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THE ECONOMIC SIGNIFICANCE OF ASSAM



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THE ECONOMIC SIGNIFICANCE OF ASSAM

The continuing possibility that Communist China might invade and occupy Assam raises the question of the economic value of that area both to China and to India. The following description of economic assets in Assam focuses on the principal resources of petroleum and agriculture and assesses their significance to the economies of China and India.

Petroleum Resources in Assam

Assam State in northeastern India represented India's sole commercial production of indigenous petroleum until 1961, when production began in the Ankleshwar oilfield, about 90 miles north of Bombay. In the third quarter of this year the oilfields in Assam were producing at the rate of about 550,000 metric tons (mt) per year of petroleum, almost 60 percent of India's total domestic production of about 950,000 mt per year at that time and about 5 percent of India's total supply.

Production in Assam is derived from the Digboi-Nahorkatiya area (see the map), where reserves are tentatively estimated to be about 400 million barrels of oil and almost 750 million cubic feet of gas. Exploration and drilling are continuing in Assam, and there is considerable optimism that current reserves will be increased substantially. Estimated reserves at present are comparable to those in British Borneo or in Brazil but are insignificant in comparison to reserves in the US or the Middle East and probably are less than the undetermined reserves of mainland China.

Two oil refineries with a combined capacity of about 1,250,000 mt per year are located in Assam, one at Digboi and one near Gauhati. The remodeled Digboi refinery, located at the oilfield, has a capacity of about 500,000 mt per year and operates on crude oil from the Digboi and Nahorkatiya oilfields. This refinery is owned by the Assam Oil Co. The Rumanian-built refinery at Nunmati, near Gauhati, is owned by the Government of India and has a capacity of 750,000 mt per year. Crude

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oil from the Nahorkatiya field will be shipped to this refinery through a newly completed 16-inch, 270-mile pipeline. The refinery at Gauhati was recently completed and is still in the shakedown stage of operation. Reports on this refinery continue to cite operational problems and failures. Although the full refinery capacity cannot now be employed, it is expected that full operation will soon be achieved.

Neither refinery in Assam can produce aviation gasoline. Except for this limitation the refineries have process facilities to produce a full line of refined products. These refineries, however, were designed to restrict output of motor gasoline in favor of that of kerosine and other middle distillates which are in greater demand than gasoline in northeastern India. Although these refineries do not now produce jet fuel, they probably could be operated to produce a fuel suitable for use in jet aircraft.

The oil facilities in Assam are an integral element of India's economic plans and growth, but the loss of Assam would not affect seriously India's total supply of petroleum, except as the loss of these facilities would impose heavy burdens on India's supply of POL to areas contiguous to Assam. About 95 percent of India's total supply of oil is derived through imports. About two-thirds of India's supply of products is derived from imported crude oil processed in two refineries in the Bombay area and one at Vishakhapatnam on the east coast of India. These three refineries represent almost 80 percent of India's refining capacity. The other one-third of India's supply of products is imported.

The oil facilities in Assam, in their present condition, would be an important addition to Chinese Communist supply capabilities. These facilities could provide China immediately with 100,000 mt per year of gasoline from the Digboi Refinery alone, or more than enough gasoline to supply the present estimated combat troops in the North East Frontier Agency area and more than half of the total requirements for all troops (combat and support) estimated to be in the area. Moreover, production of oil probably could be increased in the near future to the limit of refining capacity to provide 1,250,000 mt per year of all petroleum products, which amount corresponds to about 20 percent of China's total supply of POL in 1962. The acquisition of the oil reserves in Assam also would add significantly to China's oil resources.

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Significance of Agriculture in Assam

Agriculture in Assam is of particular importance to India because of its power to earn foreign exchange. Assam produces about half of India's tea and 20 to 25 percent of Indian production of raw jute, and, for the past 5 years, jute products and tea have accounted for approximately 40 percent of the total value of India's exports. Assam also produces about 5 percent of India's rice but is a net importer of rice and wheat. In the long run, Assam has a potential for increasing production of rice significantly by more intensive methods and by possible shifts in the cropping pattern, but these increases are not likely to take place easily or quickly.

Yields of tea in Assam are the highest in India, but the quality of the tea is not the best. Tea is a perennial that takes 4 to 8 years to mature, depending on location, soil, and climatic conditions, and the tea plant will bear for several decades. The hilly tracts of Assam are particularly well suited to tea, for the soil is deep and has a high humus content, the rainfall averages about 100 inches annually and is distributed well over the year, and temperatures are high throughout the year.

In each of the 3 years from 1959 to 1961, Assam produced an average of 150,000 mt of tea, or nearly half of the crop in India (see Table 1). Exports of tea earned India in excess of \$250 million in each of those years. Exports of tea account for about half of India's total agricultural exports and about 20 to 25 percent of India's total export trade (see Table 3).

Production of jute in India for the past decade has averaged about 4.3 million bales (400 pounds/bale) annually (see Table 2) and reached an all-time high in 1961-62 at 6.3 million bales, an increase of about 55 percent in comparison with the previous year. Production of jute in Assam during the 1950's amounted to about 25 percent of the Indian total, but in recent years its relative importance has been declining.

From 1956-57 to 1960-61, Indian jute acreage averaged 700,000 hectares. In 1961-62, however, this acreage was increased to 914,000 hectares, prompted by a rise in the price of jute manufactures. In

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Assam in 1960-61 and 1961-62, jute was grown on 121,000 hectares and 147,000 hectares, respectively.

Jute yields in Assam are lower than the average for India as a whole. Because it rapidly depletes the fertility of the soil, jute usually is grown in rotation with paddy rice.

Until May 1962, when a ban on shipping raw jute out of India was lifted, jute was exported only in the form of jute manufactures, such as cordage, sacks, bagging, and burlap. The value of jute products has been significant in the export trade of India in the last 5 years, averaging about 20 percent of the total (see Table 3). In 1961, exports of jute products exceeded \$300 million.

Production, acreage, and yields of rice in Assam have remained relatively constant in recent years. An average of 1.7 million hectares has produced about 2.5 million mt of paddy rice (see Table 4). Assam accounts for approximately 5 percent of both Indian acreage and production of rice.

Assam is a net importer of rice, although the per capita production of paddy rice in Assam is higher than in India as a whole. In most recent years, Assam imported in excess of 20,000 mt of rice annually (see Table 5). Because of the importance of the cash crops -- tea and jute -- Assam is a relatively high income area.

There are possibilities for increasing output of rice in Assam. Jute and paddy rice have similar soil and climatic requirements. If the jute acreage were all sown to rice, it would be possible to enlarge the rice acreage by about 150,000 hectares, or about 9 percent.

There also are possibilities for increasing rice yields in Assam by employing more intensive techniques similar to those used in mainland China. In interior Kwangtung Province, where climatic conditions are roughly similar to those in Assam, paddy rice yields are 2,750 to 3,000 kilograms per hectare (kg/ha) compared with about 1,400 kg/ha in Assam.

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It is unlikely, however, that yields could be quickly raised to this level. In summary, the Chinese Communists would not find surpluses of food in Assam, although the tea and jute crops could provide foreign exchange.

Table 1  
Production of Tea in India and Assam  
1959-61

| <u>Year</u> | <u>Thousand Metric Tons</u> |              | <u>Assam as a Percent of India</u> |
|-------------|-----------------------------|--------------|------------------------------------|
|             | <u>India a/</u>             | <u>Assam</u> |                                    |
| 1959        | 323.9                       | 150.9 b/     | 47                                 |
| 1960        | 316.3                       | 155.0 c/     | 49                                 |
| 1961        | 348.6                       | 182.4 c/     | 52                                 |

- a. 1/
- b. 2/
- c. 3/

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Table 2

Production of Raw Jute in India and Assam  
1952/53 - 1961/62

| Year              | Thousand 400-Pound Bales |                 | Assam as a Percent<br>of India |
|-------------------|--------------------------|-----------------|--------------------------------|
|                   | India                    | Assam           |                                |
| 1952/53 <u>a/</u> | 4,605                    | 925             | 20                             |
| 1953/54 <u>a/</u> | 3,129                    | 807             | 26                             |
| 1954/55 <u>a/</u> | 2,928                    | 750             | 26                             |
| 1955/56           | 4,198 <u>b/</u>          | 1,212 <u>a/</u> | 29                             |
| 1956/57           | 4,289 <u>b/</u>          | 1,049 <u>a/</u> | 24                             |
| 1957/58           | 3,983 <u>b/</u>          | 1,094 <u>c/</u> | 27                             |
| 1958/59           | 5,158 <u>b/</u>          | N.A.            | N.A.                           |
| 1959/60           | 4,605 <u>b/</u>          | N.A.            | N.A.                           |
| 1960/61           | 3,982 <u>b/</u>          | 813 <u>d/</u>   | 20                             |
| 1961/62           | 6,269 <u>b/</u>          | 1,131 <u>d/</u> | 18                             |

a. 4/  
b. 5/  
c. 6/  
d. 7/

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Table 3

India: Exports and Value of Tea and Production of Jute Manufactures  
1957-61

| Year | Million US \$ |                        |                            | Commodity Exports<br>as a Percent of Total Exports |                        |                              |
|------|---------------|------------------------|----------------------------|--|------------------------|------------------------------|
|      | Tea           | Jute Manu-<br>factures | Total<br>Exports <u>a/</u> | Tea  | Jute Manu-<br>factures | Tea and Jute<br>Manufactures |
| 1957 | 259 <u>a/</u> | 232 <u>b/</u>          | 1,339 <u>a/</u>            | 19   | 17                     | 37                           |
| 1958 | 287 <u>a/</u> | 209 <u>b/</u>          | 1,198 <u>a/</u>            | 24   | 17                     | 41                           |
| 1959 | 265 <u>a/</u> | 222 <u>b/</u>          | 1,298 <u>a/</u>            | 20   | 17                     | 38                           |
| 1960 | 252 <u>a/</u> | 267 <u>b/</u>          | 1,308 <u>a/</u>            | 19   | 20                     | 40                           |
| 1961 | 262 <u>c/</u> | 307 <u>d/</u>          | 1,403 <u>d/</u>            | 19   | 22                     | 41                           |

- a. 8/
- b. 9/
- c. 10/
- d. 11/

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Table 4

Acreage, Yield, and Production of Rice in India and Assam a/  
1955/56 - 1961/62

| Year    | India                                       |                             |   | Assam                                       |                             |   | Production in Assam<br>as a Percent<br>of Production<br>in India |
|---------|---|-----------------------------|---|---|-----------------------------|---|--|
|         | Acreage <u>b/</u><br>(Thousand<br>Hectares) | Yield<br>(Kg/Ha <u>c/</u> ) | Production <u>b/</u><br>(Thousand<br>Metric Tons) | Acreage <u>d/</u><br>(Thousand<br>Hectares) | Yield<br>(Kg/Ha <u>c/</u> ) | Production <u>d/</u><br>(Thousand<br>Metric Tons) |  |
| 1955/56 | 31,522                                      | 1,311                       | 41,334  | 1,743                                       | 1,457                       | 2,540   | 6  |
| 1956/57 | 32,278                                      | 1,349                       | 43,552  | 1,745                                       | 1,491                       | 2,601   | 6  |
| 1957/58 | 32,289                                      | 1,185                       | 38,268  | 1,703                                       | 1,419                       | 2,418   | 6  |
| 1958/59 | 32,957                                      | 1,404                       | 46,260  | 1,703 <u>e/</u>                             | 1,450 <u>e/</u>             | 2,469   | 5  |
| 1959/60 | 33,521                                      | 1,408                       | 47,187  | N.A.  | N.A.                        | 2,466   | 5  |
| 1960/61 | 33,567                                      | 1,528                       | 51,297  | 1,748                                       | 1,428                       | 2,496   | 5  |
| 1961/62 | 33,859 <u>f/</u>                            | 1,513 <u>f/</u>             | 51,224 <u>f/</u>                                  | 1,771 <u>f/</u>                             | 1,419 <u>f/</u>             | 2,513 <u>f/</u>                                   | 5  |

a. In terms of paddy rice, which can be converted into terms of milled rice by applying a factor of 0.667 to the figure for paddy rice.

b. 12/ unless otherwise indicated.

c. Kilograms per hectare. Calculated from production and acreage data.

d. 13/ unless otherwise indicated.

e. Estimated.

f. 14/

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Table 5

Rice Trade of Assam a/  
1956/57 - 1960

| <u>Year</u> <u>b/</u> | <u>Imports</u> | <u>Exports</u> | <u>Metric Tons</u><br><u>Net Imports</u> |
|-----------------------|----------------|----------------|--|
| 1956/57               | 30,181         | 8,694          | 21,487                                   |
| 1957/58               | 27,488         | 1,984          | 25,504                                   |
| 1958/59               | 16,081         | 770            | 15,311                                   |
| 1959/60               | 31,231         | 184            | 31,047                                   |
| 1960 <u>c/</u>        | 8,760          | 41             | 8,719                                    |

a. 15/

b. 1 April - 31 March.

c. 1 April - 30 September.

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Analysts:



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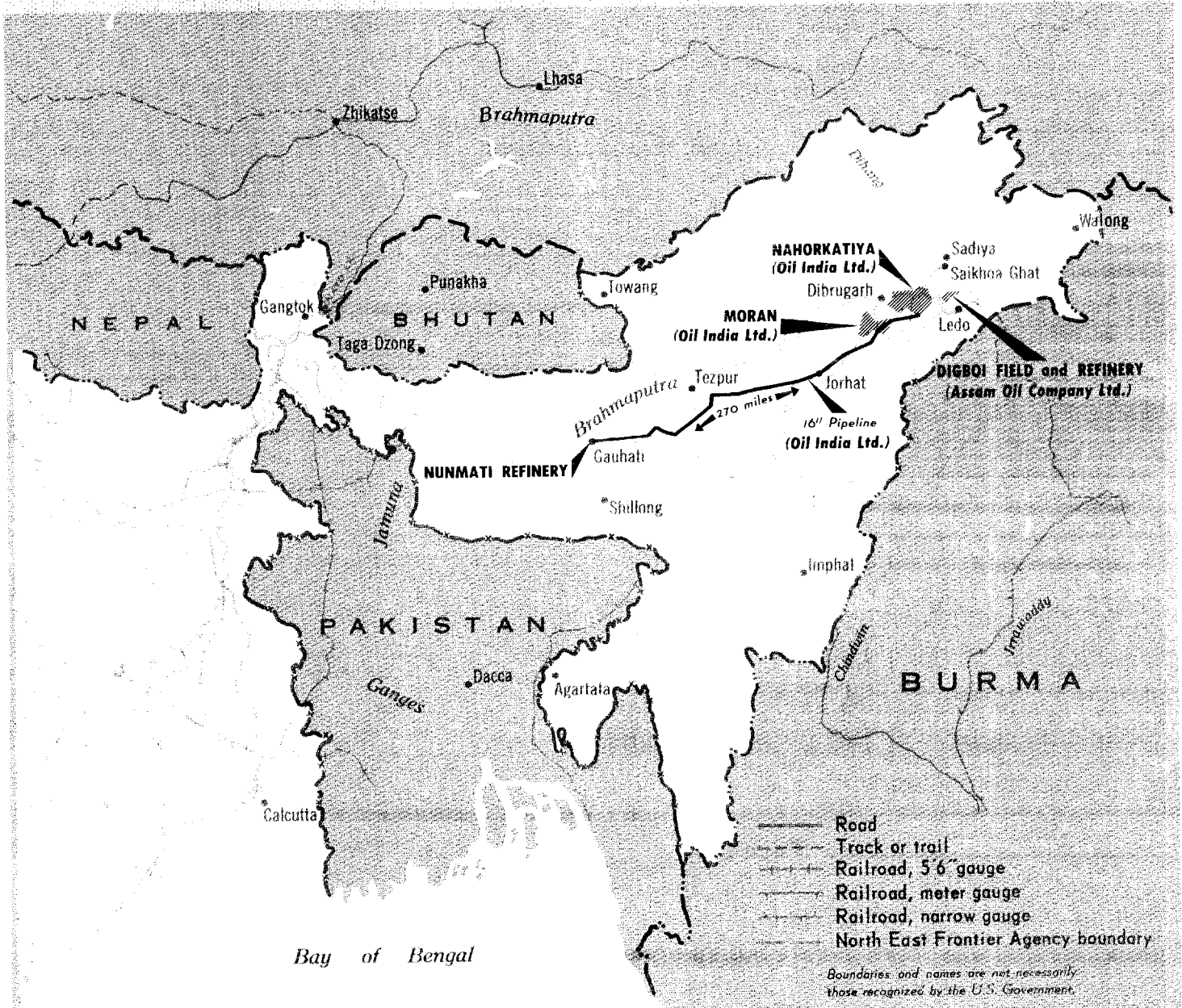
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## Petroleum Resources in Assam



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| 119 - 126        | See attached memorandum                    |                  | "           | 25X1A           |
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