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ERA Project 25.4157
RECENT DEVELOPMENTS AFFECTING THE ROLE
OF PETROLEUM IN THE INDONESIAN ECONOMY

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20 May 1964

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RECENT DEVELOPMENTS AFFECTING THE
ROLE OF PETROLEUM IN THE INDONESIAN ECONOMY*

Summary and Conclusions

Petroleum is one of Indonesia's major natural resources and, after rubber, it is the country's second most important export commodity. Net foreign exchange earnings accruing to the Indonesian government from the operations of the petroleum industry averaged about US \$80 million** annually in 1962 and 1963. Production of crude oil in Indonesia in 1963 amounted to 445,000 barrels per day (bpd) -- about 2 percent of total production in the Free World and more than 75 percent of production of crude oil in Asia and the Far East. This amount was adequate to meet most of Indonesia's estimated domestic demand*** for about 80,000 bpd of petroleum products, and to provide exports of 257,000 bpd of crude oil and 108,000 bpd of petroleum products. Except for lubricating oils, Indonesian refineries, with a total capacity of almost 280,000 bpd, can produce a full line of petroleum products including aircraft fuels. Imbalances in the refinery yield with respect to domestic demand, however, have necessitated the regular importation of small quantities of products (about 4,000 bpd) for the past several years.

* The estimates and conclusions in this report represent the best judgment of this Office as of 15 May 1964.

** Dollar values are in US currency throughout this report.

*** When used in this memorandum, the term domestic demand is intended to describe the quantity of petroleum that is removed or disappears from supply. Demand includes the quality of oil consumed, lost, and issued as bunker fuel in the country.

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The Indonesian petroleum industry was developed by foreign oil companies, but since 1958, when Indonesian gained its independence, the government has become increasingly active in establishing its participation in, and control of the industry. From 1960 until 1963 expansion of the industry was slowed down because of prolonged negotiations between the oil companies and the government over the future status of the companies and the awarding of new areas for exploration. Finally, following a high-level meeting attended by President Sukarno and representatives of the government of the United States, the oil companies and the Indonesian government signed an agreement in Tokyo on 1 June 1963. This agreement, subsequently incorporated into contracts ratified by law in November 1963, established rules of operation for the foreign oil companies in Indonesia and provided for the opening of new areas for exploration.

The essential features of the agreement provided that each of the foreign oil companies would operate as a contractor to a government-owned company, that profits would be split 60 percent to the Indonesian government and 40 percent to the oil companies, that, within 15 years, all marketing and refining facilities would be turned over to the Indonesian government, that the oil companies would make available a proportionate share of their production to meet Indonesia's domestic requirements for petroleum, and that the oil companies would have the right to repatriate profits freely. The oil companies paid \$15 million in bonuses to acquire new acreage and

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agreed to spend a combined total of \$65 million in exploration in the next eight years (1964-71).

Because of the rapid growth of production of crude oil elsewhere in the Free World, Indonesian petroleum is no longer a major contributor to world supply. Moreover, except as a possible source of supply for Communist countries of the Far East, Indonesian petroleum is not of particular importance to the Communist world. The major significance of Indonesian petroleum is to Indonesia itself -- as an export commodity and a valuable earner of foreign exchange. The petroleum industry represents one of the few healthy sectors of the domestic economy, and, barring unusual interference by the Indonesian government, prospects are favorable for the expansion of production and exports of crude oil. In spite of some problems with respect to quality and the increasing availability of crude oil in world markets, Indonesia represents a convenient source of supply to its principal customers, the countries of Asia and the Far East. Moreover, petroleum represents a ready source of energy for the development of domestic industry when conditions permit. The government of Indonesia has indicated its awareness of the importance of the petroleum industry -- both now and in the future -- and of the assistance of foreign oil companies in the operation of the industry, and appears to have reached a mutually acceptable modus vivendi with the oil companies. Nevertheless, the continuing pressures within Indonesia for the nationalization of all foreign

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pose a constant threat to the successful development and expansion of the

Indonesian petroleum industry.

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I. Introduction

The economy of Indonesia has been in a serious condition for the past several years. Measures for economic stabilization adopted in the first half of 1963 have been largely abandoned, and the situation at the end of the year appeared even more critical than that at the end of 1962. The continued deterioration of the Indonesian economy during 1963 resulted in increased deficit spending, a rapid increase in the volume of money in circulation, a decline in the level both of exports and imports, and a dangerously low level of foreign exchange reserves (about \$50 million in December 1963). Chronic difficulties resulting from inefficiency and mismanagement, stagnation or decline in the production of important export crops, lack of spare parts and raw materials, and bottlenecks in the distribution system were exacerbated in the last half of 1963 by President Sukarno's policy of confrontation against Malaysia. The abrupt decision to terminate all trade with Malaysia upset traditional channels for exports, particularly for exports of rubber, Indonesia's most important export commodity, and for imports of essential goods. Moreover, the policy of confrontation has jeopardized expected foreign aid, particularly from the United States; and such aid was a major factor in Indonesia's plans for economic stabilization.

In the chaotic economic situation which prevailed in Indonesia in 1963, the petroleum industry emerged as one of the few bright spots in the economy. In June 1963, after protracted negotiations and as a result

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of the direct intervention of the government of the United States, an agreement was reached regularizing the status of the foreign oil companies that control most of Indonesia's petroleum industry. Production of petroleum in 1963 declined slightly from the level of 1962, but the value of exports of petroleum in 1963 increased, in spite of some difficulties encountered as a result of the embargo on trade with Malaysia.

II. The Petroleum Industry*

1. Background and Development

The Indonesian petroleum industry has been developed almost entirely by foreign interests. The first company to start production of crude oil in Indonesia was the Royal Dutch Petroleum Company, the original company of the Royal Dutch/Shell group.** By 1911, this group was producing crude oil in North Sumatra, South Sumatra, East Java, and eastern and northeastern Borneo. In 1912, the Standard-Vacuum Petroleum Company, jointly-owned by the Standard Oil Company (New Jersey) and the Socony Mobil Oil Company, *** began exploration and was successful in developing

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- * Major facilities of the petroleum industry in Indonesia in 1963 are shown on the map, inside back cover.
 - ** The original name of the company, formed in 1890, was the Royal Dutch Company for the Working of Petroleum Wells in the Netherlands Indies. The current name of the company is Perseroan Terbatas Shell Indonesia (P. T. Shell Indonesia), a limited liability company registered in Indonesia.
 - *** The name of Stanvac's company currently operating in Indonesia is Perseroan Terbatas Stanvac Indonesia, a limited liability company registered in Indonesia. Stanvac's properties in Indonesia continue to be jointly held by Standard Oil of New Jersey and Socony Mobil.

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commercial production in South Sumatra and, on a small scale, in East Java. Another U.S. company, Caltex, jointly owned by the Standard Oil Company of California and Texaco, Inc., entered the picture in 1931.* Caltex explored successfully in Central Sumatra and had just established production in the area when World War II began. In anticipation of the Japanese occupation, which occurred in 1942, the government of the Netherlands Indies took measures to render ineffective the producing wells and other facilities of the petroleum industry. 1**

After World War II, Caltex, Shell, and Stanvac returned to Indonesia to rehabilitate their properties and to reactivate the petroleum industry. Because of war damage and because certain areas were inaccessible due to political unrest, the three companies did not return to all of the areas where they had been active before the war. Caltex directed its efforts toward the development of its two principal fields, Duri and Minas, in Central Sumatra, while Stanvac rehabilitated its facilities in South Sumatra. Shell initially concentrated its efforts on the rehabilitation of its properties in South Sumatra and in Borneo and later to some properties in East Java. In order to encourage the redevelopment of the

* The name of the company currently operating in Indonesia is Perseroan Terbatas Caltex Pacific Indonesia, a limited liability company registered in Indonesia. Two affiliates of the parent companies, California Asiatic Oil Company and Texaco Overseas Petroleum Company also have a joint contract with the government covering exploration in new areas.

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petroleum industry in the post-war period the three companies, Caltex, Stanvac, and Shell, negotiated agreements with the government, which granted the companies the right to remit profits freely and provided for the payment to the government, including royalties and taxes, of 50 percent of the over-all profits from their operations. The agreements under which Stanvac and Shell operated expired at the end of 1960, whereas the Caltex agreement expired in 1963.

These agreements facilitated the re-establishment of the industry, but activities of the petroleum companies were limited to old concessions, pending the adoption of a new petroleum law, and no new acreage was granted for exploration. After Indonesia achieved its independence in 1949, the government began to increase its efforts to participate in and control the petroleum industry and to increase its revenues derived therefrom.* Abandoned or inaccessible properties of the foreign oil companies reverted to the government and eventually three government enterprises were established: Perusahaan Negara Pertambangan Minyak Nasional (Permina); Perusahaan Negara Pertambangan Minyak Indonesia (Pertamin); and Perusahaan Negara Pertambangan Minyak dan Gas Nasional (Permigan).

* Before World War II, the government of the Netherlands Indies had a nominal interest in the industry through its 50 percent ownership of Nederlandsch-Indische Aardolie Maatschappij (NIAM). The remainder of the company was owned by Royal Dutch/Shell. 2/

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In 1957 Permina, the oldest of three state enterprises, took over operation of the former Shell interests in North Sumatra, which had been controlled by the Indonesians since the end of World War II. Pertamina was formed in 1961 to take over the government's interest (from its former partnership with Shell) in concessions in the Djambi area in South Sumatra and the Bunju area in Borneo. Permigan, the smallest of the three government companies, acquired two producing fields in East Java before 1962. In 1962, Permigan purchased Shell's other fields in East Java as well as the small refinery at Tjepu and the connecting pipeline. 3/

In addition to establishing its own petroleum enterprises, the government of Indonesia, in October 1960, promulgated a new petroleum law establishing the procedures for future operations in the petroleum industry.* The essential provisions of this law established that all crude oil and natural gas in Indonesia were national resources controlled by the State and that exploitation of these resources was to be carried out only by State Enterprises, i.e. government-owned oil companies, although other parties could be appointed as contractors to these companies. With respect to existing concessions the law provided that they should remain in effect until new contracts could be arranged and contractors to government companies

* The law was in fact a Government Regulation in-the-Place-of-a-Law, No. 44 year 1960, referred to as "The Regulation on the Mining of Mineral Oil and Gas."

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could be appointed. The law also stipulated that each contract between a foreign company and a government company would be ratified by law and that the terms of the individual contracts would be determined by the government. The new law resulted in an extended period of confusion, uncertainty, and relative inactivity in the Indonesian petroleum industry. Negotiations to draw up new contracts between Caltex, Stanvac, Shell, and the Indonesian government continued unsuccessfully for about two and one-half years (November 1960 - May 1963), during which time investment by the oil companies was at a minimum level. The atmosphere during the negotiations was clouded by recurrent rumors of impending nationalization of the industry by the government and of purported offers by communist countries to assist Indonesia in the operation of its own petroleum industry. Finally, in May 1963, a meeting of representatives of the oil companies, representatives of the government of the United States, and President Sukarno and other Indonesian officials was held in Tokyo. The meeting resulted in an agreement, signed in Tokyo on 1 June 1963, and subsequently incorporated into contracts, signed on 25 September 1963 and ratified by law on 28 November 1963.

Under the terms of the new contracts each of the oil companies has relinquished its former concession area to a government oil company and will operate in the future as a contractor to that company. Caltex will operate as a contractor to Pertamina; Stanvac, to Permina; and Shell, to Permigan. The essential features of the contracts provide that the

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 companies will continue to produce and export crude oil from their former concessions for a period of 20 years (1983); that each company will provide a proportionate share of its production to the Indonesian government, at an agreed price, to meet domestic requirements for petroleum; that profits will be split 60 percent to the Indonesian government and 40 percent to the oil company; and that existing refining and marketing facilities gradually will be turned over to the government at an agreed rate of compensation, payable in convertible currency.* The contracts also make provision for the companies to acquire new acreage for exploration and development for a period of 30 years. Each company paid a bonus of \$5 million to the government to acquire this acreage, and the three companies are committed to expend a combined total of \$65 million on exploration in the next 8 years (1964-71).**

In addition to Caltex, Stanvac, and Shell, a number of other foreign companies have signed contracts since 1957 to engage in exploration and/or to provide assistance to government oil companies in the development of existing fields. In June 1962 the Pan American Indonesian Oil Company, a wholly-owned subsidiary of the Standard Oil Company of Indiana, signed a 30-year agreement to operate as a contractor to Pertamina in the exploration

* Marketing facilities will be taken over by the government within 5 years; refining facilities, in 10 to 15 years. Any refining facility retained by an oil company until the end of the 15-year period (1978) will be acquired by the government without compensation.

** Stanvac 4/ and Shell 5/ each signed one contract covering both former concessions and new areas. The contract signed by Caltex 6/ covered only its former concession area; a separate contract 7/ signed by California Asiatic Oil and Texas Overseas Petroleum covers new areas, for which Caltex will probably be the operator.

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of a large area in Central Sumatra. Pan American's contract, which is similar to those of Caltex, Stanvac, and Shell, provided that profits would be divided 60 percent to the Indonesian government and 40 percent to Pan American. The company also agreed to pay a bonus of \$5 million to the government to acquire the acreage and to expend about \$28 million on exploration in the first 8 years of contract.*

Permina, in addition to its contract with Stanvac, has several production-sharing contracts with other foreign companies. Refining Associates Limited, an independent Canadian company, signed a contract in 1958 to assist Permina in the development and rehabilitation of its oilfields in North Sumatra. The contract, renewed in 1960 to extend until 1965, provides that Refining Associates will extend credit as well as consultative and engineering services and will take payment in crude oil. A marine drilling vessel owned by the Western Offshore Drilling and Exploration Company, Long Beach, is being operated under contract to Refining Associates in an off-shore test in the Strait of Malacca. Permina also has contracts with the Asamera Oil Corporation Ltd. of Calgary and with the North Sumatra Oil Development Cooperation Company, Limited (Nosodeco), a consortium of Japanese firms. Asamera's** contract, signed in 1962 is for an on-shore

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* Pan American's contract was also ratified by law in November 1963. [redacted]

** Asamera owns a 45 percent interest in the contract. Other members of the group are: Central - Del Rio Oils Limited, 33 3/4 percent; Benedum - Trees Oil Company, 11 1/4 percent; and Refining Associates Limited, 10 percent.

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and off-shore exploratory and development program to re-establish commercial production in a 750,000 acre area in North Sumatra, north of Langsa. The Asamera group will take 40 percent of any production of crude oil that is developed and Permina will take 60 percent. Nosodeco signed a 10 year contract in 1960 to rehabilitate and develop production in an area around Rantau, south of Asamera's area. Nosodeco provides credits in the form of machinery and technology and receives, as payment, 40 percent of the annual production of crude oil in excess of 800,000 kiloliters. 9/

In 1963, Permigan also signed an agreement with a Japanese group, the Ceram Island Oil Development Association. The Japanese will investigate the possibility of rehabilitating former Shell oilfields on the island of Ceram and at Tjepu in Java, and will conduct aerial surveys of possible oil areas in West Irian. If the prospects are favorable, a production-sharing agreement similar to Permina's agreement with Nosodeco will probably result. 10/

Early in 1964 Pertamina began negotiations with a third Japanese group to develop production around the Bunju oilfield in Borneo. Investigation of the area is still underway and no contract has yet been signed. 11/

Government administration of the petroleum industry in Indonesia is carried out by the Directorate of Petroleum and Natural Gas in the Ministry of Basic Industries and Mining. It is rumored that the ministry, headed by Chaerul Saleh, who is also third deputy prime minister, will be split and that a separate ministry for petroleum will be formed.

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In accordance with the contracts signed in November 1963, Saleh has implemented plans for the takeover of marketing and distribution facilities. On 6 January 1964 Pertamina was designated as the government company charged exclusively with the organization of all distribution of petroleum products. Pertamina has been designated to provide marine transportation as it acquires the necessary capabilities, and has instituted a program to purchase tankers for this purpose. ^{12/}

2. Current Status (1963)*

Indonesia is the only important producer of crude oil in Asia and the Far East. Its proved reserves of crude oil amount to almost 11 billion barrels (about 3 percent of the Free World total) and reserves of natural gas, most of which are associated with crude oil, are estimated to be about 40 billion cubic meters. Most of the crude oil is produced by Caltex, Shell, and Stanvac, with Caltex alone accounting for more than 50 percent of the total. Total refining capacity amounts to about 280,000 barrels per day (bpd), of which more than 95 percent is owned by Shell (68 percent) and Stanvac (29 percent). Caltex has no refining facilities in Indonesia. Production and refining facilities not controlled by the "Big Three" are owned by the government companies.

* Summary data on Indonesian production, consumption, imports, and exports of petroleum for the years 1958-63 are shown in Table 1. More detailed information on the operations of the Indonesian petroleum industry is given in Appendix A.

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Table 1

Indonesia: Production, Consumption, Imports, and Exports of Petroleum a/
1958-63

	Thousand Barrels per Day					
	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>
Crude Oil						
Production	333	381	416	426	458	445
Imports	24	45	44	54	31	28
Exports	152	181	221	238	251	257
Net supply	<u>205</u>	<u>244</u>	<u>240</u>	<u>242</u>	<u>237</u>	<u>215</u>
Petroleum Products						
Production	220	240	237	219	220	200 <u>b/</u>
Imports	4	4	4	4	2	4 <u>b/</u>
Exports	137	147	140	129	124	108
Net supply	<u>87</u>	<u>97</u>	<u>101</u>	<u>94</u>	<u>99</u>	<u>96 <u>b/</u></u>
Demand for Petroleum Products						
Inland consumption	57	58	61	69	77	77
Bunkers	12	15	17	21	17	16 <u>b/</u>
Total consumption	<u>68</u>	<u>73</u>	<u>78</u>	<u>90</u>	<u>93</u>	<u>93 <u>b/</u></u>
Product transfers and stock changes	19	24	23	4	6	3 <u>b/</u>
Total demand	<u>87</u>	<u>97</u>	<u>101</u>	<u>94</u>	<u>99</u>	<u>96 <u>b/</u></u>

a. Data are rounded to nearest 1,000 barrels per day. Because of rounding, components may not add to the totals shown.

b. Estimated.

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Production of crude oil in Indonesia in 1963 amounted to 445,000 barrels per day (bpd), of which an average of 257,000 bpd was exported. Production of petroleum products in Indonesia in 1963 is estimated to have averaged 200,000 bpd, of which 108,000 bpd were exported. Although exports of crude oil in 1963 showed a slight increase (about 2.5 percent) over 1962, exports of products declined by more than 13 percent and production of crude oil declined by about 3 percent. Exports of petroleum products have declined steadily since 1959, as a result of increasing domestic consumption, but the sharp decline registered in 1963 resulted primarily from Indonesia's policy of confrontation against Malaysia. ^{13/}

Traditionally, a major portion of the products exported from Indonesia have been destined for Singapore, where they entered the entrepot trade, and, to a lesser extent, for Malaya for consumption. The loss of this market created severe problems in the export of products and in domestic refining operations in Indonesia. For the first nine months of 1963, exports of petroleum products averaged 123,000 bpd, only slightly less than average for the year 1962; in the last quarter of 1963, following confrontation, exports of products fell to about half of the previous level. The over-all decline in the production of crude oil, in spite of increased exports, is also attributable to confrontation. Most of the decline resulted from a reduction of crude oil production by Stanvac because of reduced throughput at its refinery. ^{14/}

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The initial impact of the loss of Malaysian facilities was alleviated somewhat by Indonesia's subsequent agreement to the use of installations in Malaysia for blending and in transit storage. At present information is insufficient to assess completely the long-term effect of confrontation on exports of products. Exports of crude oil, which have represented an increasingly larger share of Indonesia's total exports of petroleum since 1959, normally have not gone to Malaysia and thus were not affected by confrontation.

Since 1960, the vagaries of the political and economic situation in Indonesia have hampered the development of the petroleum industry, and actual expansion of production has not been commensurate with the estimated potential for expansion. The ratification of the contracts with Caltex, Shell, Stanvac, and Pan American is expected to result in a greatly increased rate of activity in the exploration for new reserves. Prospects for success in the discovery of new fields and the development of new production are considered to be very favorable, and should result in increased exports of crude oil and increased foreign exchange earnings.

III. Significance of Indonesian Petroleum in the World Situation

1. General

Although Indonesia is the only important producer of crude oil in Asia and the Far East, its resources of petroleum are of major significance to the Indonesian economy rather than as a source of petroleum in the world pattern of supply and demand. Exports of petroleum represent a

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valuable and relatively stable source of foreign exchange earnings for the Indonesian government. To the importing countries, Indonesian petroleum constitutes a convenient, though not indispensable, source of supply. Moreover, Indonesian petroleum faces increasing competition in world markets in the next few years. The rapid increase of production in other areas of the world, particularly in Africa, and the growth of the super-tanker fleet, with resultant economies in transportation, will increase further the availability and accessibility of crude oil in the world market. In addition, Indonesian crude oil has some disadvantage with respect to quality because of its high viscosity and wax content. Most of the exports of crude oil from Indonesia in the past few years, however, have represented sales by Caltex and Stanvac to their affiliates, and these markets will undoubtedly be maintained. Permina and the other government companies also have established markets for at least part of their output of crude oil as a result of production-sharing agreements with foreign contractors.

2. Significance to Indonesia

Petroleum is one of Indonesia's most important natural resources and, after rubber, is the country's most important export commodity. More than 50 percent of Indonesia's production of both crude oil and petroleum products has been exported, primarily to countries in Asia and the Far East. During the period 1958-62, the total value of exports of petroleum from Indonesia amounted to \$1.3 billion dollars.* Preliminary

* The value of Indonesian exports, including rubber and petroleum, for the years 1958-62 is shown in Table 2.

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Table 2

Indonesia: Value of Exports

1958-62

	1958		1959		1960		1961		1962	
	Million US Dollars	Percent	Million US Dollars	Percent	Million US Dollars	Percent	Million US Dollars	Percent	Million US Dollars	Percent
Total Exports	791	100	931	100	840	100	784	100	674	100
of which										
Rubber	262	33	417	45	377	45	305	39	299	44
Petroleum	315	40	296	32	221	26	260	33	211	31

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estimates indicate that the value of exports of petroleum in 1963 was roughly \$230 million, a slight increase over 1962 in spite of the trade embargo against Malaysia. Net foreign exchange earnings to the Indonesian government from exports of petroleum were about \$80 million annually in 1962 and 1963. Earnings in 1964 are expected to be at about the same level.

Information on the total contribution of the petroleum industry to Indonesia's revenues and to the Indonesian economy is incomplete. In 1961 direct revenues from the petroleum industry were expected to contribute about 11 percent of total planned revenues (7.3 billions of rupiahs) in the budget for that year. Local expenditures by the oil companies for wages, goods, and services undoubtedly made a substantial additional contribution to the economy.

As a result of the contracts with Caltex, Stanvac, and Shell that were ratified in November 1963, the Indonesian government received \$15 million in hard currency from the oil companies as bonuses for new acreage and an additional \$30 million from Caltex for past operations. The total of \$45 million paid by the three companies was almost equal to the estimated total foreign exchange holdings of the Indonesian government at the end of 1963. Moreover, the contracts provided for stipulated expenditures for exploration. During the eight-year period 1964-71, an average of almost \$12 million annually will be expended on exploration by Caltex, Stanvac, Shell, and Pan American combined. This sum, though not unusually large for exploration activity, will provide a healthy infusion of capital

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into the economy in addition to the contribution from established petroleum operations. Successful exploration and the development of new production would result in additional bonuses and greater foreign exchange earnings for the government and would probably result in a higher level of expenditures by the oil companies.

Because of the limited industrial development in Indonesia, the major significance of petroleum in the economy has been as an export commodity and as an earner of foreign exchange. The use of petroleum as a fuel for the generation of electric power and in railroad transportation has increased, however, and the first chemical fertilizer plant to utilize natural gas in Indonesia is scheduled to go into operation in 1964. The resources of petroleum -- particularly natural gas which is now largely flared -- offer a ready, inexpensive source of energy for industrial plants. Moreover, effective use of natural gas as a source of energy would permit industrialization without detriment to the important export trade in petroleum.

3. Significance of Indonesian Petroleum to Importing Countries of the Free World

There are four main importers of Indonesian crude oil: Japan, the United States, Australia, and the Philippines. Of the total quantity of crude oil imported by these countries in 1962, imports from Indonesia represented the following shares: US, 6 percent; Japan, 11 percent; Australia, 23 percent; and the Philippines, 42 percent. The Philippines,

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which imports the largest percentage of its total supply from Indonesia, has no commercial production of crude oil. It is entirely dependent on imported crude oil to meet the needs of its local refineries, and there are no prospects for the development of significant domestic production of crude oil in the next few years. Although Japan and Australia are now dependent on imports of crude oil for a major part of their petroleum supply, such dependence is expected to decline gradually in the coming years. Australian production of crude oil from the Brisbane area is expected to begin in 1964, and Japan's production from its concession in the Persian Gulf is expanding rapidly. Rising demand and planned additions to refining capacity in these countries, however, suggest that they will continue to provide a market for exports of crude oil. The United States imports relatively small quantities of crude oil in relation to its total supply of petroleum, and no significant change in the level of its imports from Indonesia is anticipated in the near future. 16/

In addition to the established markets for Indonesian crude oil, the planned construction and/or expansion of refining capacity in several countries in the Far East area will provide potential new markets for Indonesian crude oil. Burma contracted for the import of a small quantity of Indonesian crude oil in 1963 to meet the needs of its expanded refining capacity, and additional quantities are to be imported in 1964. Other countries in the Far East area which plan new or expanded refining facilities that might use Indonesian crude oil are Thailand, South Korea, New Zealand, Pakistan, and Malaysia.

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In its established markets and in the developing new market in Asia and the Far East, Indonesian crude oil has a competitive advantage because of its proximity and the resultant lower freight rates. The increasing supply of crude oil in the world and shortcomings of Indonesia crude oil with respect to quality, however, tend to offset some of that advantage. Future increases in exports of crude oil from Indonesia to the Free World will depend not only on the development of new production but also on the reliability of supply, attractive pricing, and tie-ins with affiliates of the major oil companies.

Indonesia's exports of petroleum products have declined steadily in the past few years, and, as in the case of crude oil, no importing country is believed to be dependent on Indonesia for its supply of petroleum products. A major part of Indonesia's exports of products traditionally has entered the entrepot trade in Singapore and the ultimate disposition of these products cannot be readily determined. Most of the products, however, probably were used for international bunkers in Malaya and Singapore. Of the countries that import petroleum products directly from Indonesia, only Thailand, Laos, Cambodia, and South Vietnam receive a significant share of their total supply from Indonesia. Thailand produces a nominal amount of crude oil that is processed locally, but most of its supplies of petroleum are imported in the form of products. The other three countries are entirely dependent on imports of petroleum products. In 1962, imports of petroleum products from Indonesia represented more than 20 percent of total imports of petroleum by Thailand and Laos and almost 40 percent

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of total imports of petroleum by Cambodia and South Vietnam. Imports of petroleum products from Indonesia by Japan, Australia, New Zealand, and the Philippines represent less than 10 percent of total imports of products in each country. Furthermore, except in the case of New Zealand, which has no domestic refining capacity, imported products represent a relatively small share of total domestic supply in these countries. The continued expansion of refining facilities in the Far East area will tend to reduce further Indonesia's importance as a source of petroleum products. 17/

4. Significance of Indonesian Petroleum to Communist Countries

Indonesian petroleum has not thus far been exported to any Communist countries. As a potential source of supply, however, Indonesia could be of particular importance to Communist China, North Korea, and North Vietnam. In 1962, these countries imported about 50,000 bpd of petroleum products from the USSR and other Communist countries; imports in 1963 probably averaged about 40,000 bpd. Although Indonesia now exports products in excess of this total quantity, the requirements for specific products could not be met except at the expense of the Indonesian economy. Indonesia does not have significant quantities of kerosine (including aviation kerosine) available for export. In 1962, however, kerosine represented at least 22 percent of the total products imported from the USSR by Communist China, North Korea, and North Vietnam. * Motor gasoline and diesel

* Trade statistics of the USSR do not show quantities for jet fuel imports, which are believed to be included in the gasoline category. If China's estimated imports of about 450,000 tons of jet fuel in 1962 are added to the kerosine category, kerosine accounts for about 40 percent of total imports. 18/

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fuel could be supplied from Indonesia, but there is little or no requirement for fuel oil, Indonesia's principal product for export. At present the Indonesian government does not own refining facilities adequate to supply products for export. To obtain such products, the government would have to levy on foreign companies for a share of their surplus products that are currently exported to countries of the Free World for hard currency.

The export of petroleum products to Communist China, North Korea, and North Vietnam does not appear to offer any economic advantage to Indonesia, although the possibility that Indonesia might export small quantities for political reasons cannot be ruled out.

Communist China, the only one of the three communist countries in the Far East with refining facilities, apparently has produced enough crude oil since 1960 to supply its own refineries at their effective operating capacity. As a result of reported additions to capacity in 1963, however, China could represent a possible market for as much as 20,000 - 30,000 bpd of Indonesian crude oil for its coastal refineries. The Indonesian government could readily acquire this amount of crude oil from the foreign oil companies as payment in kind for part of its share of profits. As in the case of petroleum products, the export of crude oil to China by Indonesia probably would be politically, rather than economically, motivated. A recent trade agreement between North Korea and Indonesia included crude oil among the commodities to be imported by Korea, but there is no evidence

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that Korea, at present, has refining facilities to utilize crude oil.* 19/

For the USSR and the European Satellites, Indonesia has little to offer as a potential source of supply of petroleum because of the long distances involved in transport and because the USSR and Rumania are both exporters. A possible area of interest would be in the supply of Indonesian petroleum to the Soviet Far East, but it is unlikely that any such transaction is contemplated.

The countries of the Soviet Bloc have shown relatively little interest in the development of Indonesia's petroleum industry. In 1961 Rumania agreed to provide \$50 million in assistance to Indonesia, of which \$35 million is earmarked for the construction of a refinery and the rehabilitation of oilfields in the area controlled by Permigan.** In the three years since the credit was granted there have been no drawings against it. A few Rumanian technicians have recently been sent to Indonesia, presumably to assist in the development of Permigan's oilfields and to discuss plans for the refinery. Permigan, however, has also enlisted Japanese assistance in the development of these same oilfields and apparently there is no immediate intention to proceed with construction of the Rumanian-aided refinery. A few Indonesians have been sent to the USSR and to Rumania for training in various aspects of the petroleum industry. No other technical or material assistance to the Indonesian petroleum industry has been provided by countries of the Bloc. 20/

* Construction of a refinery with an annual capacity of 40,000 bpd is reportedly underway in North Korea. Although the refinery would be dependent on imported crude oil, completion of the plant is not expected until at least 1966.

** Only 85 percent of this assistance is to be provided as a long term credit.

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IV. Problems and Prospects of the Indonesian Petroleum Industry

Although the production of crude oil in Indonesia has increased significantly since 1958, the growth of the industry has been hampered, particularly since 1960, because of the unsettled conditions under which the oil companies operate. After the signing of the agreement in Tokyo in June 1963, it appeared that the basic problems affecting operations of the oil industry had been resolved. The atmosphere of harmony and optimism was short-lived, however, as the policy of confrontation against Malaysia, announced in September 1963, created new problems for the industry and revived or intensified the hostility against foreign interests, particularly British.

One problem that continues to plague the foreign oil interests is the fear that their assets will be expropriated. Both President Sukarno and Chaerul Saleh, Minister of Basic Industries and Mining, have said that they want foreign oil companies in Indonesia and that they look forward to a mutually beneficial era of cooperation. In spite of these assurances, however, there is continuing pressure, particularly by the Communist labor unions, for the expulsion of all foreign interests. There have been recurring instances of the occupation by the workers of British oil facilities since the confrontation. The most serious incident has involved the Shell refinery at Balikpapan in Borneo, and has been sanctioned (if not instigated) by the local military commander. Immediately after the confrontation this refinery was taken over by the Indonesian staff and for some time the

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expatriate staff was held incommunicado. The situation appears to have been resolved for the present by Shell's replacement of all of the expatriate staff of British origin with other foreign nationals and by Saleh's decree, issued in December 1963, restoring control of the refinery to Shell management. 21/

The take-over by Pertamina of marketing and distribution operations within Indonesia is also giving rise to some problems that could affect the operations of foreign oil companies. Formerly the oil companies, through the sale of products on the domestic market, obtained rupiahs adequate to cover their local requirements for wages, taxes, and so forth. Now the oil companies sell the products to Pertamina, rather than to the consumer, and rupiah payments have been slow (indeed none have yet been received). Unless Pertamina reduces the time lag between receipt of shipments and payment to the companies, which seems unlikely in terms of normal government operations, the oil companies will be compelled to increase rupiah working capital through conversion of hard currency earnings into rupiahs. The unfavorable legal rate for this conversion will add to the companies' cost of operation. Pertamina's take-over of marketing operations has also created some problems with respect to personnel formerly employed by the oil companies for this purpose. Pertamina probably will be forced to absorb these employees, although initially it refused to do so on the grounds that it had an adequate staff. Some shortages of petroleum products also are developing as a result both of the change in marketing procedures and as a result of the trade embargo. These shortages have not reached serious proportions, however, and no major problem on supply is expected. 22/

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The prospects for the petroleum industry in Indonesia are difficult to assess. From an economic point of view, the indications are favorable for an era of growth and expansion for the industry. The new areas to be explored have a good potential for the discovery of new reserves and the development of new production. The planned expansion of refinery capacity in the Far East area and Indonesia's favorable position as the nearest major producer of crude oil suggest that there should be a continued and expanding market for Indonesian crude oil. The foreign oil companies are committed to a sizable investment in exploration, government oil companies have several production sharing contracts for the rehabilitation and expansion of existing fields, and it is expected that exports of Indonesian crude oil will continue to increase and that the rate of growth may well expand.

No expansion of refining capacity in Indonesia is expected in the next few years, and exports of petroleum products probably will continue decline. Existing refining capacity, however, is more than adequate to meet anticipated over-all domestic requirements, although imports of certain types of products will continue to be necessary to supplement domestic production.

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Sukarno needs the oil companies and the

expected income from the oil industry. Leftist pressure for the seizure

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of all foreign interests and harassment at various oil installations are expected to continue, however, and the effect of these pressures on Sukarno's actions cannot be predicted. Although the foreign oil companies are going ahead with their plans for exploration and development on the basis of their existing contracts, no one is sanguine about the fact that these contracts could not be abrogated at any time.

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APPENDIX A

THE INDONESIAN PETROLEUM INDUSTRY, 1958-63*A. Crude OilI. Exploration and Production

Since 1960, because of the unresolved status of the foreign oil companies, exploratory drilling in Indonesia has been at a very low level. Of the 19 exploratory wells drilled during 1960-62, 17 were drilled in 1960. With the conclusion of the working contracts in 1963, however, and the awarding of new exploration areas, the exploration program is expected to accelerate. In the period 1964-71 almost \$100 million will be invested in oil exploration in Sumatra and Borneo by Pan American, Caltex, Stanvac, and Shell; and additional exploration on a lesser scale will be undertaken by government-owned oil companies. Several foreign oil companies, not now operating in Indonesia, also have been negotiating for exploration contracts. The new exploration program is expected to result in a substantial increase in Indonesia's proved reserves of crude oil.

Although there are some oilfields on the islands of Borneo and Java production of crude oil in Indonesia is derived primarily from oilfields on the island of Sumatra, which accounted for almost 90 percent of total production in 1963. Of the 63 oilfields being exploited in Indonesia, the Minas oilfield in Sumatra, which was developed by Caltex, is by far the most important producer. In 1963 production from the Minas field accounted

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for 38 percent of total production in Indonesia.

Indonesian crude oils in general contain little sulphur and have a somewhat higher gasoline content than the average Middle East crude. These desirable characteristics are offset, however, by the fact that the Indonesian crudes also have a high wax content and are very viscous. Crude oil from the Minas oilfield has a wax content of up to 25 percent and is almost solid at 75^oF.; crude oil from the Tandjung oilfield has a wax content of 33 percent and solidifies at 105^oF. The viscosity and wax content of most Indonesian crude oils necessitate special facilities for handling and processing.

Total production of crude oil in Indonesia increased from about 17 million tons in 1958 to about 23 million tons in 1963. Three companies -- Caltex, Stanvac, and Shell -- accounted for about 90 percent of total production in this period.*

II. Refining

Total refining capacity in Indonesia as of 1 January 1964 was almost 280,000 barrels (bpd). The two major refineries, which together comprise more than half of the total refining capacity, are located near Palembang in South Sumatra. They are the refinery owned by Stanvac at Sun-gaigerong (80,000 bpd) and Shell's Pladju refinery (110,000 bpd.). The only other major refinery is Shell's plant at Balikpapan in Borneo, with an annual capacity of about 75,000 bpd. Small units are owned by Shell and

* The production of crude oil by company for the years 1958-63 is shown in Table 3.

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by the government companies. Caltex, the major producer of crude oil, has no refining facilities in Indonesia.*

Secondary processing facilities at the three largest refineries include thermal and catalytic cracking, thermal reforming, alkylation and polymerization units.** Except for lubricating oils, the refineries can produce a full line of petroleum products, including aircraft fuels.

Indonesian refineries operate primarily on domestically produced crude oil, although Shell regularly has imported small quantities of crude oil and feedstocks for the production of products for export. Shell also processes some crude oil produced by Pertamina, and Stanvac processes nominal amounts of crude oil produced by Caltex. The products from these crudes are distributed locally.

Since 1959 Indonesia's refineries have not been operated at capacity. The output of refined products has shown a small but steady decline, reflecting a corresponding decline in exports of petroleum products.***

III. Consumption

Domestic consumption of petroleum products (exclusive of international ships' bunkers) increased from 57,000 bpd in 1958 to 77,000 bpd in 1962. / Consumption in 1963 remained at about the same level as

* A list of existing refineries is shown in Table 4.

** Capacities of the secondary processing facilities are shown in Table 5.

*** The output of refined products by company and by type of product in 1962 is shown in Table 6.

/ Consumption of petroleum products in Indonesia, by type of product, for the years 1960-62 is shown in Table 7.

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in 1962. About two-thirds of the petroleum consumed in Indonesia is used on the island of Java; and in the country as a whole, oil ranks after fuelwood as a primary source of energy. The principal products consumed are kerosine, motor gasoline, and diesel fuels. Kerosine, which accounted for 36 percent of total consumption in 1962, is used primarily for household lighting and cooking. Diesel fuel is used extensively in such industrial applications as the generation of electric power -- it is estimated that about one-third of Indonesia's powerplants are operating on diesel fuel -- and to an increasing degree in land and marine transport.

In addition to products consumed domestically, including those used for coastal and inland shipping, consumption of fuel for international ships' bunkers averaged about 16,000 bpd in the period 1958-62.

IV. Marketing, Distribution and Storage

Because the government controls prices of petroleum within Indonesia, profit margins in the retail market are narrow and the operating oil companies are more interested in the export market for their petroleum. As of 1961, Shell supplied almost 40 percent of the local market; Stanvac, about 30 percent; government companies, almost 20 percent; and Caltex, the remainder. In May 1962, however, the Indonesian government issued a decree whereby each company would be required to supply products to the domestic market in proportion to its share of total crude oil production. Under this pro-rated system Caltex, which formerly supplied little more than 10 percent of the market, will be required to supply about half of the total

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domestic requirements. As a result of the agreement signed in 1963, actual distribution and marketing operations will be taken over by Pertamina, and each foreign company will provide its pro-rated share of products to the government at an agreed price. In determining the price of the products to Pertamina, crude oil will be valued at cost plus 20¢ per barrel. Stanvac and Shell will refine their own crude, at cost plus 10¢ per barrel, while refining of Caltex's crude oil will be at commercial prices.

The principal means of transportation for crude oil in Indonesia is by pipeline, although small tankers are also used to supplement pipeline transport. Most of the crude oil that is produced is transported directly from the oilfields to coastal terminals for export or to Indonesian refineries for processing. Crude oil produced at Stanvac's Lirik and Ukui oilfields in Central Sumatra is moved first by pipeline to a marine terminal and thence by tanker to the refinery at Sungaigerong in South Sumatra. About 1,600 miles of Indonesia's total pipeline system of almost 1,900 miles* are used for the transport of crude oil.

Distribution of petroleum products within Indonesia is effected principally by tanker and rail, although some pipelines are used to transfer products from refineries to bulk storage installations. In Java products are received by tanker at coastal storage installations and distributed inland primarily by rail. In other areas of the country distribution is primarily by coastal and inland water transportation.

* Major pipelines in Indonesia in 1963 are shown in Table 8.

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The extensive use of water transportation requires a large fleet of small vessels, including tankers, barges, lighters and vessels for shipments of packaged petroleum. The Indonesian government has six small tankers used for internal transportation, with a total capacity of about 19,000 deadweight tons (d.w.t.). In addition Shell has a fleet of 31 tankers with a total capacity of almost 300,000 d.w.t., and Stanvac has a few very small tankers.

Containers are used for distribution in remote areas and Shell maintains a plant for the manufacture of drums at Balikpapan. The plant produces annually about 50,000 containers for regular petroleum products and more than 300,000 drums for asphalt.

Bulk storage facilities in Indonesia have a total capacity of 23 million barrels, of which almost 16 million barrels are used for the storage of petroleum products. Storage for clean products, exclusive of lubricating oils, amounts to about 8 million barrels, or approximately four months' supply at the 1962 rate of consumption. Crude oil storage amounts to about 7 million barrels, or approximately 25 days of supply on the basis of a refining capacity of about 280,000 bpd.*

V. Foreign Trade

Indonesia is a net exporter both of crude oil and petroleum products. Exports of crude oil from Indonesia increased from about 150,000 bpd in 1958 to almost 260,000 bpd in 1963. Caltex is the largest exporter of crude oil and, in 1962, its exports of 215,000 bpd represented more than

* Major bulk storage installations in Indonesia in 1963 are shown in Table 9.

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85 percent of total Indonesian exports of crude oil. The remainder was exported by Permina (about 10 percent of total exports) and Stanvac (almost 5 percent). Japan, the United States, Australia, and the Philippines, are the major importers of Indonesian crude oil, and, in 1962, these four countries received almost 98 percent of total Indonesian exports of crude oil.*

Exports of petroleum products from Indonesia decreased from a high of almost 150,000 bpd in 1959 to 108,000 bpd in 1963. The decline in exports of petroleum products reflects the growth of refining capacity in other countries of Asia and the Far East, that traditionally have been supplied from Indonesia. In 1962, the latest year for which complete data are available, almost 70 percent of the products exported went to Malaysia, about 20 percent went to other countries of Asia and the Far East, and the remainder went to the US and elsewhere.** The principal products exported are fuel oil, diesel fuel, and motor gasoline. Shell and Stanvac are the only two companies that export products from Indonesia, and in 1962, Shell's exports amounted to 96,000 bpd, or almost 80 percent of the total.

In spite of its sizeable exports of petroleum, Indonesia also imports crude oil and small quantities of products. Because its local production of crude oil is inadequate to employ fully its refining capacity, Shell has imported crude oil in bond for refining into products for export. In the period 1958-62 and in the first 9 months of 1963, quantities imported

* Exports of Indonesian crude oil, by country of destination, for the years 1960-62 are shown in Table 10.

** Exports of petroleum products from Indonesia in 1962, by destination and by type of product, are shown in Table 11.

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for this purpose averaged about 40,000 bpd.

Imports of crude oil were discontinued in the last quarter of 1963, as a result of the trade embargo against Malaysia. Imports of products averaged about 4,000 bpd in the period 1958-62, and probably continued at the same rate during 1963. Products imported to supplement domestic output consist mainly of lubricating oils, specialty products, and small quantities of fuels.

B. Natural Gas

Proved reserves of natural gas in Indonesia amount to about 40 billion cubic meters, including dissolved, associated and non-associated gas. Reserves of non-associated gas, which amount to about 7 billion cubic meters, are located entirely in southern Sumatra, in areas operated by Shell and Stanvac. Although Indonesia's reserves of natural gas are not large in comparison to the major areas of natural gas resources, they constitute an additional source of energy for use in the development of the economy.

Exploitation of Indonesia's natural gas resources has been relatively limited and in most cases the gas is used as fuel by the oil companies in their operations or is flared. Stanvac, however, has five plants in southern Sumatra that produce small quantities of liquefied petroleum gas (LPG) and natural gasoline. Stanvac also has completed a pipeline with a capacity to transport 425,000 cubic meters per day of natural gas from the Radja oilfield to Palembang. The pipeline will provide natural gas for a fertilizer plant scheduled for completion at the end of 1963 -- the first significant commercial utilization of natural gas in Indonesia.

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Table 3

Indonesia: Production of Crude Oil ^{a/}
1958-63

<u>Producing Company</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>
Caltex	149	166	204	224	229	230
Shell	74	86	88	87	112	107
Stanvac	76	83	78	72	70	63
Permina	5	13	16	16	4	25
Pertamin	28	32	30	25	20	18
Permigan	1	1	1	1	3	3
Total	<u>333</u>	<u>381</u>	<u>417</u>	<u>426</u>	<u>458</u>	<u>445</u>

a. Data are rounded to the nearest 1,000 barrels per day. Because of rounding, components may not add to the totals shown.

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Table 4

Indonesia: Primary Refining Facilities

as of 1 January 1964

<u>Refinery</u>	<u>Owner</u>	<u>Annual Capacity a/ (Barrels per Day)</u>
Pladju	Shell	110,000
Sungaigerong	Stanvac	80,000
Balikpapan	Shell	75,000
Tjepu	Permigan	5,100
Wonokromo	Shell	3,200
Pangkalansusu	Permina	1,200
Langsa	Permina	400
Pangkalan brandan	Permina	400
Rantau	Permina	400
Total capacity		<u>280,000</u>

a. Data are rounded to two significant digits. Because of rounding, components may not add to the total shown.

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Table 5

Indonesia: Secondary Refining Facilities

as of 1 January 1964

Type of Facility	Annual Capacity a/ (Barrels per Day)			Total
	Sungaigerong	Pladju	Balikpapan	
Vacuum distillation	52,000	24,000	14,000	90,000
Thermal cracking	22,000	10,000	0	32,000
Catalytic cracking	18,000	0	0	18,000
Thermal reforming	0	15,000	0	15,000
Alkylation	810	1,100	0	1,900
Polymerization	1,800	480	0	2,300
Solvent extraction	9,700	16,000	0	25,000
Wax production	1,100	0	7,800	8,900

a. Data are rounded to two significant digits. Because of rounding, components may not add to the totals shown.

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Table 6

Indonesia: Output of Petroleum Products^{a/}

1962

Product	Thousand Barrels Per Day				Total
	Shell ^{b/}	Starvac	Caltex ^{c/}	Pertamin Permigan and Permina ^{d/}	
Aviation gasoline	1	1	0	0	<u>2</u>
Aviation turbine fuel	0	3	0	0	<u>3</u>
Motor gasoline	18	16	3	7	<u>44</u>
Kerosine	23	9	2	4	<u>39</u>
Diesel fuels	39	10	3	2	<u>54</u>
Fuel oils	49	13	4	9	<u>74</u>
Lubricating oils	0	0	0	0	0
Other products	4	1	0	0	<u>4</u>
Total	<u>134</u>	<u>53</u>	<u>12</u>	<u>22</u>	<u><u>220</u></u>

a. Data are rounded to the nearest 1,000 barrels per day. Because of rounding, components may not add to the totals shown.

b. Including the output of products derived from imported crude oil.

c. Products derived from crude oil produced by Caltex and processed in Stanvac's refinery.

d. Including almost 19,000 barrels per day of products delivered from crude oil produced by Pertamina and processed in Shell's refineries.

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Table 7

Indonesia: Consumption of Petroleum Products ^{a/} _{b/}
1960-62

Product	Thousand Barrels Per Day				
	1960	1961	1962	1962 (Percent)	1962 Index (1960 = 100)
Aviation gasoline	1	<u>c/</u>	<u>c/</u>	1	76
Aviation turbine fuel	<u>c/</u>	1	1	1	733
Motor gasoline	18	20	22	29	126
Kerosine	25	26	28	36	110
Diesel fuels	11	14	15	20	138
Fuel oils	5	5	6	8	128
Other <u>d/</u>	2	3	4	5	182
Total	<u>61</u>	<u>69</u>	<u>77</u>	<u>100</u>	<u>125</u>

a. Data are rounded to the nearest 1,000 barrels per day. Because of rounding, components may not add to the totals shown. Percentages and indexes for 1962 were derived from unrounded data.

b. Including bunkers for international aircraft but not for foreign ships.

c. Less than 500 barrels per day.

d. Including solvents, lubricating oils, asphalt, paraffin, and liquefied petroleum gas. Consumption of lubricating oils in 1962 was about 1,300 barrels per day.

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Table 8

Indonesia: Principal Pipelines

1953

<u>Pipeline</u>	<u>Operating Company</u>	<u>Capacity (Barrels per day)</u>	<u>Diameter (Inches)</u>	<u>Length (Miles)</u>
Crude oil				
Dari to Dumai	Caltex	400,000	30	35
Minas to Duri	Caltex	250,000	26/30	36
Minas to Perawang	Caltex	110,000	12	15
Talang Akar/ Pendopo to SungaiGerong (2 lines)	Stanvac	77,000	6 8	81 81
West Prabumulih to Pladju (2 lines)	Shell	57,000	8 10	58 58
Tandjung to Balikpapan	Shell	42,000	20	148
Sago to Buatan	Stanvac	32,000	8	90
Tempino to Pladju (2 lines)	Pertamin	27,500	6/8 8	165 165
Sambodja to Balikpapan	Shell	20,400	8	34
Kawengan to Tjepu	Pernigan	18,500	6	10
NgLobo-Semanggi-Banjuasin to Tjepu	Pernigan	6,000	4	13
Anggana-Muara to Sambodja	Shell	6,000	5	36

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Table 8

Indonesia: Principal Pipelines (continued)

1963

<u>Pipeline</u>	<u>Operating Company</u>	<u>Capacity</u> (Thousand cubic feet per day)	<u>Diameter (Inches)</u>	<u>Length (Miles)</u>
Natural Gas				
Radja to SungaiGerong	Stanvac	15,000	8	66
Petroleum products				
Wonokromo to Tandjungperak	Shell	7,000	5	10



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Table 9

Indonesia: Bulk Storage Facilities for Petroleum a/

1963

	Thousand Barrels					
	Crude Oil	Clean	Dirty	Products Unknown b/	Total	Total
Balikpapan	1,300	1,000	690	760	2,500	3,800
Dumai	1,000	0	0	0	0	1,000
Pladju	1,300	2,100	630	2,300	5,100	6,400
Sambu	0	620	230	670	1,500	1,500
Sungaigerong	630	1,200	630	130	2,000	2,600
Sungaipakning	1,000	0	0	0	0	1,000
Tandjungperak	180	460	250	9	730	900
Tandjungpriok	0	620	180	23	820	820
Tandjunguban	270	1,100	190	0	1,200	1,500
Wonokromo	350	120	1	31	150	500
Other <u>c/</u>	1,300	1,200	200	410	1,800	3,100
Total	<u>7,400</u>	<u>8,400</u>	<u>3,000</u>	<u>4,300</u>	<u>16,000</u>	<u>23,000</u>

- a. Data are rounded to no more than two significant digits. Because of rounding, components may not add to the totals shown.
- b. Including storage facilities for lubricating oils, naphtha, solvents, paraffin, asphalt, feedstock, and unassigned tankage.
- c. Storage installations with individual capacities of less than 500,000 barrels.

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Table 10
 Indonesia: Exports of Crude Oil ^{a/}
 1960-62

Destination	Thousand Barrels per Day		
	1960	1961	1962
Japan	65	78	96
United States ^{b/}	71	67	63
Australia	49	57	60
Philippines	26	26	27
Other countries ^{c/}	11	10	6
Total	<u>221</u>	<u>238</u>	<u>251</u>

a. Data are rounded to the nearest 1,000 barrels per day. Because of rounding, components may not add to the totals shown.

b. Including Hawaii.

c. Principally India and West Germany.

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Table 11

Indonesia: Exports of Petroleum Products ^{a/}

1962

Destination	Thousand Barrels per Day										Percent of Total Exports
	Aviation Gasoline	Jet Fuel	Motor Gasoline	Kerosine	Diesel Fuels	Fuel Oils	Other Products	Total by Country			
Malaya and Singapore	0.9	0.1	12.7	8.9	14.9	45.2	1.4	84.1			68
Europe, North Africa, and U.S.	0	0	0	0	0.6	8.7	1.4	10.5			8
Thailand and Laos	0.2	1.6	2.5	0.3	2.1	2.4	0.1	9.2			7
Australia, New Zealand and Oceania	0.1	b/	2.5	1.2	0.9	2.3	0.3	7.5			6
South Vietnam and Cambodia	b/	0.5	2.0	0	1.3	1.6	0.1	5.6			4
South and East Africa	0	0	0	0	0.4	1.9	0.2	2.4			2
Japan	b/	0	b/	0.1	0.1	1.2	0	1.5			1
Hong Kong and Macao	0	0	b/	0	0.1	1.0	b/	1.2			1
Philippines and Guam	0	0.2	0.6	0	b/	0	0.1	1.0			1
North Borneo	b/	0	0.2	0.1	0.5	0.1	0	0.9			1
India, Ceylon and Taiwan	0	0	0	0	0	0.1	0	0.1			negl.

a. Data are rounded to the nearest 100 barrels per day. Because of rounding, components may not add to the totals shown. Percentages were derived from unrounded data.

b. Less than 50 barrels per day.

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Table II
 Indonesia: Exports of Petroleum Products
 1962
 (Continued)

Destination	Thousand Barrels per Day							Total by Country	Percent Total Exports
	Aviation Gasoline	Jet Fuel	Motor Gasoline	Kerosine	Diesel Fuels	Fuel Oils	Other Products		
Total by product	1.4	2.4	20.7	10.6	20.9	64.5	3.5	123.9	
Percent of total exports	1	2	17	9	17	52	3		

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