips Petroleum Co. to whom the matter was referred, recommended on 22nd January, 1969 that the cone roofs of the tanks should be converted into floating roofs. Action for such conversion was, however, taken only in August, 1969 when the Board's approval was obtained. The delay in initiating the action was stated by the Management (August, 1971) to be due to the fact that only in February, 1969, approval for the construction of a new floating roof tank had been obtained and it was hoped that the existing tanks with cone roofs would withstand corrosion till the construction of the new tank was completed.

In October, 1969, however, tank No. 11 collapsed. Two more tanks (No. 10 and 20) were also subsequently noticed to have been damaged. A Committee appointed by the Board of Directors in December, 1969 at the instance of the Government to investigate into the matter reported (April, 1970) that the main reason for the collapse of tank No. 11 was the presence of Hydrogen sulphide in an environment of oxygen and moisture in the vapour space of the storage tank. The source of this hydrogen sulphide was traced to its presence in the hot recurring streams from the processing area to the crude storage tanks under upset conditions due to frequent power shutdowns; the total loss on account of the collapse/damage of the three tanks was assessed at Rs. 9.29 lakhs (cost of repairing shells where necessary and conversion of cone roofs to floating roofs). The Committee could not assign responsibility to any individual for the collapse of the tank. The actual expenditure on the replacement of cone roofs by floating roofs of tanks number 10 and 11 amounted to Rs. 7.36 lakhs and Rs. 6.75 lakhs respectively.

Tank No. 20 was destroyed by fire in April, 1972 before its roof could be replaced. The fire also damaged the pipeline in crude tank farm, two welding machines, one jeep, welding cables, fire fighting accessories, etc.

About 1750 barrels of crude oil in the pipeline were also lost. An Enquiry Committee constituted by Government in April, 1972 reported in August, 1972 that the fire was due to unfortunate coincidences, more particularly the occurrence of accidental sparks just at the spot where hydrocarbon might have been present, and there was no wilful negligence on the part of either the workmen or supervisors. The Committee also suggested measures to prevent recurrence of such fires in future.

The Company filed (June, 1972) a claim for Rs. 29.20 lakhs (replacement cost of tank and piping—Rs. 26.17 lakhs and cost of equipment and crude lost—Rs. 3.03 lakhs) with the insurance company. The insurance company has so far made an on account payment of Rs. 10 lakhs pending ascertainment of replacement cost of tank and piping (June, 1974).

It may be mentioned that in the case of Fertilisers and Chemicals, Travancore Ltd. which also obtains power from the Kerala State Electricity Board, frequent power failures have resulted in shortfall of production [*vide* para 4.03(a) of the C&AG's Report (Com.) for the year 1969-70 —Part X]. The Management have stated (February, 1974) in this connection that "the number of power failures have reduced for 1972-73. Kerala State Electricity Board has been incorporating a number of modifications to their distribution system which has certainly improved the power situation in this area".

The Ministry have stated (June, 1974) that the State Government with whom the matter was taken up have intimated that the State Electricity Board have assured that the supply of uninterrupted power would improve after the modifications agreed to by the Refinery are carried out. The modfications have, by and large, been completed and the matter is proposed to be discussed further with the representatives of the State Electricity Board and the Central Water and Power Commission.

6. EXPANSION PROJECT

6.1 Refinery expansion

In the Original Formation Agreement the capacity of the Refinery was indicated as approximately 50,000 barrels of crude charge per stream day with 10% in-built provision. After operation to full design capacity for a period of 2 or 3 years, the capacity was expected to be increased to 70,000 barrels per stream day or 3.5 million tonnes per annum at a cost not exceeding 9 million dollars on the basis of the prices prevalent on the date

of signing the Formation Agreement *i.e.* 27th April, 1963. In June, 1964 M/s. Phillips Petroleum International Corporation also gave a warranty that the increase in the size of the key vessels would be sufficient to permit the Refinery to process 3.5 million tonnes of crude oil per year provided crude of light Iranian type was used, the same product pattern as indicated in the Refinery Construction contract was maintained and also necessary additions were made to heat exchange equipments, pipings, utilities, etc. The Estimates Committee were also informed by Government (*vide* para 4.44 of their 50th Report—Fourth Lok Sabha—April, 1968) that the existing designed capacity of the Refinery was about 2.3 to 2.4 millions tonnes and that the main distillation column of the Refinery had been deliberately designed for a capacity of 3.5 million tonnes at an extra cost of about 3,00,000 dollars so as to provide for the expansion of the Refinery's capacity.

The Expansion Project Report approved by the Company in July, 1970 and by Government in November, 1970, however, provided for increasing the capacity of the Refinery to only 3.29 million tonnes per year (at 66,000 barrels of crude charge per calendar day). The Management have stated (February, 1974) that "........ The reference to 3.5 million tonnes in the Formation Agreement and elsewhere only outlines a general understanding and is expressed in round figures indicating estimated stream day amount (BPSD) which is yet to be proven out........".

The cost of expansion, according to the project report was estimated at Rs. 511.87 lakhs (including foreign exchange component of Rs. 93.75 lakhs). This was approved by Government in November 1970. The expansion was scheduled to be completed in the first half of 1972 according to the project report but the due date for completion was fixed (in April, 1971) as 1st October, 1972.

The expansion was mainly intended to achieve maximum production of middle distillates, especially kerosene, while not materially increasing gasoline and asphalt yield. The expansion project also provided for increase in the crude storage capacity by 5,50,000 barrels by constructing 2 crude storage tanks and adding 7 more product tanks.

The work relating to the process, design, project engineering, purchasing, inspection, expediting, labour, equipment, materials, construction and services, etc., required for the expansion was awarded to Engineers India Limited, a Government of India concern, on 2nd July, 1970 on a fee of Rs. 23,75,000 and U.S. $ 7,500, besides a payment of 2½% on the direct field costs and charges (material consumption and equipment cost) and a fee of 3% of the FOB cost of imported equipments in foreign exchange.

In addition, the Company was also to reimburse the actual, legitimate and necessary costs incurred in the performance of the work. The procurement of plant, materials, etc., is to be arranged by M/s. Engineers India Ltd., after obtaining the Company's approval for the selected suppliers.

The work on the expansion scheme which was expected to be completed in October, 1972, was actually completed by September 1973. The delay was on account of (i) delay in receipt of materials and equipments, especially the imported items, (ii) delay in awarding the contract for expansion and (iii) delay in getting DGTD/CCIE clearance.

The total expenditure incurred by the Company up to September, 1973 was Rs. 483 lakhs.

6.2 **Production of Liquefied Petroleum Gas**

The total expenditure incurred by the Company up to September, 1973 the original product pattern of the Refinery.

In reply to a query made by the Estimates Committee, Government informed (Para 4.74 of the 50th Report—4th Lok Sabha—April, 1968), that a Project Report for the production of LPG had already been prepared and was under examination by the Board of Directors of the Company in consultation with IOC Limited and Madras Refineries Limited.

The feasibility of production of LPG was under the consideration of the Company since April, 1967. The Project Report for the manufacture of LPG and bottle filling facilities at a cost of Rs. 24.50 lakhs was prepared in June, 1968 and was approved by the Board of Directors in August, 1968 subject to settlement of a reasonable price for the product from IOC Ltd.

The Detailed Project Report prepared by the Company in September, 1970 indicated that the project would be completed in December, 1972 if necessary licences, permits and approvals were immediately obtained. The approval for the project and the revised estimates of Rs. 42.33 lakhs was accorded by Government in May, 1971. The project was actually completed in May, 1973.

As per indications given by the Indian Oil Corporation Limited in September, 1967, LPG sales were expected to be 2000 M. Tons in the first year (1972-73), increasing thereafter by 2000 M. Tons annually up to 10,000 M. Tons, the sale realisations were expected to be Rs. 32.50 lakhs yielding a net profit of Rs. 8.39 lakhs.

The ex-Refinery selling price fixed by the Government on commencement of sale of LPG in July, 1973 was Rs. 388.13 per tonne. The price has been increased from time to time and the present price (February, 1974) is Rs. 544.34 per tonne.

The Ministry have stated (July, 1974) that non-production of LPG during these years did not result in the wastage of any stream products. "During the period LPG was not produced, what is now produced as LPG was sold/dissolved in Naphtha and to some extent in Motor gasoline...... and the rest was being used as refinery fuel........".

7. FINANCIAL POSITION AND WORKING RESULTS

7.1 Financial position

The financial position of the Refinery during the years 1967-68 to 1971-72 is given below :—

(Rs. in lakhs)

	1967-68	1968-69	1969-70	1970-71	1971-72
Liabilities					
(a) Paid-up capital . . .	700.00	700.00	700.00	700.00	700.00
(b) Reserves and surplus . .	300.64	409.80	658.92	592.36	543.90
(c) Borrowings					
(*i*) From Govt. of India .	421.87	363.75	320.00	261.88	503.75
(*ii*) Foreign loans . .	1268.25	1121.87	975.49	829.12	712.44
(d) Trade dues and other current liabilities (including provisions) . .	878.81	955.59	726.77	1021.72	1039.62
Total . . .	3569.57	3551.01	3381.18	3405.08	3499.71
Assets					
(e) Gross block . . .	2650.26	2681.19	2681.19	2769.29	2716.93
(f) Less: Depreciation . . .	337.60	510.63	680.78	859.08	1001.77
(g) Net fixed assets . . .	2312.66	2170.56	2000.41	1910.21	1715.16
(h) Capital works-in-progress (including unclassified construction expenses) . . .	11.75	14.25	76.60	47.22	227.62
(i) Interest income during construction	(—)17.80	—	—	—	—
(j) Investments . . .	0.15	1.23	1.92	1.92	1.92
(k) Current assets, loans and advances	1247.53	1354.78	1297.16	1445.73	1555.01
(l) Misc. expenditure . .	15.28	10.19	5.09	—	—
Total	3569.57	3551.01	3381.18	3405.08	3499.71
Capital employed . . .	2681.38	2569.75	2570.80	2334.22	2230.55
Net worth	985.36	1099.61	1353.83	1292.36	1243.90

Notes: 1. Capital employed represents net fixed assets plus working capital.
2. Net worth represents paid-up capital plus reserves less intangible assets.
3. The figures are as published in the respective year's accounts irrespective of adjustments made in subsequent years.
4. Current assets include stock of finished petroleum products which are valued on the basis of ex-Refinery selling prices as the cost of production of each of the finished products is not worked out. The Company is of the view that as the prices of petroleum products are fixed by Government as refining involves complex and interconnected processing units of diversified products, accurate costing of each of the finished products on the basis of actual expenditure incurred is not possible.

7.2 Working results

7.2.1 The working results of the Company for the last five years are indicated below :—

(Rs. in lakhs)

	1967-68	1968-69	1969-70	1970-71	1971-72
Sales realisation	4153.06	3950.03	3741.51	4059.03	3824.78
Other income & credits . .	34.38	65.90	46.18	15.31	265.97*
Total .	4187.44	4015.93	3787.69	4074.34	4090.75
Net profit (No tax provision made during those years) . .	336.13	247.60	249.12	175.68	51.78
Cost of sales	3816.93	3702.43	3492.39	3884.56	3700.00
Percentage of cost of sales to sales	91.9	93.7	93.3	95.7	98.64
Percentage of net profit to capital employed	12.5	9.6	9.7	7.5	2.3

Note : *This figure is inclusive of Rs. 248.10 lakhs received from the Government of India under the Modified Formation Agreement so as to ensure the payment of minimum guaranteed dividend to the collaborators.

7.2.2 The Refinery went on stream in September, 1966 and started commercial production from May, 1967. Under the Original Formation Agreement Government guaranteed a process margin of $ 1.35 per barrel of crude charge (Rs. 79.43 per M. Ton) for the first 10 years from the date of commercial production and $ 1.30 per barrel (Rs. 71.84 per M. Ton) thereafter for a period of 5 years. This provision was modified in December, 1968 and M/s. Phillips Petroleum Company, the foreign collaborators, were ensured a minimum return on their equity capital participation (for details please see para 3.1.5). The Company has paid dividend from 1967-68 at the following rates :—

1967-68	21%
1968-69	21%
1969-70	18.6%
1970-71	16%
1971-72	14.32%

During 1971-72 the profit made by the Company was not sufficient to pay the minimum guaranteed dividend of 10% to the foreign collaborators as required under the Modified Formation Agreement. As a result, Government had to pay a sum of Rs. 248.10 lakhs as per the Modified Formation Agreement to the Company which will be repaid in future years if the net profits are in excess of those required to meet the obligations under the agreement.

The dividend paid during 1967-68 and 1968-69 was subject to tax as the Company had not, by then, reached a stage of claiming exemption under section 80J of the Income Tax Act on account of its not having any taxable profits in those years. In 1969-70, 37.63% of the amount of dividend was exempted from tax under section 80K of the Income Tax Act as determined by the Income Tax Officer. During 1970-71 and 1971-72 full tax relief under section 80J of the Income Tax Act was allowed to the Company and so the dividends paid in those years were completely exempted from income tax.

7.2.3 Refiner's margin

The table below indicates the total Refiner's margin, total expenditure incurred as also the Refiner's margin, expenditure and net profit per tonne of crude processed and the percentage of total expenditure to total Refiner's margin during the years 1967-68 to 1971-72 :—

(Rupees in lakhs)

	1967-68	1968-69	1969-70	1970-71	1971-72
1. Crude charged (in tonnes) .	26,31,570	26,04,046	24,46,456	24,85,410	22,74,627
2. Total sales realisation (including internal consumption and stock differential) .	4,149.22	3,969.52	3,755.43	4,054.44	3,827.21
Less : Total cost of crude charged . . .	2,477.30	2,418.77	2,195.18	2,461.65	2,664.10
3. Total Refiner's margin .	1,671.92	1,550.75	1,560.25	1,592.79	1,163.11
4. Total expenditure . .	1,374.00	1,349.56	1,343.39	1,445.73	1,382.53
5. Profit (including miscellaneous receipts) . . .	336.13	247.60	249.12	174.47	51.78
6. Sales realisation per tonne of crude charged (in Rupees)	157.67	152.44	153.50	163.13	168.26
7. Cost of crude per tonne (in Rupees)	94.14	92.89	89.74	99.04	117.12
8. Refiner's margin per tonne (in Rupees) . . .	63.53	59.55	63.78	64.09	51.13
9. Expenditure per tonne (in Rupees)	52.21	51.83	54.91	58.17	60.78
10. Net profit per tonne (including miscellaneous receipts-in Rupees) . . .	12.77	9.51	10.18	7.02	2.28
11. Percentage of expenditure to Refiner's margin . .	82.18	87.03	86.10	90.77	118.86

Note : *This figure is arrived at after including Rs. 248.10 lakhs received from Government of India under the Modified Formation Agreement so as to ensure the payment of average net dividend to the collaborators.

The data in the table will indicate that :

(i) The percentage of expenditure to Refiner's margin gradually increased (excepting during 1969-70) and was the highest during 1971-72.

(ii) Although the sales realisation per tonne increased from Rs. 157.67 in 1967-68 to Rs. 168.26 in 1971-72, the profit per tonne of crude processed came down from Rs. 12.77 in 1967-68 to Rs. 2.28 in 1971-72.

The sharp fall in the net profits during 1971-72 as compared to earlier years was attributed to the increase in the price of crude without corresponding increase in the prices of different products of the Company, and also to fall in the throughput of crude in the year. The average cost of crude increased gradually from Rs. 94.14 per tonne in 1967-68 to Rs. 117.12 per tonne in 1971-72 whereas the increase in product realisation was only from Rs. 157.67 per tonne in 1967-68 to Rs. 168.26 per tonne in 1971-72.

According to the recommendations of the Oil Prices Committee, as accepted by the Government, the ex-Refinery prices of all the products except Bitumen and Naphtha was less than the prices prior to first June, 1970. The shortfall in revenue on account of reduction in prices of these products during the period from June, 1970 to August, 1970 and for the years 1970-71 and 1971-72 worked out to Rs. 37.73 lakhs, Rs. 131.42 lakhs and Rs. 109.05 lakhs respectively. However, as per the recommendations of the Committee, the Company as a consumer of the imported crude is entitled to compensation for increase in marine freight over world scale rates and increase in wharfage charges at the Cochin Port. These charges are to be paid by the Marketing Company (Indian Oil Corporation Limited) to the Refinery. The revenue on this account during 1969-70, 1970-71 and 1971-72 amounted to Rs. 26.44 lakhs, Rs. 205.01 lakhs and Rs. 142.94 lakhs respectively.

7.2.4 The following table indicates the gross block of the Company per tonne of crude capacity created as compared with that of Madras Refineries

Limited and Indian Oil Corporation Limited (Refineries Division) during the last four years :—

	Cochin Refineries Ltd.			
	1968-69	1969-70	1970-71	1971-72
Gross block (Rs. in lakhs) . .	2631.19	2681.19	2769.30	2716.93
Capacity (in lakhs MT) . .	25.13	25.13	25.13	25.13
Gross block per tonne of capacity (Rs.) . . .	105	107	110	108

In comparing the gross block per tonne of capacity, the crude differential, the have also to be taken into consideration.

Madras Refineries Ltd.				IOC (Refineries Division)			
1968-69	1969-70	1970-71	1971-72	1968-69	1969-70	1970-71	1971-72
No production	3934.74	3975.01	3993.24	9545.78	9685.19	Not	available.
-do-	25.00	25.00	25.00	57.50	57.50	57.50	
-do-	157	159	160	166	168	Not	available.

technology differential and differential due to extent of indigenisation and complexities

7.3 Other factors affecting the profitability of the Refinery

7.3.1 *Ocean loss*

The affreightment contract entered into with M/s. Triton on 12th August, 1964 for transporting crude oil to the Refinery did not indicate the permissible limit of ocean loss in respect of crude oil transported in their ships.

The Management stated in February, 1969 as follows :—

> "Ocean loss with reference to any individual ship by itself, it will be seen, cannot lead to any worthwhile conclusion, as the loss is not necessarily attributable to the period of the ship's own transit. Cumulative factors some being subsequent to the arrival of the ships contribute to the "Ocean loss" and a meaningful study has, therefore, to be over a period of time. The period of time for the study need not be fixed duration. It is the moving average loss that has to be watched and it is the practice of oil industries generally to accept loss up to 1% as "chance" loss cumulatively on all factors involved right from the time of loading of crude in tankers up to its delivery in the purchasers' tanks. We cannot quote any authority for saying that ocean loss up to 1% is in order, but crude oil has considerable quantities of volatile ends, like motor gasoline or naphtha which are lost in storage, in filling tanks, in transfer etc.".

A review of monthly reports made by Audit revealed that in respect of individual shipments made during 1966-67 to 1969-70 the ocean loss ranged between 0.32% and 2.70%; after taking into account the gains made in certain shipments the total average loss worked out to 0.95%, 0.92%, 0.90% and 0.67% in these years respectively and came down to 0.66% in 1970-71. It went up to 0.94% in 1971-72.

A foreign firm (M/s. E.W. Saybolt) was engaged in September, 1969 for a period of 3 months on a payment of $ 20,610 to assess, among other things, the crude loss during transit. The firm inspected loading and unloading of crude during the period from 14th September, 1969 to 27th January, 1970 in respect of 22 shipments and found that the ocean loss varied from (+) 0.33% to (—) 1.50%, the average being (—) 0.52%.

The findings of the firm were reported to Government in June, 1970 who pointed out that ocean loss during shipments from the same loading station to Bombay and Visakhapatnam was approximately (—) 0.26% and (—) 0.42% respectively. When this was reported by the Company in July, 1970 to the foreign firm, they could not give any specific reason for higher losses in respect of crude consigned to Cochin.

The ocean loss in respect of crude oil imported for Madras Refinery during 1969-70 and 1970-71 was 0.81% (more than the loss in Cochin Refinery) and 0.56% (less than the loss in Cochin Refinery) respectively. The Management have, however, stated (January, 1972) as follows :-

> "There can be no comparison of losses between Cochin and any other place without an identity of quantity and losses determination methods and resultant reported values. Our Managing Director had suggested to the Government of India that a comparison can and should be made after appointing Messrs. E.W. Saybolt to undertake a study similar to that which they undertook at Cochin. Government of India is yet to respond to this suggestion and we believe would have responded if there was any point worth following up in their original claim"

7.3.2 *Loss in storage and handling*

(i) *Transfer from storage tanks to tank wagons etc*

The loss in storage and handling from the storage tanks to the tank wagons and tank trucks during the 5 years ending 31st August, 1971 were as follows :—

Products	1967-68			1968-69		
	Quantity (in tonnes)	Money value of loss/gain (Rs.)	Percentage of loss to Qty. handled	Quantity (in tonnes)	Money value of loss/gain (Rs.)	Percentage of loss to Qty. handled
1. Motor Spirit .	93.792	20,998	0.05	23.081	4,856	0.01
2. Raw Naphtha .	443.850	31,237	0.37	429.638	33,245	0.38
3. Superior Kerosene	(108.26)	(27,230)	—	33.941	8,405	0.01
4. Refined Diesel Oil	(267.066)	(50,604)	—	(250.372)	(43,445)	—
5. Furnace Oil .	(155.606)	(15,948)	—	49.054	4,113	0.01
6. Light Diesel Oil .	(155.606)	(5,835)	—	(65.391)	(10,527)	—
7. Asphalt . .	—	—	—	303.336	64,585	0.30

Note:—Figures in brackets represent gain.

1969-70			1970-71			1971-72		
Quantity (in tonnes)	Money value of loss/gain (Rs.)	Percentage of loss to Qty. handled	Quantity (in tonnes)	Money value of loss/gain (Rs.)	Percentage of loss to Qty. handled	Quantity (in tonnes)	Money value of loss/gain (Rs.)	Percentage of loss to Qty. handled
104.629	21,605	0.06	202.085	40,215	0.09	550.235	94,457	0.27
483.416	39,838	0.41	200.076	18,745	0.39	196.709	19,661	0.33
28.637	6,955	0.01	0.295	70	—	80.138	15,717	0.02
(256.670)	(44,101)	—	100.774	17,438	0.02	174.982	25,438	0.04
(45.341)	(4,202)	—	(23.305)	(3,188)	—	55.086	4,355	0.006
4.234	685	0.02	(34.064)	(5,565)	—	32.281	4,344	0.14
187.528	47,880	0.20	—	—	—	12.190	3,209	0.01

No norms for the loss in storage and handling of these products have been fixed so far.

The Management stated (January, 1972) that "it is not feasible or practicable or possible technically or otherwise to fix norms".

The Ministry have stated (June, 1974) as follows :—

"Although in January, 1972 the Management have stated that it is not feasible, practical or technically possible to fix the norms, it is possible for the Refinery authorities who have acquired considerable operating experience to fix more realistic norms. The Ministry would issue suitable instructions in this regard".

(ii) *Pipeline transfer of products*

In respect of pipeline transfer of finished products, the Company ascertains the quantity removed from the product tanks by dip measurement. The Company claimed from time to time the value of the difference between the measurement at Refinery tanks and the measurement at receiving tanks of Indian Oil Corporation Limited for the period September, 1966 to the end of 1971-72. This was disputed by the Indian Oil Corporation Limited in February, 1967 and the matter was referred for arbitration by the Special Secretary of the Ministry of Petroleum and Chemicals. According to the award given by the Arbitrator in September, 1969, loss up to 0.5% was to be borne by the Company in respect of motor spirit, high speed diesel oil and kerosene and up to 0.25% in respect of furnace oil; loss in excess of these limits was to be shared equally between the Company and the Indian Oil Corporation Limited. Consequently, the Company had to bear the loss to the extent of Rs. 13.18 lakhs up to the end of 1971-72 out of a sum of Rs. 15.74 lakhs claimed from the Indian Oil Corporation Limited.

7.3.3 *Other losses*

When products are despatched through tank wagons, Indian Oil Corporation Ltd. is billed for the quantity as ascertained by dip measurements of the tank wagons. However, excise duty refundable (refundable portion is reimbursed by Indian Oil Corporation and non-refundable portion is borne by the Company) is paid on the quantity as arrived at by dip measurements of the product tanks. As the two sets of figures did not tally, the Company had to bear a net loss of Rs. 0.34 lakh during 1968-69 which increased to Rs. 13.40 lakhs during 1969-70 and Rs. 19.87 lakhs in 1970-71 but came down to Rs. 13.21 lakhs in 1971-72. In 1968-69, the quantities shown by dip measurements of tank wagons sometimes exceeded the quantity

shown by dip measurement of product tanks. Since 1969-70, the quantities shown by dip measurement of tank wagons have always been less except in October and November, 1969.

The Management stated in April, 1971 that the movement of stocks from the product tanks of very large capacity into tank wagons and trucks would result in gauging errors. Further, the erratic and undependable calibration of tank wagons also resulted in difference between the quantity loaded into tank wagons and quantity moved from sales tanks. The Central Excise Authorities who were approached in the matter declined to recover excise duty on the same basis on which sale of products to Indian Oil Corporation was determined.

7.3.4 *Delay in setting up of the Drum Making Plant*

The Formation Agreement and the Refinery Construction Contract provided for the setting up of a Bitumen Drum Making Plant with a capacity of manufacturing 4,000 drums a day for the filling of bitumen. Though the construction of the Refinery was completed in September, 1966, the Drum Making Plant could be commissioned only by the end of August, 1967 as the Company's application dated 24th October, 1963 for Industrial Licence mentioned only crude oil as the raw material required and did not include the Drum Making Plant or the steel therefor.

As a result, the Company could import the Drum Making Plant only after obtaining the fresh licence in April, 1965 against the application made on 22nd December, 1964. The bitumen produced in the meantime could not be sold for want of drum making facilities, thereby locking up capital to the extent of Rs. 39.55 lakhs. The accumulated stock was disposed of gradually (up to April, 1968) for Rs. 38.04 lakhs.

7.3.5 *Payment of demurrage charges*

Between 1966 and 1969, the Company did not have to make any payment towards demurrage in respect of crude oil shipments. But demurrage charges to the extent of Rs. 1.92 lakhs, Rs. 4.05 lakhs and Rs. 7.85 lakhs were paid on crude shipments during 1970, 1971 and 1972 respectively. These payments had to be made for the following reasons :—

(Rupees in lakhs)

	1970	1971	1972
(*i*) Non-availability of berth	1.78	3.10	3.68
(*ii*) Lack of crude ullage at the refinery	0.14	0.06	1.55
(*iii*) Delay at the loading point	—	0.71	2.55
(*iv*) Other causes (trouble with pilot launch at Cochin)	—	0.18	0.07
Total	1.92	4.05	7.85

Another significant feature was that the demurrage charges incurred on the crude transported in ships hired on spot charter, commencing from May, 1969, were much more than those in the case of regular chartered ships as indicated below :—

(Rupees in lakhs)

	1970	1971	1972
Spot charters	1.08	2.58	5.01
Chartered ships under regular contract	0.84	1.47	2.84

According to the Ministry (June, 1974) the following were the reasons for payment of demurrage charges from 1970 onwards :—

(i) Considerable increase in spot liftings.

(ii) Reduction in free lay-time for loading and unloading operations from 120 hours to 72 hours in the case of spot charters with effect from 15th September, 1969.

(iii) On account of limited port facilities, spot liftings were arranged mostly in G.P. tankers which did not have adequate pumping capacity for discharging the crude at the Refinery.

7.3.6 *Loss in the sale of packed bitumen*

The Government fixes from time to time the ex-refinery prices for packed bitumen and naked bitumen and the difference between the two prices represents the margin provided for the cost of packing.

The Company is not preparing monthly cost sheets for the drums manufactured in its own plant. From the annual cost sheets prepared at the close of each year, it was observed that the cost of packing incurred by the Company was always more than the margin allowed in the price fixed by the Government. This has resulted in a loss of approximately Rs. 46 lakhs during the period from 1967-68 to 1971-72 as indicated below :—

	1967-68	1968-69	1969-70	1970-71	1971-72
	(Rs.)	(Rs.)	(Rs.)	(Rs.)	(Rs.)
1. Cost for packing one metric tonne of bitumen:					
(*a*) Drum making . .	104.98	102.66	124.53	140.98	144.60
(*b*) Drum painting . .	22.62	19.55	17.61	20.69	26.91
(*c*) Drum filling . . .	11.11	9.84	8.32	10.01	13.08
(*d*) Drum loading . .	9.18	3.30	2.69	2.68	3.06
Total	147.89	135.35	153.15	174.36	187.65
2. Margin allowed for packing cost of one tonne of bitumen .	134.75	134.75	134.75	171.40	171.40
3. Excess of cost over margin allowed . . .	13.14	0.60	18.40	2.96	16.25
4. Quantity of bitumen despatched in packed condition (in Metric tonne) . . .	79211.576	100292.556	75350.018	102620.383	109168.488
5. Total loss incurred [(3×4) Rs in lakhs)] . . .	10.41	0.60	13.86	3.04	17.74

The Ministry have stated (June, 1974) that escalations in the cost of bitumen drums are being allowed, with effect from 1st June, 1970, on the basis of six monthly weighted average cost of the four main oil companies. These companies (including CRL) have, however, been representing that escalation in the cost of bitumen drums should be allowed on the basis of actual experience of each oil Company. This issue has been specifically included in the terms of reference of the new Oil Prices Committee.

7.3.7 *Loss on surplus chemicals*

As per item 4.15 of the Refinery Construction Contract, the contractor (M/s. Phillips Petroleum International Corporation) was required to supply the initial fill of catalysts and chemicals for the operation of the Refinery. Out of the chemicals supplied by the contractor, certain items of the value of Rs. 1.19 lakhs were declared by the Company in August, 1971 as surplus to requirements. As the attempts made to dispose of these items were not successful, these were written off in the accounts for 1971-72.

7.3.8 *Unsatisfactory performance of diesel locomotive*

After evaluating the quotations obtained from seven foreign firms, the Company purchased in April, 1967 from a U.K. firm a diesel locomotive, capable of operating on both broad gauge and metre gauge, at a cost of Rs. 8.22 lakhs. The locomotive did not give satisfactory service right from the date of its purchase and was down for repairs for most of the time; the exact periods during which it was down is not known as the log books are stated to be available only from 9th December, 1970.

During the period when the locomotive was down for repairs, the Company took locomotives from the Railways on hire for hauling tank wagons and paid hire charges amounting to Rs. 9,14,772 up to August, 1972 *vide* details given below :—

	Number of days for which broad gauge locos were hired	Number of hours for which metre gauge locos were hired		
	Days	Hours		Minutes
1966-67 (April 1967 to September 1967)	153	603	—	35
1967-68	41	124	—	05
1968-69	40	42	—	25
1969-70	285	837	—	10
1970-71	291	659	—	35
1971-72	62	237	—	05
Total	872	2503	—	55

The Company spent a sum of Rs. 2,38,165 up to August, 1972 (including Rs. 28,600 paid to Railways in 1970-71 for major overhaul) for the repairs and maintenance of the locomotive. The salaries and allowances (including bonus) paid to the loco drivers engaged by the Company for the operation of its locomotive amounted to Rs. 1,38,877. The Management have stated (June, 1974) that when the locomotive was down, the drivers were engaged in tank wagon loading operations, wherever possible.

7.3.9 *Failure of air-conditioning plant*

As per the Refinery construction contract, M/s. Phillips Petroleum International Corporation were to provide, among other things, a plant office with necessary fittings. The fittings provided included a 90 ton air-conditioning plant procured by the contractor from a Madras firm at a cost of Rs. 4,30,317 (including erection charges) which was covered by one year's guarantee for trouble free service.

The plant was commissioned on 19th September, 1967 but, after rectification of certain defects noticed in its operation, was formally taken over by the Company on 29th November, 1967, on the basis of trial runs on the previous day. The plant worked satisfactorily till 6th January, 1968 when certain parts were damaged. The suppliers agreed to air freight the damaged parts on the condition that the retention money amounting to Rs. 37,955 being withheld by the Company should be immediately released and the plant, after repairs, was recommissioned by the suppliers on 8th April, 1968. During 28th April, 1968 to August, 1968 *i.e.* within the warranty period, the Company replaced certain parts which were damaged but the suppliers refused to meet the cost of replacement (Rs. 27,891) on the plea that these were done without their concurrence.

The performance of the plant continued to be unsatisfactory and it was replaced by a new plant in December, 1971 at a cost of Rs. 4,41,232. The old plant was sold in May, 1971 for Rs. 37,000.

8. SALE OF PRODUCTS THROUGH I.O.C. LIMITED

The Formation Agreement (original as well as modified) envisaged that the products of the Refinery would be sold either to Government of India or their nominees. Accordingly, Government of India asked the Indian Oil Corporation Limited (Marketing Division) to undertake the sale of Refinery's products. The quantity and value of products sold during the five years ending 31st August, 1972 are given in Annexure 'B'.

Although the products are sold on ex-refinery basis, the Indian Oil Corporation Limited has been making use of one or other of the following installation facilities provided by the Company at its own cost :

	Cost of the facility (Rs. in lakhs)
(*i*) Pipelines and jetty facilities	68.14
(*ii*) Product tanks and pumps	97.13
(*iii*) Loading gantry (truck and wagon)	120.12
(*iv*) Railway siding	144.11
(*v*) Locomotives	8.22

The Company represented in April, 1969 to the Oil Prices Committee that the Indian Oil Corporation Limited should share the MI charges. The representation was, however, not considered by the Oil Prices Committee on the ground that this was a matter to be directly settled by the two parties or by Government. The matter was subsequently taken up by the Company with Government in August, 1971.

Government directed the Indian Oil Corporation Limited in November, 1973 to reimburse to Cochin Refineries Limited the MI charges in respect of all bulk refined petroleum products (including LPG and bitumen) on all despatches by rail and road with effect from 1st April, 1972 *i.e.* the date from which IOC started paying such charges to its own refineries.

As regards the use of railway siding by the Indian Oil Corporation the Company worked out a recovery rate of Rs. 2.30 per tonne in September, 1966 on the basis of an annual anticipated handling of 11.4 lakh tonnes of products (as indicated by the Indian Oil Corporation Limited) and an amortisation period of 15 years, etc. This was approved by Government in May, 1968. However, on a representation made by the Indian Oil Corporation this order was revised in September, 1969 allowing the company to make the recovery at Rs. 2.30 per tonne from inception to August, 1969 and to restrict it thereafter to reimbursement of all maintenance charges paid by the Company to Railways plus interest charges at 6½% per annum on a net capital cost of Rs. 104.89 lakhs. The quantity of products handled through the railway siding and the recovery effected from Indian Oil Corporation Limited are indicated below :—

Year	Qty. handled (in lakhs M.T.)	Recovery made (Rs. in lakhs)
1966-67	6.83	15.71
1967-68	8.99	20.67
1968-69	9.97	22.93
1969-70	N.A.	6.81
1970-71	N.A.	6.82
1971-72	N.A.	6.30

It may be mentioned that the actual quantity handled through the railway siding during 1966-67, 1967-68 and 1968-69 was only 6.83 lakh tonnes, 8.99 lakh tonnes and 9.97 lakh tonnes as against 11.4 lakh tonnes indicated by Indian Oil Corporation Limited and on which the recovery rate of Rs. 2.30 per tonne was based. The loss of revenue due to shortfall in the movement of products through the railway siding during the years 1966-67 to 1968-69 amounted to Rs. 19.32 lakhs. The Management have stated (January, 1974) that———— "the payment at the rate of Rs. 2.30 per tonne was ordered by Government on *ad hoc* basis and there was no provision to effect any change in the rate on the basis of actual tonnage ————". The Ministry have, however, stated (July, 1974) that the rate was based as an award on the disputes between CRL and IOC and was not on *ad hoc basis.*

9. PURCHASE PROCEDURE AND INVENTORY CONTROL

9.1. Purchase procedure

The following purchase procedure is being followed by the Company from May, 1969:

Items below Rs. 500	Single quotation
Items above Rs. 500 but below Rs. 5,000 . . .	Call of minimum 3 quotations
Items above Rs. 5000 but below Rs. 50,000 . . .	Sealed quotations are invited and opened in the presence of the Departmental Tender Committee.
Items above Rs. 50,000	Open tenders are invited and opened by the Tender Committee.

The above procedure does not, however, apply to proprietary items and the items to be procured from one source only. The person responsible for authorising a purchase can also make a departure if he considers that strict compliance with the aforesaid procedure will be wasteful and unnecessary—for example, in the case of repeat orders for an item recently purchased or orders for additional construction work which forms an adjunct to a principal construction project.

Emergency purchases can be made without going through the above procedure if there is likelihood of a disruption in the working of the plant or any other activities of the Refinery, after the approval of the Refinery Manager or the Managing Director.

In all cases where lowest tenders are not accepted, the reasons are recorded by the Departmental Tender Committee or the Tender Committee as the case may be.

9.2 **Inventory control**

9.2.1 The following table indicates the comparative position of the inventory and its distribution at the close of the last five years:—

(Rs. in lakhs)

	1967-68		1968-69		1969-70		1970-71		1971-72	
	Stock in hand	Stock as No. of month's consumption	Stock in hand	Stock as No. of month's consumption	Stock in hand	Stock as No. of month's consumption	Stock in hand	Stock as No. of month's consumption	Stock in hand	Stock as No. of month's consumption
1. Chemicals, catalysts & TEL	26.89	17	21.53	8	25.64	26	23.28	13	38.21	19
2. Stores & spares .	116.83	56.2	125.6	57	131.9	56	131.37	48	155.85	48
3. Drum steel .	59.43	8	3.86	0.5	25.08	2.5	175.95	14	95.67	7

In this connection, the Management have stated (February, 1974) as follows :—

(i) "The bulk of chemicals, catalysts and TEL are imported. .... Catalyst life depends on several factors and is difficult to predict. It varies between 2½ to 4 years." Excluding catalysts, the stock of chemicals and TEL held as on 31st August, 1972 represented about 9 months' consumption.

(ii) Several factors are to be considered in evaluating the inventory levels of stores and spares. 75% to 80% of the spares are proprietary in nature and are imported. The stock of stores and spares include construction surplus, initial supply of stores/spares by the construction contractors and insurance and safety stock. The stock of stores and spares in 1971-72 included insurance/safety stocks of the order of Rs. 49.65 lakhs. Excluding the insurance/safety stock, the level of stores and spares held in 1971-72 represented 35 months' consumption.

The Company does not maintain separate accounts for imported and indigenous items of stores and spares. The A, B, C analysis of inventory items has also not been made. The Management have stated (February, 1974) that though we have not formally categorised the items under A, B, C, by and large the same principles for reviewing inventory items are applied.

In March, 1970 it was intimated by the Management that a phased programme of reviewing the stocks was on hand in order to determine the obsolete and surplus stores. The review had, however, not been completed till March, 1971 and it was again stated in April, 1971 that the analysis of stores had been programmed for 1971-72. The analysis has, however, not been completed so far (December, 1973).

The Ministry have stated (June, 1974) that "the Company has had to store inventories which had to be consumed for a period of three years taking into consideration the cumbersome procedure and delays involved from the stage of inventory budgeting to that of the actual import of the inventory. .... Though the storing of inventory for a period of three years is on the high side but this was done and the Company had not adopted proper planning and inventory budgeting .... The Company has now undertaken a review with a view to introduce new procedures on reporting methods whereby the maintenance of separate accounts for imported and indigenous items would be ensured. The Company has been bestowing special attention to the subject of inventory control by creating a post of Officer Inventory Control for effectively reviewing and controlling inventories".

As regards the accumulation of drum steel, the Management stated (January, 1972) that they did not have much flexibility in this regard as the drum steel had to be imported through Minerals and Metals Trading Corporation of India Limited and they had to accept the foreign exchange allocations as and when these were made by Government; the stock of drum steel increased to 11 months' consumption as at the end of April, 1973.

9.2.2 *Purchase of off-sized steel*

Against an allocation of Rs. 30 lakhs (in foreign exchange) for procurement of drum steel, the Company furnished in April, 1969 to Minerals and Metals Trading Corporation the specifications of steel required as 35″ × 61.75″ for body sheets and 22″ × 44″ for end sheets. On receipt of an intimation from its Delhi office in August, 1969 that Minerals and Metals Trading Corporation had received an offer for drum steel sheets of the size of 35″ × 67.5″, the Company conveyed its acceptance without

pointing out the discrepancy in the size. When the discrepancy was intimated to the Minerals and Metals Trading Corporation in February, 1970, *i.e.* after the receipt of shipping documents, the latter pointed out that order had already been placed on the basis of specifications (35″ × 67.5″) confirmed by the Company and nothing could be done a that stage.

The off-size steel was received in February, 1970 and the Company incurred a loss of Rs. 1.30 lakhs (approx.) on account of wastage. The circumstances under which incorrect specifications of steel were confirmed to the Minerals and Metals Trading Corporation do not seem to have investigated. The Management have stated (February, 1974) that "while it is true that the over-size aspect of the steel offered did not receive specific attention, it would appear that we would have nevertheless taken this steel considering the peculiar circumstances and uncertainties involved in the procurement of drum steel at that particular time. The loss of Rs. 1.3 lakhs has to be viewed against the background of the shutdown of drum plant".

10. MANPOWER ANALYSIS

The Company has been able to maintain its staff strength near about 400 men from inception. Based on the actual throughput as indicated in para 5.2.4, the crude processed per employee during 1967-68 to 1971-72 works out to 6530 tonnes, 6510 tonnes, 6011 tonnes, 5989 tonnes and 5533 tonnes respectively.

11. EXPORTS, FOREIGN EXCHANGE SAVINGS AND IMPORT SUBSTITUTION

11.1 Exports

During the four years 1967-68 to 1970-71, the Company earned Rs. 903.80 lakhs on the export of petroleum products as detailed below. There were no export during 1971-72.

(Quantity in M.T. & Rs. in lakhs)

Products	1967-68		1968-69		1969-70		1970-71	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Naphtha	108,554	101.34	123,339	93.71	106,697	87.10	32,627	30.54
Motor Spirit-79	32,563	53.50	34,458	49.35	4,838	6.91	32,251	47.10
Motor Spirit-95	21,026	47.12	23,200	35.96	2,760	4.17	—	—
High Speed Diesel	57,188	92.65	67,081	100.01	36,549	52.48	21,508	31.22
Furnace Oil	23,362	19.05	—	—	—	—	—	—
Asphalt (Packed)	4,400	9.82	—	—	4,460	10.00	11,974	31.77
Total	247,093	323.48	248,078	279.03	155,304	160.66	98,360	140.63

Although clause 8.2 of the Formation Agreement required M/s. Phillips Petroleum Company to undertake the export of surplus products of the Refinery at the best prices available on the world market, it was found that the offers obtained by them were less attractive than those obtained by the Indian Oil Corporation Limited. The Company's products are, therefore, being exported through the Indian Oil Corporation only. The Management have stated (February, 1974) that according to a package deal made on 30th November, 1967 between the Government of India and M/s. Phillips Petroleum Company it was agreed by both the parties that the provisions of clause 8.2 of the Formation Agreement relating to export of products had been performed by the latter and that M/s. Phillips Petroleum Company would continue to endeavour to obtain the best prices for such products.

11.2 Foreign exchange saving

The foreign exchange saving made as a result of the setting up of the Refinery during the period 1967-68 to 1971-72 is indicated below :—

		(Rupees in lakhs)
1. Value of production		19,753.86
2. Less :—		
(a) Cost of crude, TEL, chemicals, catalysts and technical services fee paid in US dollars	12,638.21	
(b) Dividend paid to M/s Phillips Petroleum Company . .	143.91	
(c) Depreciation on imported equipment	569.22	
(d) Interest on foreign loans	299.09	13,650.43
3. Foreign exchange saving		6,103.43

11.3 Import substitution

A full-time officer is in position since 1st November, 1969 to assess the possibility of substituting imported spares, components, chemicals, etc. with those manufactured indigenously. The Company reported in its Annual Report for 1968-69 that a saving of Rs. 6.64 lakhs had been effected in foreign exchange by cutting down imports of spares and chemicals during that year. No such assessment (in monetary terms) for the subsequent period is available.

The Management have stated (January, 1972) that they have so far successfully developed about 260 major items of spare parts of various equipments and another 200 items are being developed. The Company

is a member of the "Indigenous Development Committee" set up by the Chemical and Petroleum Industries in India for exchanging technical know-how, eliminating duplication of efforts and to channelling resources to mutual advantage. But differing technologies, process and equipment obtaining at various refineries and chemical plants in India from different foreign sources call for divergent requirements and thereby defy easy standardisation.

12. INTERNAL AUDIT

According to the Accounts Manual of the Company which was introduced on 15th May, 1966, at least one internal audit report is required to be prepared each month; major audit findings should be summarised and put up to the Board once in three months indicating the corrective action taken. However, no report on major audit findings has been submitted to the Board of Directors so far (January, 1973).

The Company draws up at the beginning of each year the programme of audits to be conducted by the internal audit during the year. During the years 1970-71 and 1971-72 the internal audit was not able to complete the audits as programmed on account of staff strike in the early part of 1970-71 and shortage of staff in 1971-72.

The Committee on Public Undertakings in their Fifteenth Report (Fourth Lok Sabha) on 'Financial Management in Public Undertakings' recommended that the functions of the internal audit should include a critical review of the systems, procedures and operations as a whole. The Ministry of Finance (Bureau of Public Enterprises) while accepting the above recommendation directed the Public enterprises in September, 1968 to introduce such a system. The Internal Audit Section has, however, not conducted any appraisal of the performance of the Refinery on the above lines so far (January, 1973).

The internal audit has also been entrusted with the physical verification of stores and other items in stock. The physical verification of all the items was not completed in any year and heavy arrears were noticed. During 1971-72, about 53% of the items of stores and other items in stock were not physically verified. In 1972-73, out of the stores and stock items valued at Rs. 413.40 lakhs at the close of the year, stores valued at Rs. 40.43 lakhs were found to have not been verified. The Management have stated (February, 1974) that the present system of verification will be reviewed.

13. ORGANISATIONAL SET UP AND FINANCIAL CONTROL

13.1 Organisational set up

The overall management of the Company vests in a Board of Directors consisting of a Chairman, a Managing Director and other Directors. In terms of the Formation Agreement with M/s. Phillips Petroleum Company, the Board of Directors is to consist of 9 members—5 nominated by Government (including Chairman), 2 (including the Managing Director) by M/s. Phillips Petroleum Company and the remaining 2 by other shareholders (*vide* para 3.1.2). The organisational structure of the Company as on 1st April, 1973, is indicated in Annexure 'C'.

The functions of the Managing Director were laid down in a letter dated 27th April, 1963 addressed by Government to M/s. Phillips Petroleum Company according to which he has powers to appoint personnel for the operation of the Refinery, purchase materials, utilities, etc., arrange for technical and consultancy services, dispose of finished products and coordinate the keeping of necessary books and records. In September, 1963 the Managing Director was authorised by the Board of Directors to re-delegate these powers to the persons working under him; the powers were sub-delegated in August, 1964.

13.2 Financial control

The Company does not have a full time Financial Director or a Financial Adviser. According to the Company the Accounts Manager performs the day-to-day functions which are normally expected to be performed by a Financial Adviser and Chief Accounts Officer in a Public Sector undertaking.

In May, 1969 the Government of India, Ministry of Finance (Bureau of Public Enterprises) laid down the main functions and responsibilities for the Financial Adviser which could be adopted by Government Undertakings *in toto* or with such alterations and adaptations as might be necessary to suit their requirements. However, the office memorandum in question has not been placed before the Board of Directors for determining, among other things, matters which should be reserved (i) for concurrence of the Financial Adviser, (ii) for consultation with the Financial Adviser and (iii) those on which he need not be consulted.

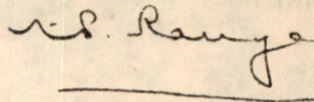
This Ministry have stated (June, 1974) as follows :—

"............As per agreement between Phillips and Government of India ...., Government appointed an Officer

designated as Officer on Special Duty in the Ministry of Petroleum and Chemicals incharge of the financial functions of the Refinery. There is a Finance and Accounts Manager incharge of day-to-day functions of the Company.

The guidelines issued by the Ministry of Finance (Bureau of Public Enterprises) in May, 1969............ could not be given effect due to lack of full time Financial Director or Financial Adviser who could function as Director on the Board of Management of the Company. As the Officer on Special Duty in the Ministry, who is a director on the Board of Management of CRL is incharge of the financial functions of the Company, all matters (financial and accounts) are referred to OSD and the Board and the question of delegation of powers to the Financial Adviser has not arisen.

The Finance and Accounts Manager attends Board Meeting whenever the Board feels that his knowledge and expertise will be useful".

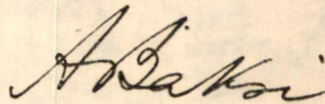


(R. P. RANGA)

Chairman, Audit Board and *Ex-Officio* Additional Deputy Comptroller and Auditor General (Commercial)

New Delhi;
The 17 DEC 1974

Countersigned



(A. BAKSI)

New Delhi;
The 17 DEC 1974

Comptroller and Auditor General of India

ANNEXURE 'A'

(Referred to in paragraph 3.1.6)

Other Important Modifications in the Formation Agreement

	Formation Agreement (1963)	Modified Formation Agreement (1969)
1. (*a*)	The product pattern based on the 34.1 API Gravity light Iranian export type crude consisted of the following : (*i*) Domestic Gasoline (*ii*) Export Gasoline (*iii*) Kerosene (*iv*) Diesel fuel (*v*) Asphalt (*vi*) Heavy fuel (Exhibit I of Appendix II)	The product pattern was revised by inclusion of Naphtha as detailed below: (*i*) Naphtha (*ii*) Gasoline Domestic (*iii*) Gasoline Export (*iv*) Kerosene (Superior) (*v*) HSD (Local) (*vi*) LDO (*vii*) Furnace Oil (Local) (*viii*) Bitumen
(*b*)	In the event of any alteration of the product pattern provided for in the agreement the Company could modify or alter the Refinery in any way to change the process scheme or to change the proportionate yield of products. The additional capital expenditure was subject to mutual agreement of the parties and the process fee was to be adjusted to amortise the cost of the additional investment. (Para 11)	No capital expenditure in excess of Rs. 5 lakhs per project nor in excess of Rs. 25 lakhs in the aggregate in any one financial year, whether or not included in an annual budget, shall be incurred without the approval of the majority of Directors (including a Director nominated by M/s. Phillips Petroleum, Company) (Para 4.01 of Exhibit 'A').
(*c*)	There was no provision regarding variation in product-mix and ensuring net back to the Company on the basis of original product-mix.	The Government of India or its nominees may request a variation in the product-mix contemplated in the Agreement but should ensure that over each financial year of the Company, the net back to the Company (The sales realisation less non-recoverable excise duty to be borne by the Company and less packing costs on bitumens as allowed by Government) is not lower than what would accrue to the Company on the product-mix mentioned in the Agreement (Para 3 of Exhibit 'A').

Formation Agreement (1963)	Modified Formation Agreement (1969)
2. There was no provision in the Agreement for obtaining the concurrence of Phillips Director to create reserve.	The Modified Agreement provides that reserves other than Development Rebate Reserve and legally required reserves could be created only with the approval of the Director nominated by Phillips Petroleum Company. There was no mention of dividend policy in the original Agreement. The Modified Agreement ensures that Development Rebate Reserve and other legally required reserves are created in arriving at the profits before recommending a dividend. Dividend is required to be declared out of profits and/or reserves. The Government of India's obligation is limited to the payment towards average net dividend subject to a maximum ceiling determined by a formula included in the Modified Agreement.
3 There was no provision for securing affirmative vote of majority of Directors for increasing the capital.	The capital of the Company would not be increased nor any additional shares issued without the affirmative vote of majority of Directors of the Company (including a Director nominated by Phillips as provided in para 4.7 of this Formation Agreement). This provision would cease to be effective at the time the Company has paid in full all long term foreign exchange debts (para 6 of Exhibit 'A').
4. The Government of India will establish marketing zones for each product of the Refinery so as to assure the sales of these products to the maximum extent possible. These product zones will be reviewed periodically and if there is not sufficient demand for a product in that product zone, the Government of India will expand the zone to provide a sufficient market for that product. The products of the Refinery will be sold to the Government of India or its nominees specified in this behalf from time to time.	The Government guaranteed that it or its nominees would from 1st April, 1969 purchase all the sale products for a crude charge of an average of 53500 barrels per calendar day/66000 barrels per calendar day before/after expansion (Para 3 of Exhibit 'A').

ANNEXURE 'B'

(Referred to in paragraph 8)

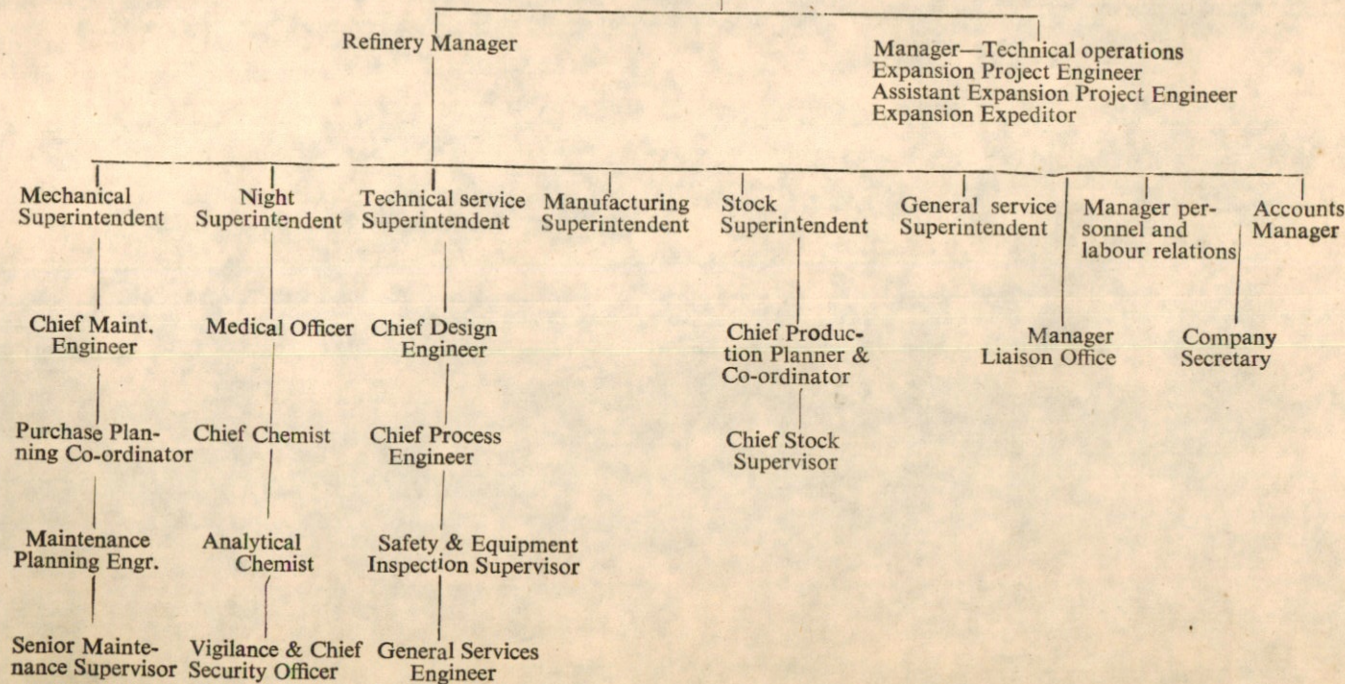
Statement sho wing the details of the quantity and value of sales of the various products for the five years ended 31st August 1972,

Name of the product	1967-68		1968-69		1969-70		1970-71		1971 72	
	Quantity (MT)	Value (Rs.)	Quantity (MT)	Value (Rs.)	Quantity (MT)	Value (Rs.)	Quantity (MT)	Value (Rs.)	Quantity (MT)	Value (Rs.)
1	2	3	4	5	6	7	8	9	10	11
Naphtha . .	1,08,593	1,00,68,605	1,23,339	93,71,203	1,12,118	92,40,002	50,722	47,51,951	57,771	57,74,303
Motor Spirit-79 .	1,93,224	4,09,34,524	1,92,247	3,89,69,211	1,78,992	3,68,63,338	2,20,753	4,39,03,883	1,06,877	2,38,69,182
Motor Spirit-95 .	21,026	37,39,658	23,200	30,10,927	2,760	3,51,346	—	—	—	—
-85 .	—	—	—	—	—	—	—	—	—	—
-83 .	—	—	—	—	—	—	—	—	91,968	2,13,64,793
Superior Kerosene	6,13,956	15,38,82,227	5,64,948	13,88,75,382	6,09,675	14,80,81,647	6,00,690	14,34,06,464	4,87,672	12,30,29,746
High Speed Diesel	4,87,304	8,78,39,583	4,90,374	8,62,21,772	4,22,860	7,26,54,646	4,18,821	7,34,47,297	4,26,374	7,87,80,087
Light Diesel Oil .	43,126	73,82,503	42,433	71,91,718	16,493	26,67,326	18,571	30,33,731	21,091	36,24,441
Furnace Oil .	9,56,464	9,52,47,929	9,09,013	8,81,80,696	8,87,055	8,22,09,860	9,34,401	8,74,16,434	8,28,360	8,07,64,358
Asphalt . .	79,212	1,81,42,015	1,00,434	2,23,81,893	80,466	1,94,39,145	1,02,620	3,04,42,347	1,09,237	3,09,76,923
Less: Adjustment	—	19,31,480	—	—	—	—	—	—	—	—
								38,54,02,107		36,81,83,833
AFRA (Average freight rate adjustment) Index .						26,43,677		2,05,01,375		1,42,93,908
								40,59,03,482		38,24,77,741

ANNEXURE—'C'

(Referred to in paragraph 13.1)

organisational chart as on 1st April, 1973



MGIPRRND—TSS II—S/24C&AG/74—12-12-74—2460