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PIRINC has prepared the enclosed report entitled, *How Big Are the Oil Majors – Now and After the Mega-Mergers?*

This report first focuses on two different measures of size, share of refining and share of production in a U.S. and world context for the world's seven largest private, (pre-merger) major oil companies. The analysis indicates that refining is highly competitive, especially when considered on a global basis where their combined share of world refinery runs reached only 25% in 1997. Their share of U.S. refining is higher, 43%, but has been declining, a process which is continuing. The companies' share is much smaller when it comes to oil production, accounting collectively for only about 12% of the world total.

The report then turns to the U.S. gasoline market and in that context the consummated BP-Amoco and pending Exxon-Mobil mergers. If both mergers take place, the national data still indicate a market falling below the Federal Trade Commission threshold for deeming a market even moderately concentrated. At the local level, areas of relatively high BP-Amoco market shares tend not to overlap with those of Exxon-Mobil. In some states where Exxon-Mobil shares are significant population density and availability of service stations are exceptionally high, making it difficult to isolate markets for purposes of determining market concentration.

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Introduction and Summary

In 1911, the U.S. Supreme Court rejected the appeal of the Standard Oil Company of New Jersey and affirmed a lower court decree ordering its breakup into 34 independent entities, many of which became very large companies in their own right. These days a number have been making news as current and potential partners in mergers. The largest announced mergers are those of BP (the acquirer of Standard Oil of Ohio, the original company founded by John D. Rockefeller) and Amoco (Standard Oil of Indiana), and the proposed merger of Exxon, formerly Standard Oil of New Jersey, and Mobil, the former Standard Oil of New York. Some press commentaries have referred to these proposed mergers as "Rockefeller's Revenge." But these companies, while large in terms of sales and assets, are operating in a very different world from the era of the original Standard Oil trust. Since 1911, the oil industry has grown spectacularly in size and number of players with most of the growth coming outside the United States. World oil production has grown from less than 1 MMB/D in 1911 to about 74 MMB/D in 1997. The U.S. share of world oil production has fallen from about two-thirds in 1911 to only about 12% of the world total today. As of 1997, no individual company accounts for more than about 7% of U.S. or world refining, although in absolute volumes, 7% of world refining today amounts to over 4 times the world total in 1911.

This report first focuses on two different measures of size, share of refining and share of production in a U.S. and world context for the world's seven largest private, (pre-merger) major oil companies, Exxon, Mobil, BP, Amoco, Texaco, Chevron and Royal Dutch Shell. The analysis indicates that refining is highly competitive, especially when considered on a global basis where their combined share of world refinery runs reached only 25% in 1997. Their share of U.S. refining is higher, 43%, but has been declining, a process which is continuing. The companies' share in production is much smaller, accounting collectively for only about 12% of the world total.

The report then turns to the area of greatest public sensitivity, the U.S. gasoline market, and in that context, the FTC-approved BP-Amoco and the still pending Exxon-Mobil mergers. The pre-merger national market share data for the seven companies and others indicate a market falling well below the Federal Trade Commission threshold for deeming a market even moderately concentrated. If both mergers take place, the national market would still not exceed the moderate concentration threshold. However, the FTC looks at specific local, not national, market conditions. Thus to satisfy FTC antitrust concerns regarding local wholesale gasoline markets, BP and Amoco have agreed to divest nine terminals and to free up more than 1,600 gas stations in 30 specified markets located in seven states.¹ There are a number of states where the Exxon-Mobil market shares appear at least as high as the BP-Amoco shares in the seven states where the FTC expressed competitive concerns. But as this report shows, with one exception, they don't overlap. Moreover, in some states where Exxon-Mobil market shares are significant,

¹ The number of outright divestitures is much smaller, 134. The balance is an estimate based on the number of wholesale customers, both jobbers and open dealers, who are to be given the option of canceling their franchise and supply agreements as well as a financial incentive to do so.

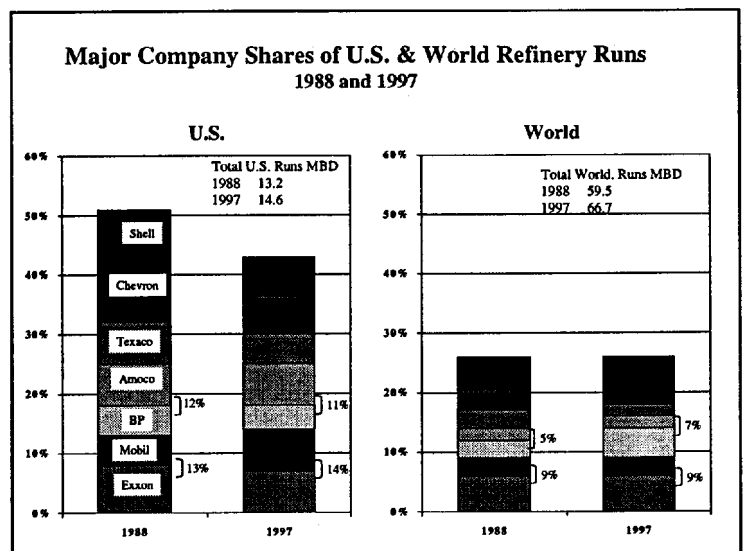
population density, and availability of service stations are exceptionally high, making it easier for customers to find competing stations and therefore more difficult to specify isolated local markets for purposes of determining market concentration.

Shares of U.S. & World Refinery Runs

The chart below shows shares of U.S. and world refinery runs of the seven companies in 1988 and in 1997. The panel on the left shows the company shares of total U.S. runs. The seven collectively in 1988 accounted for just over 50% of U.S. refinery runs. In 1997, their share was significantly lower, 43%. The combined shares of BP and Amoco as well as Exxon and Mobil were relatively constant, with BP-Amoco falling slightly from 12% to 11%, and Exxon-Mobil rising slightly from 13% to 14%². Both pairs would have shares larger than that of any of the other individual companies. However, while the Federal Trade Commission has approved the BP-Amoco merger without requiring divestiture of any refinery, it's not clear the FTC will follow the same path in the case of Exxon-Mobil. In 1998, Shell and Texaco combined their western and mid-west refining operations in the joint venture, Equilon, and combined the Shell and Star (Texaco and Saudi Aramco) Gulf Coast and Eastern interests in the joint venture, Motiva. In 1997, the combined U.S. Shell-Texaco refinery runs amounted to 12% of total U.S. runs, similar to the combined BP-Amoco and Exxon-Mobil runs.³

As shown on the right, the seven majors together account for just over 25% of world refinery runs, well below their U.S. shares. Individually, shares are far smaller on a world basis for Chevron, Texaco, and Amoco, about the same for Exxon and Shell, and somewhat larger for BP. Neither the BP-Amoco pairing, nor Exxon-Mobil reach a 10% share on a world basis.

The chart suggests that certainly on a global basis, refining is highly competitive, a condition that would



² In 1998, Mobil sold its 155,000 barrel/day refinery in Paulsboro, New Jersey to Valero Energy Corporation. The sale reduces the combined Exxon-Mobil share of U.S. refining by about 1.5 percentage points below the 14% figure for 1997.

³ The combined 1997 refining runs of Shell and Texaco have been modified in 1998. As part of the 1998 consent agreement with the Federal Trade Commission, Shell had to divest its Anacortes refinery, which accounted for about 5% of the refining capacity of the two joint ventures. (See also footnote 9).

not change if Exxon and Mobil, (as well as BP and Amoco), kept their refineries after a merger.⁴ The U.S. figures are higher. However, it should be kept in mind that oil products are traded in a global market. In 1998, the U.S. imported about 2 MMB/D of products (including imports from the U.S. Virgin Islands), over 10% of total consumption and about the same volume as the combined BP-Amoco refinery runs. There are also other very large international players besides the seven discussed here. These include Saudi Aramco and Petroleos de Venezuela, both of whom have global refining capacities larger than BP's, including U.S. ventures.

Texas and Louisiana

Within the U.S., the Gulf Coast has the greatest concentration of refining capacity and thus the Federal Trade Commission is likely to consider the impact of any mergers on refining in that area. The table on the right shows shares of crude refining capacity for the seven majors in Texas and Louisiana as of January 1, 1999. The two states' total refining capacity is 7.0 MMB/D.

Exxon and Mobil have shares of nearly 13% and 8% respectively. BP and Amoco have a combined share of 10%, Motiva, the joint venture between Texaco, Saudi Aramco and Shell also has a share of 10%. The Shell figure of 5% includes the Deer Park refinery, now a joint venture with Pemex, and a 40 MB/D refinery in Louisiana owned by Shell Chemical. Chevron has a modest

1% share. The seven companies altogether account for somewhat less than half of total crude refining capacity in the two states. A number of the companies in the "Others" category have refining capacities in the region comparable to most of the 7 majors. These include companies such as Citgo, Conoco, Crown, Clark, Koch, Marathon, etc.⁵

Share of Crude Refining Capacity In Texas & Louisiana – 1/1/99

	<u>%</u>
Exxon	13
Mobil	7
BP	4
Amoco	6
Motiva*	10
Shell**	5
Chevron	1
Others	54

* Joint venture between Texaco, Shell, and Saudi Aramco

** includes all of Deer Park Shell-Pemex interest.

Source: *Oil & Gas Journal 1998 Worldwide Refining Survey*

Shares of U.S. & World Oil Production

We next focus on the seven companies' share of oil production in the U.S. and the rest of the world. For the seven as a whole, their share of U.S. production fell from 40% in 1988

⁴ Exxon/Mobil's share of refining capacity is nearly 13% in both the U.S. and Europe, 9% in Asia Pacific and less than 3% elsewhere.

⁵ It should be kept in mind that a substantial amount of products refined at the U.S. Gulf Coast is consumed elsewhere. For example, the Gulf Coast is the single largest supply source of products to the very competitively priced U.S. East Coast.


to 34% in 1997. Overall U.S. oil production fell over this period by 1.5 MMB/D, so production volumes by this group fell even faster. The declines in share and volume were most significant for BP and Exxon, major producers of Alaskan oil, which has been in substantial decline. Alaskan oil production in 1988 was 2 MMB/D. In 1997, production had fallen to 1.3. Both BP-Amoco and Exxon-Mobil have U.S. production shares of 10% for 1997, down from 13% and 12% shares respectively in 1988.

In the rest of the world the seven companies' production shares are much smaller than in the U.S. In 1997, they produced altogether 5.8 MMB/D, equal to 9% of total non-U.S. oil production. These shares are far too small for any concern about ability to influence oil prices. Indeed, these days, OPEC itself seems to have minimal influence on oil prices despite a 40% share of world production and a two-thirds share of world reserves.⁶

Since crude oil is a globally traded commodity, with imports of crude just about equal to U.S. crude and NGL production in 1998, the world shares are more relevant for competitive judgements than the U.S. shares of the different companies. The low shares suggest no competitive issues in this area.

Shares of the U.S. Gasoline Market

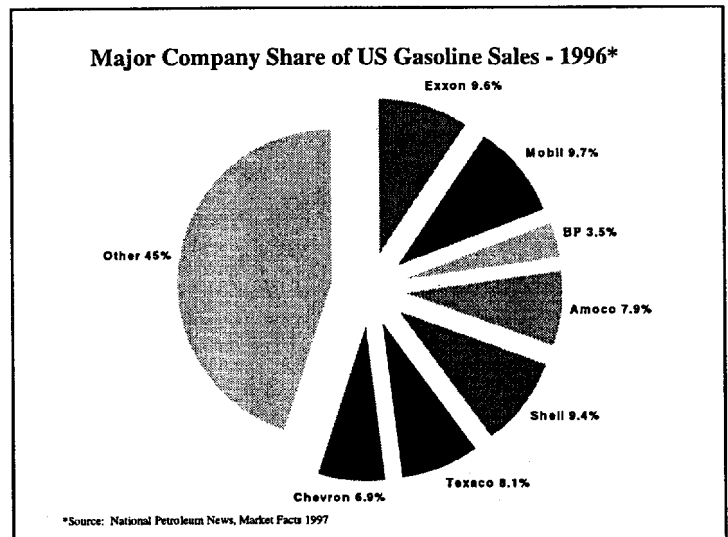
The public's main contact with the oil industry is at the gasoline pump, not the oil fields or refineries. As a result, public and government concerns regarding proposed mergers tend to focus on implications for the gasoline market. The consent agreement between the Federal Trade Commission and BP and Amoco announced at the end of 1998 requires the two companies to divest 134 gas stations and to allow branded resellers supplying over 1,600 gas stations to cancel existing supply contracts without penalty.⁷

MAJOR COMPANIES SHARE OF OIL PRODUCTION 			
	U.S.		World excl. U.S.
	1997 %	1988 %	1997 %
Exxon	6.8	7.8	1.5
BP	6.7	8.8	1.1
Shell	5.9	5.4	2.8
Texaco	4.8	5.4	0.8
Chevron	4.1	5.0	1.1
Mobil	2.9	3.0	1.1
Amoco	2.8	4.2	0.5
Total	34.0	40.0	8.9
Total Production MMB/D	8.27	9.76	65.0

⁶ The low shares are not surprising given the large share of world oil production concentrated in OPEC and other producing countries where state oil companies predominate. The world's largest companies in terms of oil production are, in descending order, the state-owned companies of Saudi Arabia, Iran, Mexico, China, and Venezuela.

⁷ The agreement also requires the sale of nine terminals.

The chart on the right focuses on the U.S. gasoline market, showing for each of the seven companies, their share of U.S. gasoline sales in 1996.⁸ Together, the seven companies accounted for 55% of U.S. sales, with individual company shares ranging from 3.5% for BP to slightly under 10% for Exxon and Mobil. Sharing the 45% of sales accounted for by the “Other” category are some large players in the market, including Citgo (9.2%), owned by the Venezuelan national oil company PDVSA, Marathon (5.8%) and Phillips (4.1%).



Since 1996, there have been some significant changes in the market. Among the majors, Texaco and Shell have pooled their downstream interests through joint ventures.⁹ As of the end of 1998, BP and Amoco are free to proceed with their merger, subject to the terms of the consent agreement discussed above. The 1996 gasoline market shares of Exxon and Mobil approach 20%, much larger than the combined 11.4% 1996 share of BP and Amoco and somewhat larger than the 17.5% share of Shell and Texaco.

The changes underway in the U.S. gasoline market are substantial but they don't necessarily mean the gasoline business is becoming concentrated to the point of impairing competition. In measuring market concentration, the Federal Trade Commission relies on what is called the Herfindahl-Hirschman Index, calculated by summing the squares of the individual market shares of all participants in the market. Under Section 1.51 of the Horizontal Merger Guidelines of the Federal Trade Commission and the Department of Justice, index levels exceeding 1,800 are viewed as “highly concentrated” while levels between 1,000 and 1,800 are considered to be “moderately concentrated.”

A Herfindahl-Hirschman Index can be calculated for the 1996 gasoline market, using the market share percentages for the seven companies shown in the chart plus the shares of Citgo, Marathon and Phillips. A simplifying and upward biased assumption is made that the remaining 26% of the market is divided among 13 other participants each having a

⁸ There are not many public sources for market share data. In addition, the data that does exist is neither comparable or consistent with each other. Some published sources for example suggest a lower market share for Exxon and Mobil (7% each) than that illustrated above. We've conservatively chosen the higher market share data because even here the data supports the conclusion that this is a very competitive market.

⁹ The Federal Trade Commission gave final approval to the Shell-Texaco joint ventures in April, 1998, after requiring divestitures of gasoline stations in San Diego and Oahu and divestiture of Shell's Anacortes refinery. The refinery is one of the few sources of CARB gasoline outside California. Dealers and jobbers in the area associated with the refinery were to be allowed to affiliate with the new refinery owner.

2% share of the market. If each company's 1996 share is treated separately, the resulting index value is 650, well below the "moderately concentrated" threshold. If the index is calculated using combined shares for Shell-Texaco, BP-Amoco, and Exxon-Mobil, it reaches a value of 991, higher than before, but still below the "moderately concentrated" threshold. The actual figure would be lower as a result of the divestitures of Shell, Texaco, BP, and Amoco assets that were required under their consent agreements---and the prospect of divestitures as a condition of any Exxon-Mobil merger. Thus, there appears to be no evidence at a national level that the market is becoming less competitive.

Specifying the Market

As demonstrated again in its actions regarding the BP-Amoco merger, the Federal Trade Commission focuses on local rather than national market conditions. The Commission required divestiture of gasoline stations and/or cancellation of supply agreements in 30 specified markets. These included 29 metropolitan areas, plus one city and three contiguous counties in Mississippi.

In general, these Commission-specified markets tended to be small. In 14 of the 30 markets, the population was below 250,000, the U.S. Office of Management and Budget definition of a large metropolitan area. Only 5 metropolitan area markets had populations above 1 million: Raleigh, North Carolina, Memphis, Tennessee, Charlotte, North Carolina, Cleveland, Ohio, and Pittsburgh, Pennsylvania.

Seven states with multiple specified markets account for 26 of the 30 locations where gasoline station divestiture or cancellation of supply agreements were required.¹⁰ The top half of the table below focuses, on these seven states. It shows for each state the number of specified markets, the percent of stations within the states branded by BP-Amoco and Exxon-Mobil as of 1996, population per square mile of land area, and the total number of outlets per 100 square miles. The lower half of the table focuses on nine states where Exxon-Mobil have branded station shares comparable to the BP-Amoco shares shown in the top half.

In the seven states at the top of the table, the BP-Amoco branded stations accounted for between 15% and 22% of the total gasoline outlets. In the same states, the Exxon-Mobil shares of branded stations were much lower, ranging from near zero in Ohio to 9% in North and South Carolina. These disparate figures suggest little market overlap between the two pairs of companies in these states and, presumably, few problems of market concentration if Exxon and Mobil combine, beyond those posed by the BP-Amoco merger. Thus, there is apparently no significant market overlap between the two combines.

¹⁰ The remaining 4 are: Cumberland, Maryland (population 101,000), Charlottesville, Virginia (population 131,000), Tallahassee, Florida (population 259,000) and Pittsburgh, Pennsylvania (population 2.4 million).

The lower half of the table shows 9 states, all in the Northeast, where the Exxon-Mobil shares of branded stations ranged from 15 to 27%. With the exception of one state, Pennsylvania, the BP-Amoco shares tended to be low, indeed zero in 5 of them. Thus, apart from Pennsylvania, the BP-Amoco merger should have little or no impact on determinations of market concentration problems associated with the proposed Exxon-Mobil merger.¹¹

	No. of FTC Specified Markets	% of Stations BP-Amoco	Branded by: Exxon-Mobil	Population per Sq. Mile	Gasoline Outlets per 100 Sq. Miles
North Carolina	6	19	9	148	18
Alabama	4	16	5	84	11
Georgia	4	20	4.5	124	13
South Carolina	4	18	9	122	14
Ohio	3	15	0.5	272	15
Tennessee	3	22	8	130	13
Mississippi	2	15.5	4	57	8
States with Comparable Exxon-Mobil Branded Station Shares					
Connecticut		2	18.5	676	37
Maine		0	21	40	5
Massachusetts		0	22	775	33
New Hampshire		0	21	63	11
Rhode Island		0	15	947	52
Vermont		0	27	63	8
New Jersey		7.5	18.5	1,071	61
New York		5	22.5	384	14
Pennsylvania	1	12.5	17	269	12
Note: U.S. ex-Alaska Average				89	6

Number of branded stations and total outlets as reported in NPN Market Facts, 1997. Population statistics from the U.S. Census Bureau estimates for mid-1995.

The demographic figures shown in the table suggest a complication in specifying markets for assessing the competitive impact of an Exxon-Mobil merger. In 4 states where the Exxon-Mobil shares are high, Connecticut, Massachusetts, Rhode Island, and New Jersey, population densities are far higher than in any of the seven states where the Federal Trade Commission is requiring the most extensive shedding of retail assets. So too gasoline outlet densities as measured by outlets per 100 square miles. In the most extreme comparison, New Jersey versus Mississippi, New Jersey population density is nineteen times higher, and gas station density 7 times higher, than in Mississippi.

Where population density is high, distances short, and gas stations plentiful, it becomes much more difficult to specify individual, isolated, markets to test for market concentration. No doubt, there are towns (with populations as large as some of the markets specified in the BP-Mobil merger) in New Jersey where Exxon-Mobil market shares are extremely high. But in many such cases there will be readily accessible

¹¹ History plays a significant role in these results. The 1911 break-up of the Standard Oil Trust resulted in the establishment of separate, geographically-based entities including, in the eastern part of the country, Standard Oil of New Jersey (Exxon) and Standard Oil of New York (Mobil) and in the mid-west, Standard Oil of Ohio (acquired by BP) and Standard Oil of Indiana (Amoco).

competitors in adjacent neighboring towns and any specification of a market should take such considerations into account.

Concluding Notes

Oil industry restructuring had been going on for some time before 1998 as the industry coped with stagnant markets and low returns. From 1990 through 1997, the largest U.S. companies (defined as the 24 largest U.S. producing companies in 1996 required to report financial and operating data under the Federal Reporting System) earned an average return on their U.S. petroleum investments of only 6.5%. On their refining and marketing investments, the average return was only about 3%. While 1997 was the best year of the decade to date with returns on total U.S. petroleum investment of about 10% and returns for refining and marketing of nearly 7%, last year produced a sharp turn for the worse. In 1998, the industry experienced declining crude prices, and after an initial advance, weakening refining margins. For the third quarter of 1998, Department of Energy figures for the major companies show declines in net income versus the third quarter of 1997 of 62% from U.S. oil and gas production and 23% from domestic refining and marketing.

Since companies can't control the price of crude or the prices of products they sell, they can only respond to difficult market conditions by acting on what they do control, their costs. Last year simply intensified pressures on the industry to move faster. Even the largest companies could no longer consider themselves exempt.