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China's Rapidly Growing Oil Exports: Can Expansion Continue?

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An Intelligence Assessment

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EA 86-10009
March 1986

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An Intelligence Assessment

This paper was prepared by Office of East Asian Analysis.

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Comments and queries are welcome and may be directed to the Chief, China Division, OEA, on

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China's Rapidly Growing Oil Exports: Can Expansion Continue?

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Scope Note

The prospect of oil for export is the primary incentive for foreign countries—especially the United States—to invest in oil in China. This paper evaluates China's ambitious plans to increase oil exports and points up those factors that will have an impact on China's ability to meet those goals.

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Key Judgments

Information available as of 25 February 1986 was used in this report.

Beijing has nearly doubled the volume of its crude oil exports in the past two years, making China the world's 13th-largest oil-exporting country. At less than 600,000 barrels per day (b/d), these sales are still too small to affect the world oil market, but they are increasingly important to the East Asian market—particularly Japan and the Philippines. Moreover, Beijing's drive to increase exports is offering substantial investment opportunities for US firms engaged in both onshore and offshore exploration as well as those that provide equipment and techniques to extend the life of older fields. The search for oil, in fact, has already become the largest component of foreign investment in China; foreign oil firms since 1979 have invested $1.7 billion; 35 percent of this has been from the United States.

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Beijing has been able to raise production and sales of both crude oil and petroleum products by:

- Encouraging the introduction of foreign equipment and expertise to enhance recovery techniques and exploit new finds.
- Implementing a conservation program to limit domestic consumption of oil.
- Undercutting OPEC prices to bolster its own sales.
- Aggressively marketing its oil and oil products overseas.

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Because of growing domestic demand for oil and the glut in the world oil market, China is unlikely to sustain last year's 27-percent growth in the volume of exports over the next few years. Nonetheless, we believe there is a strong possibility that China will be able to increase exports to 1 million b/d by 1990. Recent discoveries of oil on the periphery of existing onshore fields have considerably brightened prospects for a steady increase in production to 3 million b/d. China's continuing desire to maximize foreign exchange earnings, moreover, suggests that Beijing will keep up its pressure on domestic industry and households to limit oil consumption. Finally, the Chinese are expanding oil terminals and pipelines to ease current logistic bottlenecks.

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The recent downturn in the international oil market will complicate but probably not change China's export plans. Given Beijing's considerable need for foreign exchange, we believe that China would probably not reduce its oil exports significantly even if international oil prices fell below $10 per barrel. Beijing's announcement that it intends temporarily to freeze the volume of its oil exports is, in our opinion, a political gesture to Middle Eastern countries and will not last. Indeed, the Chinese have a history of undercutting OPEC, and we expect them to continue attempts to expand their share of the market.

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Falling oil prices will exacerbate China's trade deficit, which approached a record $14 billion in 1985, according to Chinese statistics. If Beijing maintains 1985's export volume and world crude prices average $18 a barrel, we estimate that China will lose $1.6 billion in foreign exchange earnings this year. China will probably react to the trade deficit and the loss of oil revenues by imposing stricter controls on imports, and perhaps scaling back some large development projects, but we expect acquisitions of oil-related equipment and technology to continue.

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Opportunities To Earn Foreign Exchange

With skyrocketing needs for foreign exchange to finance its modernization program, China over the past few years has sought ways to greatly increase exports. Because increasing international constraints limit sales of two major Chinese exports—textiles and apparel—Premier Zhao Ziyang in early 1984 identified oil exports, along with tourism and arms sales, as the areas with the greatest potential for increasing foreign exchange earnings,

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Since then, Beijing has strongly pressed its petroleum industry to produce more oil. The China National Chemical Import and Export Corporation (Sinochem), Beijing's crude oil trading firm, has opened offices in the United States, Japan, West Germany, Panama, France, Hong Kong, and Macau. In addition, Beijing has purchased more than $600 million in petroleum technology and equipment from US firms. The bulk of the additional oil found at existing onshore fields with the help of this equipment has been exported. In 1985, crude oil and petroleum product exports earned an estimated $6.4 billion, about 23 percent of China's foreign earnings.

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How China Boosted Oil Exports

Beijing has been able to increase its oil exports because new finds and enhanced recovery techniques have boosted China's total oil output. With the help of resident foreign experts and foreign technology, China increased its oil production by 8 percent in 1984 and another 9 percent in 1985 to almost 2.5 million b/d. Of this increase, 80 percent was exported. Almost half of the increased production in the past few years has come from new finds at China's second-largest field—Shengli, located in Shandong Province.

China has been remarkably successful at limiting domestic oil consumption through conservation efforts so it can increase exports. The country's annual consumption of oil declined by 11 percent between 1978 and 1982, from 1.82 million b/d to 1.62 million b/d. Most of the decrease resulted from a cutback in the burning of crude and fuel oil in power plants and industrial boilers and furnaces. Beijing began converting such plants to coal in 1978, and since 1981 it has imposed a tax on direct fuel and crude oil consumption to discourage this wasteful practice. In 1981, the State Council responded to widening shortages of gasoline and diesel fuel (caused by China's limited refining capacity and increased demand for transportation) by imposing quotas on the fuel allocated for every vehicle in China.

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Table 1
Chinese Crude Oil and Petroleum Product Exports and Foreign Exchange Earnings, 1970-85

	Oil Production (*Thousand b/d*)	Crude Oil Exports (*Thousand b/d*)	Petroleum Product Exports (*Thousand b/d*)	Foreign Exchange Earnings (*Million US $*)
1970	613	3.8	3.9	NA
1971	788	5.3	7.5	NA
1972	911	12.7	17.8	NA
1973	1,072	36.7	23.2	NA
1974	1,297	101.4	29.6	NA
1975	1,541	197.6	42.0	864.2
1976	1,738	169.5	38.8	774.9
1977	1,873	182.1	39.3	1,011.9
1978	2,081	226.3	43.5	1,278.8
1979	2,123	268.6	60.7	2,446.5
1980	2,113	265.5	83.8	4,320.6
1981	2,024	275.1	91.8	4,942.2
1982	2,042	293.6	105.4	4,896.8
1983	2,121	296.4	102.4	4,486.5
1984	2,286	439.0	113.7	5,184.7
1985 [a]	2,496	580.0	120.0	6,400.0

[a] Estimated.

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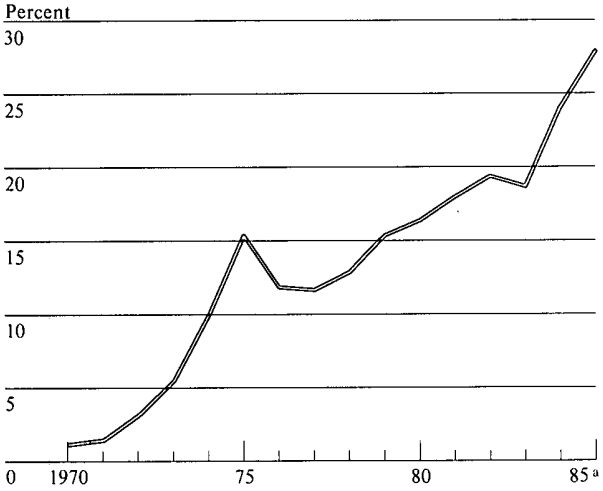
Figure 2
China: Crude Oil and Petroleum Product Exports as a Percent of Total Oil Production, 1970-85



[a] Estimated.

Beijing also has expanded its oil exports by undercutting OPEC prices. For example, Beijing's official June 1985 price for Daqing crude was $27.35 per barrel, about 50 cents below the price of comparable OPEC crudes. Moreover, China sold much of its crude oil at the spot market price of $25.80. China dropped its price to Japan for Daqing crude last June by 60 cents a barrel retroactive to April, cautioning its Japanese customers against disclosing this discount to avoid irritating other oil-producing countries before the July OPEC meeting. More recently, Beijing has been forced to drop its oil price below $20 per barrel to maintain its share of the weakening international market.

China has occasionally reduced the price of its oil to "friendship prices" for certain countries. For example, Thailand received oil at a discounted price during the 1979-80 oil crisis, and the Philippines for many years has received about 15 percent of its total oil needs from China at reduced prices and with deferred payment arrangements.

Seeking New Markets

Beijing also has intensively sought new markets to expand its crude oil exports. Beijing reportedly began direct sales to South Korea in 1984, and, during his July 1985 visit to the United States, Vice Premier Li Peng suggested to Vice President Bush that the United States should consider buying Chinese oil under a long-term arrangement. Party General Secretary Hu Yaobang signed a document while visiting Australia in April 1985 that inaugurated China's first shipment of Daqing crude to Australia. Last August, an article in one of China's leading economic journals even proposed that China take advantage of the recent downturn in the Soviet Union's crude oil production to increase exports to Eastern Europe.

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At the same time, Beijing has been encouraging countries holding trade surpluses with China to balance their trade by importing Chinese oil. In August 1984, for example, Chinese leaders made a strong pitch to a visiting economic delegation from Chile to reduce Chile's $80 million trade surplus through oil purchases. Chile later agreed to buy 730,000 barrels of Chinese crude, worth about $19 million.

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Prospects for Continued Export Growth: Pluses and Minuses

In our view, recent discoveries of oil on the periphery of onshore fields in China have considerably brightened Beijing's outlook for increased oil exports. These unexpectedly large finds have caused Beijing to raise its projection for 1990 crude oil production to 3 million b/d, a 5-percent-per-annum increase over 1984 production, which we believe is achievable. We believe Beijing could export as much as one-third of this output, based on our estimate that China will need almost 2 million b/d for domestic use by 1990.

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Table 2
Major Oil Exporters [a] and Producers, 1984

Exporters		Producers	
Country	*Thousand b/d*	Country	*Thousand b/d*
Saudi Arabia	3,760	USSR	12,415
USSR	3,420	United States	10,385
Mexico	1,600	Saudi Arabia	4,690
Iran	1,576	Mexico	3,010
Venezuela	1,362	United Kingdom	2,580
Nigeria	1,162	**China**	2,286
United Arab Emirates	973	Iran	2,195
Kuwait	955	Venezuela	1,875
Indonesia	949	Canada	1,555
Libya	947	Indonesia	1,440
Iraq	943	Nigeria	1,405
United Kingdom	770	Iraq	1,170
China	553	Libya	1,115
Norway	535	Algeria	990
Algeria	483	Kuwait	985

[a] Including petroleum products.

Significant new finds at Shengli and several other fields are the primary reasons for China's optimistic oil outlook. Beijing recently predicted that production at Shengli—after rising by 20 percent or more in each of the past two years—will increase by 1990 to 1 million b/d, double current production. Beijing has announced plans to invest 25 billion yuan ($7.8 billion) over the next five years to raise the field's production further. The Chinese predict that Shengli's Gudong field, discovered in 1984 and located at the mouth of the Yellow River, will produce over 150,000 b/d in 1987.

Beijing also has begun building more refineries to expand its production of petroleum products. It recently signed a $500 million joint venture agreement with a group of overseas Chinese to build a new refinery in Fujian Province capable of handling 60,000 b/d of crude oil. In January 1985,

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Growing Foreign Involvement in China's Onshore Oil Production

Beijing has opened its onshore oil industry to on-site foreign technical assistance over the past few years. Several US and French firms are doing extensive seismic surveys in Xinjiang Province in western China. Another US firm is helping the Chinese with directional drilling at Shengli, and a French firm has assisted the Chinese in developing enhanced recovery techniques at Daqing. Some of these projects are being financed by the World Bank. The prospect of additional Chinese oil for export is the primary incentive for foreign companies to explore at both China's offshore and onshore areas. Foreign firms have conducted extensive surveys off China's coast for oil, at minimal cost to Beijing.

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In March 1985, Beijing opened 1.83 million square kilometers in 10 southern provinces to oil exploration by foreign firms. This unprecedented action opened a largely unexplored area. Some Chinese officials have indicated Beijing will also open up northwestern China to foreign exploration during the next few years. Oil discovered inland may be more difficult to export than offshore oil because of logistic problems, but Beijing could conceivably provide foreign oil firms with oil from their existing coastal fields in exchange for exploration and development work inland.

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The search for oil, both onshore and offshore, has become the largest component of foreign investment in China. Foreign oil firms have already invested $1.7 billion, about 35 percent from the United States, and this figure will probably grow significantly as a result of onshore exploration that is beginning now.

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Important Customers for China's Oil

Japan. *Japan buys about 40 percent of China's crude oil exports, most of it under their Long-Term Trade Agreement (LTTA), which was renewed in January for 1986-90. China's crude oil exports were worth about $2.2 billion in 1985 and provided about 5 percent of Japan's oil needs. Several months of contentious bilateral negotiations ended in December with Japan agreeing to increase its annual minimum import commitment by 10 percent from 160,000 b/d to 176,000 b/d. This compromise balanced China's desire to expand exports to offset its large bilateral trade deficit (over $5 billion in 1985) with Japan's slack demand for oil. In addition, Japan has been recently buying about 60,000 b/d of Chinese crude on the spot market at favorable prices. In response to US and Chinese complaints about its nontariff barriers, Japan recently opened its market to foreign gasoline, and China sent the first shipment in January.*

United States. *During 1982-84, China exported about 25,000 b/d of leaded gasoline to the United States, worth an average of $400 million a year. Much of it was sold at discount prices at gasoline stations on the West Coast after it was blended to raise the octane level. Gasoline exports dropped to 15,000 b/d in the first half of 1985 as the demand for Chinese gasoline weakened in response to new US environmental regulations that reduced permissible lead-content levels. The Chinese rapidly expanded their crude oil exports to the United States in 1985, in part to replace the lost gasoline market. By mid-1985, crude oil exports to the United States were triple the 1984 volume.*

South Korea. *South Korea has been an attractive market for Chinese oil, especially because of its close proximity to China's oilfields. China has reportedly shipped crude oil directly to South Korea since 1980, using false bills of lading, and Japanese oil brokers have transshipped Chinese crude to South Korea via Japan. This trade reached a new stage in the fall of 1984 when, according to press reports, Beijing apparently made its first direct sale of crude oil to South Korea without resorting to false documents. Press accounts of the sale indicated that South Korean buyers had become dissatisfied with the 30- to 40-cent-per-barrel fees Japanese middlemen were charging to handle these transactions. Beijing also hopes to take advantage of Seoul's desire to reduce its dependency on Middle Eastern crude. We have no indication of any sales being made in 1985.* 25X1

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North Korea. *China has exported crude oil to North Korea for over a decade, providing as much as half of P'yongyang's needs. North Korea's proximity to China's major oilfields has made it possible to ship Chinese crude oil directly by pipeline to the Ponghwa refinery in northwestern North Korea.* 25X1

North Korea's 1984 trade protocol with China called for importing 30,000 b/d of crude oil. In October 1984, North Korea reportedly made an urgent request for another 730,000 barrels of crude to replace oil that Iran could no longer provide. 25X1

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Table 3
China's Oil Exports to the United States, 1980-85

	Crude Oil		Petroleum Products	
	Barrels per day	*Million US $*	*Barrels per day*	*Million US $*
1980	1,993	20	7,673	131
1981	0	0	16,858	319
1982	16,733	212	24,774	431
1983	7,239	249	25,136	384
1984	22,105	249	27,741	406
1985 [a]	73,902	351	18,010 [b]	102 [b]

[a] First half of 1985.
[b] Does not include light oils or kerosene.

Beijing also has announced plans to invest $200 million over the next six years to modernize its large refinery at Maoming in Guangdong Province. By 1990, China hopes to export 30,000 b/d of petroleum products from Maoming.

Oil terminals and pipelines in China's major ports are being expanded to accommodate additional exports. A $30 million project will add new oil facilities at the ports of Dalian, Qingdao, Nanjing, and Qinhuangdao. In May 1985, China signed a contract with a Canadian firm to help design a new 71-centimeter crude oil pipeline that will connect Shengli oilfield to the port of Tianjin. The new pipeline will have a capacity of 400,000 b/d, double the existing pipeline. At Dalian, officials are soliciting foreign bids for a $900,000 system to heat crude oil being pumped in or out of the port's storage tanks used for export.

Although we expect China's exports to grow through 1990, several factors combine to keep China from becoming a major player in the oil export market. Almost half of China's current supply of oil is produced at Daqing, a mature field in northeastern China where production may start declining in the

Table 4
China: Oil Output by Major Producing Areas

Thousand b/d

	Total	Daqing	Shengli	Huabei (Renqiu)	Liaohe	Other
1980	2,113	1,027	351	320	141	274
1981	2,024	1,035	322	244	138	285
1982	2,042	1,038	327	226	145	306
1983	2,121	1,040	376	211	122	372
1984	2,286	1,068	459	203	153	403
1985 [a]	2,496	1,106	540	206	180	464

[a] Field output is estimated.

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next few years. Enhanced recovery techniques, the discovery of a new pool of oil, and introduction of foreign technology helped production at Daqing to rise by 3 percent in 1985 to 1.10 million b/d. But US experts working at Daqing report that the Chinese have saturated Daqing with new wells, and this is likely to lead to faster depletion rates. In addition, we believe the water-cut ratio at many wells is in excess of 70 percent, a further indication of the onset of declining production.[1]

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Beijing will need to find large quantities of new oil in the coming years to replace Daqing, and the disappointing results of the offshore oil search have encouraged China to accelerate onshore exploration efforts. China is now pinning its hopes on largely unexplored areas in southern and western China, but the lack of a transportation infrastructure to move oil out of China's interior makes the potential for exports from these areas a long-term goal.

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[1] Water is frequently injected into older oilfields to force the remaining oil to the surface. Eventually the percentage of water being pumped out of the wells grows to significantly exceed the levels of crude oil being pumped, indicating the onset of declining production.

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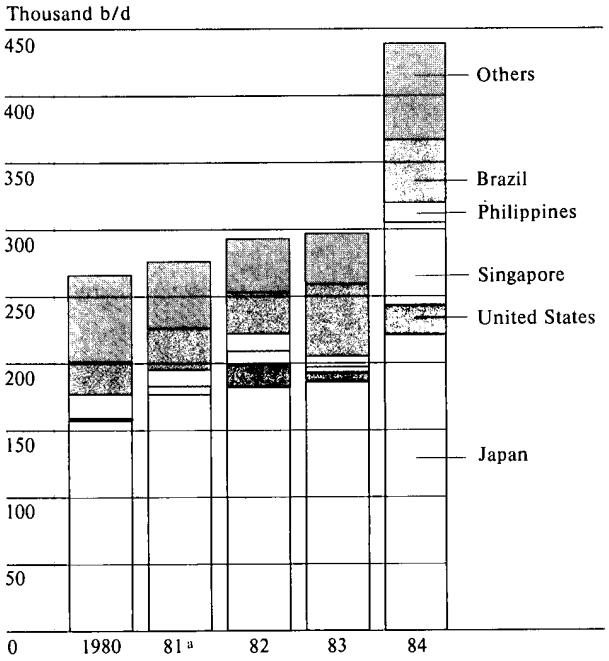
Figure 3
Major Importers of Chinese Crude Oil, 1980-84



[a] No US sales.

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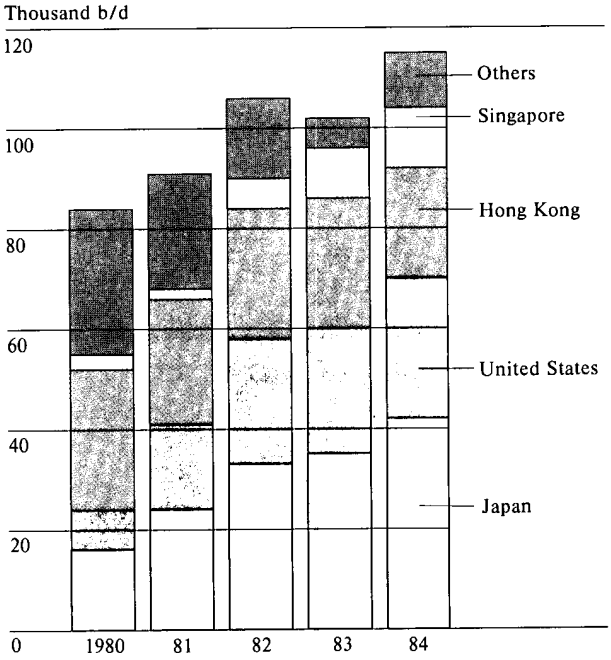
Figure 4
Major Importers of Chinese Petroleum Products, 1980-84



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In addition, the waxy and heavy quality of Chinese crude oil has made it difficult to export to countries lacking the necessary refining capabilities.[2] Beijing has tried to deal with this problem by increasing its exports of petroleum products, which also have a higher value than crude oil, but China's limited refining capacity has restrained this growth (see inset).

China's rapid economic growth has caused domestic consumption of oil to begin rising again, which also may constrain China's oil exports. We believe that China has already achieved many of the easy gains in oil conservation, although additional incentives such as increases in the domestic prices for crude oil and petroleum products are possible. The rapid growth in vehicular traffic in China could negate the conserva

[2] Some countries, such as Japan, burn Chinese crude directly as a fuel because of the refining difficulty.

tion efforts, but Beijing has, so far, been largely successful at rationing its domestic gasoline supply. several types of automobile fuel were unavailable in parts of China last summer because of the drive to increase exports.

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Implications for the Domestic Economy

The domestic shortage of crude oil and petroleum products resulting from the push for export growth will exacerbate China's transportation bottleneck and constrict economic growth. Large amounts of coal and other vital commodities already lie idle because of the shortage of rail capacity and the lack of vehicles and adequate roads. By 1990, even allowing for oil consumption to rise to 2 million b/d, supplies will remain tight, lowering the prospects of easing the transportation crunch despite the ongoing investment in infrastructure and the production of vehicles.

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Table 5 (*Billion US $*)
Estimated Chinese Annual Foreign Exchange Earnings From Crude Oil and Petroleum Product Exports: Scenarios

Exports (*barrels per day*)	Average Price per Barrel of Oil, 1990			
	15	20	25	30
500,000	2.87	3.83	4.79	5.75
750,000	4.31	5.75	7.19	8.62
1,000,000	5.75	7.66	9.58	11.50

Note: We have assumed that 20 percent of exports will be in petroleum products—worth about 25 percent more than crude—on the basis of China's recent product mix for oil exports.

Moreover, with lower world oil prices, we estimate China's earnings from petroleum exports could decline $1.6 billion from last year's earnings of nearly $6.4 billion.[3] With little chance of turning to alternative commodities to compensate for the expected drop in oil earnings, Beijing will need to slow its runaway imports to reverse the growing trade deficit. Restrictions are already in place on commodities that China can produce domestically, including such consumer durables as color televisions, refrigerators, radio cassettes, and motor vehicles. But Beijing will also need to cut deeper into its import shopping list. We believe these cuts will begin with capital equipment purchases for postponed or canceled government projects. We also expect Beijing will continue its efforts to slow down its overheated economy, which grew at an estimated 18 percent last year. But we also believe Beijing will continue to encounter problems slowing economic growth and, therefore, will achieve only moderate success in reducing industrial and capital equipment purchases. Consequently, the effect on US exports to China, more than one-third of which are machinery and transport equipment, will be marginal. Moreover, demand for raw materials and chemicals—which represent an additional 25 percent of US exports to China—should also be sustained.

[3] This assumes export volume at the 1985 level and an average price of $18 per barrel. Petroleum products—nearly 20 percent of oil-related export volume—earn approximately 25 percent more per barrel than crude.

Petroleum Products

China would like to increase the share of its exports of petroleum products, primarily because products sell at higher prices than crude. During the early 1980s, about one-fourth of oil-related exports were products. That share fell to one-fifth in 1984 and 1985, however, probably because of insufficient refining capacity. Even so, we estimate that China exported 120,000 b/d of petroleum products in 1985 worth about $1.3 billion.

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While China is expanding its processing capacity, it is taking bold measures to overcome its refinery shortage. Most notably, China has taken advantage of Singapore's excess refining capacity and ships as much as 100,000 b/d there for refining and reexport. The value of China's crude oil exports to Singapore jumped from $36 million in 1983 to $591 million in 1984. Singapore's Prime Minister Lee Kuan Yew visited Beijing in mid-September and won China's agreement to continue exporting Chinese crude oil at the rate of at least 60,000 b/d for each of the next three years.

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The uncertainties of the world oil market make it difficult to predict future foreign exchange earnings from oil. If the international price of oil remains low, Beijing will be forced to make further cuts in imports to reduce its trade deficit. We believe, however, that Beijing would be reluctant to reduce its oil exports even at international prices below $10 per barrel, primarily because oil exports are so crucial to foreign exchange earnings. At the extreme, we estimate that Beijing's earnings from oil exports in 1990 could range from $3 to $11 billion, depending on world oil prices and the amount of oil and products available for export (see table 5). We expect that earnings in the neighborhood of $6-9 billion are most likely.

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The International Side

China's growing oil exports will expand the supply of non-OPEC, non–Middle Eastern oil available at the market's minimum prices, although Chinese sales will remain too small to have a significant impact on world prices. China's oil exports currently amount to less than 3 percent of the world's trade in oil. Nonetheless, by 1990, China will probably have an especially strong influence in the East Asian oil market. Its sizable merchant fleet and proximity to countries with rapidly growing economies draw it to this expanding market. Indonesia will probably remain China's strongest regional competitor, but Beijing may be able to continue taking advantage of the mismanagement afflicting Indonesia's petroleum industry, as well as Jakarta's loyalty to OPEC, to capture more of the region's oil market.

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China will probably continue to appear conciliatory toward its OPEC competitors, most of which are countries with which Beijing is trying to improve relations, but is unlikely to let these efforts stand in the way of increased sales. For example, during a March 1985 visit to Venezuela, State Councilor Gu Mu publicly stated Beijing's support for OPEC's efforts to stabilize world oil prices; Gu cryptically added that China would take "active measures" to cooperate with the OPEC countries on prices. Yet a Chinese news analysis of the subsequent July OPEC meeting in Vienna described the cartel as being in a great predicament because it is losing its reins on oil prices as non-OPEC countries increase production. More recently, Beijing claimed in early February that China would maintain 1986 exports at last year's level to support OPEC attempts to revive oil prices. However, we believe that China will continue to press exports and that the statement was intended more to curry favor in the Middle East.

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China will also continue to try to expand the sale of oil and oil products to the United States, but the relatively low volume will have little direct effect on the large US market. In fact, leaded gasoline sales to the United States will continue to decline, although exports of other products could increase.

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More important than Chinese sales to US markets, however, will be the substantial opportunities for US firms aiding China in the search for more oil. US firms have been among the largest participants in China's search for oil both offshore and onshore. New opportunities for US oil companies to invest in China have been created by last year's opening of areas in 10 southern provinces to foreign exploration and development. Both at these sites as well as offshore, US companies will earn substantial fees for providing equipment and services, and could earn oil as well if product-sharing arrangements apply to new discoveries.

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