HORIZONTAL INTEGRATION AND DIVERSIFICATION

IN THE PETROLEUM INDUSTRY

by

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In the period from the Civil War to 1973 real prices of petroleum products, natural gas, and electricity declined. At the same time, consumption generally grew at exponential rates for the century long era. In terms of conventional economic criteria, the industry performed well during this Growth Era. Rising consumption and declining prices were associated with profit levels which were normal for U. S. industry.

At the same time, petroleum industry structure has taken forms which are unique in many ways. Data on national concentration show that energy sectors are less concentrated than other industries. However, economies of scale and cooperative activities between oil companies generally render irrelevant the usual concepts of competition[1/].

During the Growth Era, industry structure was generally of little public interest. With the exception of the Standard Oil Trust dissolution in 1911 and the Temporary National Economic Committee investigation before World War II, petroleum industry structure was left unnoticed and undisturbed. Certainly the productivity, low prices, and high consumption levels of the recent past made such inquiry seem of limited interest to most Americans.

The changing international system since 1973 has obviously lessened the relative importance of the very largest U. S. oil companies. The weaker position of U. S. companies is reflected within U. S. markets: Shell, the largest U. S. gasoline retailer in 1978, is a subsidiary of the Royal Dutch/Shell group of companies. Standard of Ohio, a subsidiary of British Petroleum and the British Government, is the most rapidly growing U. S. producer.

Preceding and during the decline in U. S. oil and gas production in the 1970's[2/], major oil companies developed significant positions in coal and nuclear fuel. In the late 1970's, movement into solar energy is taking place, and so is expansion into non-energy sectors.

In 1978 the revenues of the 33 largest U. S. oil companies matched U. S. Federal budget receipts at $283 billion. For 1979, the current increases in petroleum prices clearly indicate these companies' revenues will surpass Federal budget revenues.

The legislation being considered would prohibit new major acquisitions by oil companies of properties or corporations in other sectors. The prohibition would apply to solar energy, coal, and nuclear fuel as well as non-energy business.

This analysis and discussion describes the present position of petroleum companies in these economic sectors, and offers my conclusions about the desirability and efficacy of the legislation.

Major Petroleum Companies

Tables 1, 2, and 3 show 20 major U. S. oil companies ranked by revenues for 1978. S.1246 would affect 16 major companies whose 1976 production exceeded 35 million barrels. Ashland, Standard of Ohio (Sohio), Occidental, and Tenneco would be excluded.

In Table 1, Sohio shows a 22% after-tax return on stock holder's equity. Sohio's funds from operations were $1.1 billion in 1978 and will be considerably higher this year. Because S.1246 is based upon 1976 production, and Sohio did not begin Alaskan production until 1977, Sohio is not affected by the bill.

In Table 2, Sohio is second only to Exxon in domestic production. Because of its Alaskan holdings, Sohio may become the country's largest domestic crude oil producer and earn the highest profit rate, yet would continue to be exempt from the proposed legislation.

Table 1. Major Oil Companies: Economics, 1978

Company	Revenue ($ billion)	Assets ($ billion)	Employees (thousand)	Net income ($ million)	Stockholders' equity ($ million)	Net income (as a % of stock. eq.)
1. Exxon	60.335	41.531	130	2,763	20,229	13.7
2. Mobil	34.736	22.611	208	1,126	8,910	12.6
3. Texaco	28.608	20.249	69	853	9,463	9.0
4. Socal	23.232	16.761	38	1,106	8,231	13.4
5. Gulf	18.069	15.036	58	791	7,757	10.2
6. Standard/Ind.	14.961	14.109	47	1,076	7,146	15.1
7. Arco	12.298	12.060	51	804	5,508	14.6
8. Shell	11.063	10.453	35	814	6,106	13.3
9. Continental	9.455	7.455	43	451	3,148	14.3
10. Tenneco*	8.762	10.134	104	466	3,535	13.2
11. Sun	7.428	5.498	34	365	2,948	12.4
12. Phillips	6.998	6.935	30	711	3,636	19.5
13. Occidental*	6.253	4.609	33	7	1,267	0.5
14. Union/Calif.	5.955	5.525	16	382	2,655	14.4
15. Standard/Ohio*	5.198	8.326	24	450	2,041	22.1
16. Ashland*	5.167	2.886	32	245	1,150	21.3
17. Amerada Hess	4.701	3.435	8	142	1,392	10.2
18. Cities Service	4.661	4.005	18	118	1,971	6.0
19. Marathon	4.509	3.758	13	225	1,448	15.5
20. Getty	3.515	4.718	14	328	2,960	11.1
Totals	275.904	220.094	1,005	13,223	101,501	13.1

Note: For sources of, and comments on, this Table, see p. 6.

Asterisk denotes companies not affected by S.1246.

Table 2. Major Oil Companies: Petroleum, 1978

Company	Crude Oil & Liquids Production (million barrels) U.S.	Crude Oil & Liquids Production (million barrels) Worldwide	Refining (million barrels) U.S.	Refining (million barrels) Worldwide	Petroleum Sales (million barrels) U.S.	Petroleum Sales (million barrels) Worldwide
1. Exxon	312	1,655	521	1,616	634	1,967
2. Mobil	117	773	288	753	309	867
3. Texaco	187	1,245	364	1,018	457	1,181
4. Socal	128	1,201	410	805	454	896
5. Gulf	146	581	308	637	302	614
6. Standard/Ind.	191	377	407	469	423	500
7. Arco	192	235	298	298	267	303
8. Shell	181	188	391	391	402	402
9. Continental	60	171	126	161	156	234
10. Tenneco*	34	36	32	32	55	55
11. Sun	69	98	227	227	250	250
12. Phillips	95	162	110	110	176	188
13. Occidental*	3	119	0	5	<1	19
14. Union/Calif.	73	114	157	157	167	167
15. Standard/Ohio*	193	195	155	155	156	156
16. Ashland*	16	16	129	129	179	179
17. Amerada Hess	34	65	214	214	234	234
18. Cities Service	66	76	94	94	113	113
19. Marathon	65	141	182	206	197	224
20. Getty	100	162	86	103	94	110
Totals, major companies	2,262	7,610	4,499	7,580	5,025	8,659
1978 U.S. Total	3,163		5,381		6,838	
Majors, % of U.S. Total:	72%		84%		74%	

Note: For sources of, and comments on, this Table, see p. 6.

Asterisk denotes companies not affected by S.1246.

Table 3. Major Oil Companies: Involvement in Natural Gas, Coal, Nuclear Fuel, and Solar Energy, 1978

Company	Natural Gas Production (billions of cubic feet) U.S.	Worldwide	U.S. Coal Production (millions of tons)	Uranium; nuclear fuel	Solar	Major non-energy business
1. Exxon	1,587.0	3,784.3	5.200	x	x	
2. Mobil	844.2	1,193.6	x	x	x	x
3. Texaco	1,325.3	1,421.3	x	x	--	
4. Socal	517.6	624.9	x	x	x	
5. Gulf	687.0	790.8	9.0	x	--	
6. Standard/Ind.	889.1	1,191.1	x	x	x	
7. Arco	500.1	553.8	1.982	x	x	
8. Shell	680.0	680.0	2.800	x	x	
9. Continental	317.2	549.0	37.200	x	x	
10. Tenneco*	400.5	410.3	--	--	--	x
11. Sun	427.1	427.1	2.887	x	--	
12. Phillips	412.5	565.4	x	x	--	
13. Occidental*	14.6	20.4	13.7	--	--	
14. Union/Calif.	438.4	457.9	--	x	--	
15. Standard/Ohio*	30.4	30.4	7.773	--	--	
16. Ashland*	98.5	98.5	17.3	--	--	
17. Amerada Hess	100.0	215.6	--	--	--	
18. Cities Servies	315.7	328.2	--	--	--	
19. Marathon	149.1	155.1	x	x	--	
20. Getty	283.6	284.6	x	x	--	
Totals	10,017.9	13,782.3				

Note: For sources of, and comments on, this Table, see p. 6.

Asterisk denotes companies not affected by S.1246.

Notes on Tables 1, 2, and 3

Sources: Company Annual Reports and Financial Reports; Fortune Directory (7 May 1979), and Oil and Gas Journal (14 May 1979). Sources sometimes differ on definitions, interpretations, and amounts. Where possible, subsidiary data is included in parent totals.

Table 1

Revenue excludes excise taxes but includes other tax liabilities. Net income includes extraordinary items such as property sales. Data are generally worldwide operations, except for Shell and Standard of Ohio which are U.S. subsidiary affiliates of foreign oil companies.* Ashland's fiscal year begins October 1.

Table 2

Production data combines crude oil, condensate, and natural gas liquids. Production is usually on a net ownership basis, excluding royalty oil and oil owned by some other company. However, it includes oil received under agreements with foreign governments.

Refining data, where possible, is for oil refined by the company.

The sales data often include petrochemicals.

Important individual exceptions are: Socal worldwide production data is gross, not net, and AMAX production is excluded; Mobil sales exclude Montgomery Wards data; Sun includes Canadian production in U.S. total; and Ashland and Union/California combine U.S. and foreign data in most categories.

Table 3

Sun combines its Canadian and U.S. gas production data.

For coal, "x" means reserve holdings or exploration, but no reported production for 1978. For uranium and nuclear fuel, "x" means mining, milling, reserves, exploration, or fuel fabrication. For solar energy, "x" means sales or research activity.

Mobil's and Tenneco's non-energy business is discussed in the text; they are the only majors who earn more than one-fifth of their revenues in non-energy activities.

*Standard of Ohio and Shell

These two companies are U.S. subsidiaries of two major international firms, British Petroleum and the Royal Dutch Petroleum/Shell group of companies. The data for U.S. subsidiaries is for their operations alone, and excludes the parents' international operations.

Table 3 summarizes certain data on energy activities and non-energy business. Major oil companies are also major gas producers, and experience major growth in funds received in 1979 from both natural gas and petroleum price increases.

Sixteen of the 20 majors (13 of the S.1246 companies) have coal interests. Fourteen of the majors (and 10 of the S.1246 companies) have nuclear fuel interests. In early 1979, seven of the 10 largest companies had solar operations or research activity.

Only two major companies had non-energy business which constituted more than one-fifth of their revenue.

Apparently, the bill would leave unaffected these positions already held by oil companies.

Nuclear Power

From 1974 to 1978, petroleum companies increased their ownership of uranium milling capacity, holding 52.4% of that capacity on January 1 last year. Table 4 shows ownership patterns in this stage of the nuclear fuel cycle.

Four companies (Anaconda-Atlantic Richfield, Exxon, Kerr-McGee Nuclear, Mobil Oil) and two partnerships (Continental Oil-Pioneer Corporation, and Sohio-Reserve Oil and Gas) constitute the oil industry segment of the uranium milling industry. Anaconda-Atlantic Richfield and Kerr-McGee, with a combined milling capacity of 13,000 TPD (tons per day) are by far the largest owners, with 33.2 percent of total milling capacity for the country. Exxon (3,000 TPD) and Conoco-Pioneer (2,900 TPD) also own considerable capacity. Sohio-Reserve, with a 50%-50% partnership, has a 1,660 TPD capacity. The Getty Oil-Kerr-McGee partnership reported in the 1974 figures was inoperative in early 1978. It may be significant

Table 4. Uranium Milling Capacity and Affiliation with Oil Companies 1973 - 1978

	1974			1978		
Industry Segment	Gross capa.	Net capa.	Net % U.S.	Gross capa.	Net capa.	Net % U.S.
A. Oil Company ownership:						
Anaconda (ARCO)	3000	3000		6000	6000	
Conoco-Pioneer		1115		2900	2900	
		635				
Exxon	2000	2000		3000	3000	
Kerr-McGee	7000	7000		7000	7000	
Getty-Kerr-McGee	1500	750		-	-	
		750				
Sohio-Reserve	1100	550		1660	830	
		550			830	
TOTAL		12250	40.1		20560	52.4
B. Milling capacity owned by companies having management affiliations with oil companies:						
Cotter (Commonwealth Ed.)	450	450		450	450	
Federal-American Partners)	950	950		950	950	
Homestake Mining	3500	1050		-	-	
Rio-Algom (Rio-Tinto Zinc)	500	500		700	700	
Union Carbide	2300	2300		2500	2500	
Western Nuclear (Phelps Dodge)	1200	1200		1700	1700	
TOTAL		8000	26.2		6300	16.1
C. Milling capacity owned by companies with subsidiary oil production:						
Atlas	1500	1500		1100	1100	
Dawn Mining (Newmont)	500	500		400	400	
Lucky Mc Uranium (G.E.)	2400	2400		3450	3450	
Rocky Mountain Energy (Union Pacific-S.C.E.)	-	-		1000	1000	
Susquehanna-Western	2000	2000		-	-	
United Nuclear	3500	2450		5380	3000	
U.N.C.-Homestake Partners	-	-		3400	2380	
TOTAL		8850	29.0		12350	31.5
TOTAL: U.S. Milling Capacity		30550	100.0%		39210	100.0%

Sources: See footnote 3. Table prepared by Byron Estes.

to add that every oil company with uranium mill ownership also had subsidiary coal production.

Companies with a management affiliation with oil companies represented 16.1 percent of the total U.S. milling capacity in 1978, or 6,300 TPD. This compares to the 8,000 TPD capacity reported in 1974, or a drop of 21.3 percent over five years. This is a decrease of 10.1 percent from the 26.2 percent share of the market reported by this segment in 1974. This reflects, primarily, the acquisition of Anaconda Company by Atlantic-Richfield. Union Carbide Corporation was the leading producer in this segment of the industry, with 2,500 TPD capacity and Western Nuclear, a subsidiary of Phelps Dodge Corporation, was second with 1,700 TPD capacity. Union Carbide had one director on the Louisiana Land and Exploration Company board, and one director on the Pan-Canadian Petroleum board, as well as significant coal production. Western Nuclear (Phelps Dodge) had one director on Union Pacific's board (significant oil and gas production) and one director on Equitable Gas Co.'s board. Phelps Dodge has oil and gas exploration and development operations, as well as reserves.

Federal Resources-American Nuclear Partners had 970 TPD capacity in a 60%-40% partnership. Most of their production is for the Tennessee Valley Authority, as well as being largely financed by the Authority. Management affiliations include one director who was on the Skyline Oil Company's board, and one director who was also director of Wyoming U.S. Department of Housing and Urban Development. Rio-Algom Corporation, a Canadian subsidiary of United Kingdom-based Rio-Tinto Zinc, Ltd., has 700 TPD capacity. Most of their milling production is Canadian. Management affiliations were one director on General Electric's board, and one director on Petrofina Canada Ltd.'s board. Cotter Corporation, a subsidiary of Commonwealth Edison Company, had a 450 TPD capacity. Management affiliation was one director on the board of Standard Oil of Indiana. Homestake Mining Company, which was reported as an independent producer in 1973, is now producing in partnership with United Nuclear Corporation (see below).

Companies with subsidiary oil production represented 31.5 percent of total U.S. production capacity, or 12,350 TPD. This is an increase of 28.3 percent over the 8,850 TPD capacity reported in 1973. This is roughly similar to the 1973 percentage share of the market, which then was 29.0. The leading producer in this segment is United Nuclear Corporation (UNC), which alone and in partnership with Homestake Mining, has a 5,380 TPD capacity, which is 43.6 percent of this segment's production capacity and 13.7 percent of total U.S. Capacity. UNC has oil and gas production and leases, and mines coal through Plateau Mining Company. Homestake Mining, which has a 1,020 TPD capacity share from the UNC partnership, had no independent oil production activities. Lucky Mc Uranium Corporation, a subsidiary of the Utah International division of General Electric, was second in production capacity with 3,450 TPD. General Electric, through Utah International, has oil, natural gas, and coal production. Management affiliations included one director each on the boards of Union Pacific Corporation, Husky Oil, and Mobil Corporation. Atlas Corporation had a productive capacity of 1,100 TPD and is active in coal and oil. Rocky Mountain Energy Company, 25 percent owned by Union Pacific Corporation and 75 percent owned by Southern California Edison Company, had a productive capacity of 1,000 TPD. Union Pacific has oil and gas production through Champlin International Petroleum as well as coal production. Management affiliation included one director on the board of General Electric and one director on the board of Phelps Dodge. Dawn Mining Company, a subsidiary of Newmont Mining, had a 450 TPD capacity. Newmont has oil and gas production (Newmont Oil) as well as coal production. Susquehanna-Western, reported in the 1973 survey, is not now in production. Its parent company, Susquehanna Corporation, liquidated its uranium milling activities and sold its uranium concentrate stockpiles in 1974 and 1975.

Three companies (Arco, Kerr-McGee, and United Nuclear) control 46.9 percent of the industry. The first two are oil companies, and the third has significant oil and gas operations. Other important factors are the increasing participation of electric utilities, in partnership with companies with oil activities (Cotter-Commonwealth Edison, Rocky Mountain Energy-Union Pacific-Southern California Edison, and U.S. Steel-Niagara Mohawk), and the increasing direct control of uranium companies by the oil industry (from 40.1 percent to 52.4 percent between 1973 and 1978).

In 1976, 65 percent of uranium reserves was held by companies affiliated with the oil industry. As shown in Table 5, 46 percent was owned by oil companies. However, eight percent of the reserves was affiliated by means of partnerships or directors, and 11 percent was held by companies with subsidiary oil and gas operations. Thirty-five percent was unaccounted for.

Petroleum corporation holdings in uranium milling and reserves are considerable. But, it should be anticipated that continued nuclear power development would be coupled with considerable funds flowing to oil companies from traditional oil and gas sales, and the two developments would result in increased acquisition of uranium properties by oil companies.

Table 5. Proven U.S. Uranium Reserves, 1976, and Ownership Affiliation with Oil Companies

Industry Segment	$30 Reserves (Tons U_3O_8)		% of total U.S. Reserves	
A. Oil companies				
Anaconda (Arco)	15,000		2.2	
Chevron	8,000		1.2	
Continental	25,000		3.7	
Exxon	17,500		2.6	
Getty	20,000		2.9	
Gulf	55,000		8.1	
Kerr McGee	145,000		21.3	
Phillips Petroleum	12,500		1.8	
Reserve Oil and Minerals	9,300		1.4	
Sohio	5,000		0.7	
TOTAL		312,300		45.9
B. Companies having management affiliation with oil co.'s				
American Nuclear	6,000		0.9	
Cleveland Cliffs Iron Co.	10,000		1.5	
Rio Algom USA	9,000		1.3	
Union Carbide	4,000		0.6	
Phelps Dodge (Western Nuclear)	22,500		3.3	
Pioneer	4,000		0.6	
TOTAL		55,500		8.2
C. Companies with subsidiary oil production				
Atlas	3,000		0.4	
General Electric (Utah International)	17,500		2.6	
Union Pacific (Champlin)	5,000		0.7	
United Nuclear	50,000		7.4	
TOTAL		75,500		11.1
1976 Reserves: TOTAL of figures available		443,300		65.2
Total unaccounted for		236,700		34.8
TOTAL U.S. PROVEN RESERVES		680,000		100.0

Notes on Table 5

Prepared by Dooley Kiefer

Source: "Concentration Levels in the Production and Reserve Holdings of Crude Oil, Natural Gas, Coal, and Uranium in the U.S., 1955-1976," American Petroleum Institute (API), Discussion Paper #004R, December, 1977. Table 4 is a reorganization of data from API Table 37, p.45. According to API (p.5), "the ownership of uranium reserves is difficult to determine due to the lack of accurate data".

Total U.S. proven reserves of 680,000 tons (at $30/ton), as of the end of 1976, is quite close to the 690,000 tons as of January 1, 1978, reported in "Statistical Data of the Uranium Industry," U.S. Dept. of Energy, Grand Junction Office, Jan. 1, 1978 (p.3) (and this latter figure does not include byproduct uranium).

Of the 136,700 tons of U_3O_8 reserves unaccounted for at the end of 1976, Dawn Mining Co. could account for 975 tons, according to its 1976 Annual Report, but this was not characterized by price. Dawn Mining is 51% owned by Newmont Mining Corporation, which has subsidiary oil production, too, and would therefore be listed in industry segment "C".

Continental/Pioneer: Continental Oil and Pioneer Corporation have a uranium mine and mill partnership. Conoco owns 2/3 of this joint venture (the Conquista mine and mill project, in Karnes County, Texas); 1/3 is owned by Pioneer Nuclear Corporation (PNI), a subsidiary of Pioneer Corp.

Pioneer Uravan, Inc., is another wholly-owned subsidiary of Pioneer Corp. which is active in mining in Colorado and Utah; most of the ore from the mines is milled under a joint venture agreement with Union Carbide, and Uravan receives approximately 50% of the U_3O_8contained in the ore.

Phillips Petroelum reserves: San Juan Basin only (API, p.45)

Reserve/Sohio: Standard Oil of Ohio (Sohio) and Reserve Oil & Gas have a 50-50 partnership. According to the Sohio 1976 Annual Report (p.15), Sohio is operating manager and 50% owner of the L-Bar uranium mine and mill, approximately 50 miles west of Albuquerque. There is no mention of uranium activity in Reserve Oil & Gas's 1977 Annual Report.

American Nuclear/Western Nuclear

American Nuclear Corporation has uranium interests in Wyoming. It is a 40% partner in Federal-American Partners (FAP) with Federal Resources Corporation (60%). [Federal Resources, besides its 60% share of FAP, has uranium mining and milling interests in Canada, with Consolidated Canadian Faraday, Ltd., and has metallurgical coal interests in Alabama.] FAP mines and mills uranium in Gas Hills, Wyoming, and its mill also processes ore for Lucky Mc, a subsidiary of Utal International, which merged with General Electric. In 1978 FAP acquired 86.9% of ANC stock from Western Nuclear, and 37 mining claims from Phelps Dodge.

Western Nuclear, Inc., is a wholly-owned subsidiary of Phelps Dodge; it has sold off Allied Nuclear.

Cleveland Cliffs: According to its 1977 Annual Report, Cleveland-Cliffs is engaged in 5 joint ventrue projects for the purposes of uranium exploration; in each venture, Cleveland-Cliffs is the manager, with headquarters in Casper, Wyo. In the 1976 Annual Report (p.10) it was reported that there was a "substantial increase in potential in-place reserves of U_3O_8." ... The 5 are:

(1) Cliffs-Getty Joint Venture: with Getty Oil Co.; they hope to have a commercial uranium operation within 5 years;

(2) Thunderbird Joint Venture: with Pioneer Nuclear Corporation, Getty Oil, Thunderbird Petroleum, Inc., and Texas Eastern Nuclear, Inc. This venture is described as research in uranium solution mining, with the possibility of a pilot plant by early 1979;

(3) Pintee Joint Venture: with Pioneer Nuclear, Inc. and Texas Eastern Nuclear, Inc.

(4) PNC Joint Venture: with Power Reactor and Nuclear Fuel Development Corp.

(5) Nuclear-Cliffs-Getty Joint Venture: with Commonwealth Edison and Getty Oil Company

The 1977 Annual Report also mentions "uranium and base metals exploration" in Michigan's Upper Penninsula with Chevron Oil Co, (1976ff).

Coal

In 1960 petroleum corporation participation in coal was non-existent. Table 6 shows that it has reached 30% of production by 1976. Other industries with major coal production operations are steel (5%) and power generation (3%).

Large independent coal companies are a small part of the industry, accounting for only 8% of production. Put another way, of the 20 largest coal producers, only five are independent. Petroleum corporations and companies active in oil production own the four largest.

The pattern for coal reserves is similar.

My general opinion is that further expansion by oil companies into coal activities is possible. Such expansion would be stimulated by continually rising prices for oil and gas; this simultaneously increases funds available for investment while raising the profitability of coal activities. A Federal synthetic fuels program would add an additional incentive for petroleum company expansion in the coal industry.

Table 6. Coal Production and Petroleum Company Ownership, 1960 and 1976

1960 Coal Production Company	%	1976 Coal Production Company (1979 owner)	%
Consolidation Coal Co.	7.0	Newmont et al (Peabody)	10.6*
Peabody Coal Co.	6.9	Continental (Consolidation)	8.4*
U.S. Steel Corp.	4.3	Amax (Socal)	3.5*
Pittston Co.	3.1	Occidental (Island Creek)	2.7*
Island Creek Coal Co.	2.9	Pittston	2.6
Eastern Gas & Fuel Assoc.	2.3	U.S. Steel	2.4
Bethlehem Mines	2.2	Ashland-Hunt-Arch Minerals	2.3*
West Kentucky Coal Co.	1.7	Bethlehem Steel	2.1
General Dynamics (Freeman)	1.6	Pacific Power & Light	1.8
Ayrshire Collieries Corp.	1.6	North American Coal	1.6
North American Coal Corp.	1.5	American Electric Power	1.6
Traux-Traer Coal Co.	1.4	St. Joe Minerals Corp.	1.6
Ziegler Coal & Coke Co.	1.1	Sohio (Old Ben)	1.4*
Rochester & Pittsburgh	1.0	Montana Power Co.	1.4
United Electric	1.0	Westmoreland Coal	1.2
Pittsburgh & Midway	1.0	Peter Kiewit	1.2
Old Ben Coal Corp.	1.0	Eastern Gas & Fuel Assoc.	1.2
Valley Camp Coal Co.	1.0	Gulf Oil (Pitt. & Midway)	1.2*
Republic Steel Corp.	1.0	General Electric (Utah Int.)	1.0
Jones & Laughlin Steel	0.9	General Dynamics (Freeman-United)	0.9
Total, largest 20	44.5%		50.6%
Oil company affiliation	0 % ?		30.1%
Total production (million tons)	415.5		665.0

Notes: * denotes coal production by oil company or by company with major oil operations. Coal production for 1976 is identified by company ownership as of early 1979. Standard Oil of California (Socal) owns 20% of Amax. The Peabody Holding Company is owned by the Newmont Mining Corporation, The Williams Companies, Boeing, the Fluor Corporation, the Bechtel Corporation, and Equitable Life Assurance. Newmont is an oil and gas producer, and Williams Pipeline transports oil. Oil and gas is important but not the major interest of either company.

Sources: "Concentration Levels ...," op. cit., Table 5; Annual Reports

Non-Energy, Solar Energy, and Recent Acquisitions

Table 7 shows the significance of non-energy activities in 1978. Generally, the major oil companies have concentrated their operations rather heavily in energy production. Tenneco earns 50% of its revenues in agriculture, shipbuilding, farm equipment, and other non-energy business. However, this is an exception. Only four other majors have non-energy revenues more than 10% of total revenues, and none of these four exceed 20%.

Solar energy activity (cited in Table 3, above) ranges from economic research into investment potential (Conoco) to collector panel manufacture (Exxon). Seven of the majors had solar activies as of early 1979. Appendix A discusses non-energy and solar energy for each major.

Merger and acquisition developments for petroleum companies during the past six months (see Appendix B) may be summarized as follows. Forty-three potential or completed transactions were noted. Ten involved assets with a value greater than $100 million, 18 involved assets of less than $100 million in value, and 15 involved assets whose value was not stated or disclosed. Of the 10 transactions clearly of the size that would have been prohibited by the proposed legislation, seven were by a major petroleum company, two were by other petroleum companies, and one was a joint venture between a major and a smaller company. However, of the ten potentially affected transactions, only five were by major companies affected by the bill. (Recall that Tenneco, Occidental, Sohio/BP, and Ashland are excluded.)

Of these ten potentially affected transactions, six were acquisitions of oil and gas properties or of a company primarily engaged in the oil and gas industry. Another of the transactions involved the proposed acquisition of a company (Bodcaw) that produces oil and gas in addition to forest products and

Table 7. Non-Energy Revenues of Major Oil Companies as a Percentage of 1978 Total Revenues

Company	Non-energy revenues
1. Exxon	.03
2. Mobil	.20
3. Texaco	---
4. Socal	.05
5. Gulf	.01
6. Standard/Indiana	.03
7. Arco	.15
8. Shell	.01
9. Continental	---
10. Tenneco	.50
11. Sun	.07
12. Phillips	---
13. Occidental	.15
14. Union	.03
15. Standard Ohio	---
16. Ashland	.17
17. Amerada Hess	---
18. Cities Service	.05
19. Marathon	---
20. Getty	.05

Sources: Company 1978 Annual Reports

Notes: Chemical revenues are assumed to be energy-related unless otherwise indicated in Appendix A. Most chemical operations are petrochemical; non-energy income from chemical activities is not separately reported (e.g., see Tenneco, in Appendix A). Revenue from uranium activity (an energy interest) is usually not reported separately from non-energy mineral activity. Other income may include that from interest in other energy companies. Finally, the notation "---" was used in place of zero since all companies have at least some interest income or short-term investments.

Prepared by Michael Slott and Dooley Kiefer liner board. The three remaining acquisitions were of a manufacturer of automated systems (Reliance Electric), a mining company (Cyprus Mines), and a diversified producer of electrical, consumer, and industrial goods (Eltra Corporation).

Table 8 below also presents a breakdown by type of investment for transactions less than $100 million or of undisclosed value. Again, the largest proportion of the acquisitions in these two categories were of oil and gas properties or companies.

Table 8. Acquisitions Made or Discussed, January-June, 1979

Type of acquisition	Total number	Size of investment: Not stated	Less than $100 mill.	Greater than $100 mill.
Primarily or partly oil and gas	19	4	8	7
Coal, nuclear, other mining	10	4	5	1
Chemical	5	4	1	0
Other	9	3	4	2
	43	14	18	10

It is also interesting to note that none of the properties that are known to be valued at greater than $100 million involve other energy sources (Cyprus Mines does not appear to produce coal or uranium, according to Moody's Industrial Manual, 1978), whereas seven of the nine mining-related investments of less than $100 million or of undisclosed value are of coal or nuclear properties or companies. It is, of course, possible that some of these properties of undisclosed value would prove to be worth more than $100 million; nevertheless, the "price range" of coal and nuclear properties that petroleum companies have recently considered seems by and large to be below the $100 million limit, and the proposed legislation may therefore have little discouraging effect on horizontal integration by the oil industry.

In general, the pattern of non-energy activities in 1978 and mergers and acquisitions reported and discussed in 1979 indicates that the petroleum industry has not yet made major efforts to expand into non-energy activities. However, present financial developments in energy prices, production, and revenues make substantial changes in this picture inevitable unless new public policies are implemented.

The Cash Problem

Since World War II the major petroleum companies have generally experienced profit rates on stockholder equity which have been at or below the rates attained by other U.S. industries. However, current circumstances are unique, and indicate a permanent departure from previous conditions. Rising oil and gas prices and increasing coal and uranium production are accelerating growth in petroleum corporation revenue, net income, and funds earned.

Revenues for major oil companies this year will approximate $350 billion, and net income will be about $20 billion.

If this growth in profitability continues undiminished by taxation, the industry will obviously be free to expand its presently limited position in non-energy activities, and further develop its extant holdings in coal and nuclear fuel.

If S. 1246 becomes effective law, and if Sohio/BP is included within its jurisdiction, then the major companies would be faced with major decisions with respect to financial policy. Would dividends be increased? Would the companies establish major lending divisions? For example: major companies might establish loan divisions to lend money or buy bonds from local and state governments. They would partially transform themselves into bank-like institutions.

A radical approach to the cash disposal problem would be to require minimum cash distributions to stockholders as part of S. 1246, or to require the companies to sell stock to public organizations such as pension funds at pre-1979 stock prices.

Other Problems

There appear to be a variety of substantive and technical problems with the present version of the bill which would be amenable to partial resolution by amendment, or other major policy actions.

1. The Sohio problem. The British Government owns 51% of British Petroleum. The British Petroleum Company owns 52% of Standard Oil of Ohio (and Sohio is now the second largest U.S. oil producer). Sohio/BP own about 53% of the Prudhoe Bay field, which is itself about one-third of U.S. reserves. An anomaly exists with respect to the bill as it now stands: it excludes Sohio/BP and BP, a combination with great potential for future profit growth, because of Alaskan holdings, and leaves unaffected the potential for growth in indirect acquisitions of U.S. enterprises by the British Government. The remedy is to redefine production levels on a 1978 basis.

2. Self-acquisition. The Chase Manhattan Bank has owned 4% of Exxon common stock. Is Exxon prohibited from buying its stock from Chase-Manhattan? With increased cash reserves, many oil companies may find that purchasing their own stock is a profitable investment. Does the bill prevent or encourage this?

3. Subdivision. Suppose the Q Coal Company, worth $400 million, subdivides itself into five separate companies, each worth less than $100 million. May these companies be purchased by oil companies? Similarly, may properties valued at less than $100 million be sold separately?

Conclusions

Several positive results can be anticipated to follow from successful implementation of S. 1246.

First, by reducing the expansion of petroleum company control of nuclear fuel and coal beyond present levels, the potential for future competition is preserved. An oligopolistic energy industry, with coordinated pricing and production policies across energy sectors, always carries the potential for restricted production and excessive price and profit levels. The bill restricts further control and increases the potential for future competition.

Second, by reducing the relative and absolute potential for profitable investment in other activities, the legislation would increase the incentive for incremental investment in oil and gas and development of presently owned energy properties. The determination that this is a positive result is predicated upon the assumption that oil and gas production itself has social value which exceeds its market value.

Third, by placing a moratorium on major expansion into non-energy areas, the bill would reduce the growth in what would otherwise be a rapid growth in domination of the U.S. economy by the petroleum industry.

Fourth, S. 1246 is a kind of "acquisition holiday", attempting to restrain major economic developments while public policy addresses basic questions of corporate and resource ownership and control.

Notes and References

1. See Walter Measday, "The Petroleum Industry" in The Structure of American Industry, Walter Adams, ed., 1977; S.J. Flaim and T.D. Mount, "Federal Income Taxation of the United States Petroleum Industry and the Depletion of Domestic Reserves," Solar Energy Research Institute, 1978, an examination of the interaction of growth, monopoly, and taxation; and D. Chapman, T. Flaim, et al, The Structure of the U.S. Petroleum Industry; A Summary of Survey Data, Print, U.S. Senate Interior Committee, 1976; discussion of incentives for and efficiencies of cooperative activities in exploration, production, refining, and marketing is of particular interest.

2. U.S. crude oil production reached its historic maximum in 1970. Production outside of Alaska has declined regularly since 1972. Maximum natural gas production in the U.S. was in 1973.

3. U.S. Department of Energy, Statistical Data of the Uranium Industry, DOE Publication GJO-100(78), Grand Junction, Colorado, January 1, 1978; Annual Reports.

Appendix A. Summary of Non-Energy and Alternative Energy Activities for Major Petroleum Companies

Prepared by Michael Slott and Dooley Kiefer

Amerada Hess

The Amerada Hess Corporation is an example of a major oil company which has not spread itself out. It does not report any revenues from unconventional energy sources nor even research projects. The company is exclusively concerned with petroleum related business. There is virtually no indication of any non-energy related activity.

Ashland Oil, Inc.

Ashland Oil's 1978 Annual Report does not mention any involvment with solar energy development or nonconventional energy sources.

The company does considerable business in areas that are not related directly to energy production. This non-energy business generated about 17 percent of the firm's 1978 total revenues (this figure excludes the sale of Ashland Canada -- a large oil exploring and producing company.) The primary source of these non-energy revenues are two wholly owned subsidiaries, Ashland-Warren, Inc. and Levingston Shipbuilding. Ashland-Warren is both a producer of construction materials, such as sand, gravel, and cement, and a major contractor for heavy construction projects. Levingston Shipbuilding designs and assembles marine equipment for offshore exploration and development. Levingston also is equiped to handle major marine repairs. Recently Levingston was awarded a 200 million dollar contract to build five cargo ships over the next four years.

Atlantic Richfield

Arco's venture into the area of solar energy is not mentioned in its annual report for 1978. Nevertheless, in 1977 Solar International Technology (Chatsworth, Calif.) was purchased and has since been a wholly owned subsidiary called Arco Solar, Inc. On May 2, 1979, Arco Solar entered into an agreement with Energy Conversion Devices Inc. to provide 3.3 million dollars towards the development of a solar electric conversion device. Arco Solar is currently in the business of making and selling photovoltaic equipment.

Two of the eight subsidiary companies of Arco, Anaconda Industries and Anaconda Copper Company, are heavily engaged in non-energy related business. The former produces and sells electronics equipment and metal products. The latter explores for, produces, and processes a variety of non-hydrocarbon minerals. As a result of the two Anacondas, non-energy revenues amounted to nearly 15 percent of Arco's total revenues in 1978.

Cities Service Company

Cities Service does not report any solar energy operations or nonconventional energy resources in its 1978 annual report.

The company does have two copper mines, and some of its chemical products are associated with these ores and not with petroleum activities. Because the chemical products can not be broken out by production process in the income statement, the figure of 5 percent is probably low as an estimate of the company's non-energy to total revenues ratio.

Continental Oil Company

While neither solar nor unconventional energy development are evidenced in the 1978 annual report, Conoco has investigated the possibility of investing in solar energy.

Conoco's mineral operations are primarily uranium production and its chemical production seems to derive wholly from petroleum refining; therefore it is hard to attribute any of Conoco's revenues to non-energy operations.

Exxon

Exxon Enterprises Inc., which is a wholly owned affiliate of Exxon Corporation, coordinates the research done outside the nuclear, coal, and petroleum fields. In 1978 such ventures cost Exxon $11 million. Specifically in the area of solar energy, Exxon has two affiliates (Daystar Corporation and Solar Power Corporation) which produce and market collector panels for space and water heating and which also produce and sell photovoltaic cells and related equipment.

In addition to overseeing the advanced energy activities of Exxon, Exxon Enterprises markets a growing line of products and services in the area of information systems, microprocessor based office equipment, and specialized computer systems. In 1978 revenue from this area was $320 million.

To the above non-energy activities of Exxon must be added the exploration and holdings of minerals unrelated to energy production. Some examples of these are: 98.9 percent interest in the copper mines of Disputada; a lead-zinc mine and mill in Nova Scotia; and copper, zinc, and silver mines in the United States. Exxon also has 70 percent ownership of Imperial Oil Limited, a company which, in addition to its energy related business, markets fabricated products and explores for minerals in Canada.

In spite of all of the above venture, Exxon's non-energy revenues don't comprise more than a few percent of its total revenues.

Getty Oil Company

Getty Oil's only operation in the area of advanced energy technology is a 50 percent interest in a joint venture to recover methane from landfill areas. Getty participates in one such plant through its wholly owned subsidiary, Getty Synthetic Fuels, Inc. Another plant is under construction and two more are planned. Getty does not report any other advanced energy ventures.

It is difficult to separate Getty's non-energy revenues from those of its mineral operations involving uranium. Nonetheless, Getty's extra-energy business ventures are diverse. In January of 1979 seventeen thousand acres of agricultural land were added to the 92 thousand nonpetroleum fee land which Getty already owned. Getty leases much of this land to independent agribusinesses. Getty also farms, processes, and merchandises grapes, almonds, citrus fruit, and cotton.

These agricultural ventures together with real estate, land management, and wood products operations, do not contribute more than about 5 percent of Getty's total revenue, even when significant mineral operations' revenues are included in the non-energy category.

Subsidiaries which are involving Getty Oil in the above non-energy-related activities include: Minnehoma Land and Farming Company, Minnehoma Cotton Inc., Minnehoma Development Inc., Sutton Place Property Company, Vanply Inc., and Vancouver Plywood Company.

Gulf Oil Corporation

Gulf does not report any operations in the area of solar energy. Through Gulf Canada Limited, which is a 68 percent owned subsidiary of Gulf Oil, the company has a 16.75 percent interst in the Syncrude oil project in Alberta.

With respect to extra-energy activities, Gulf has been divesting itself of its major realestate holdings. No other area of extra-energy business is evident from the 1978 annual report.

Marathon Oil Company

Marathon Oil does not seem to have any operations in the area of solar or nonconventional energy. Furthermore, aside from some fluorspar and zinc properties in Kentucky, the company is not involved in any extra-energy business.

Mobil Corporation

Mobil is one of the more highly diversified energy companies. Its interest in solar energy is embodied in a joint venture with Tyco Laboratories to develop and commercialize Tyco's solar cell production technology. Mobil Oil holds an 80 percent interest in this venture which was undertaken in 1974. No other advanced energy activity is mentioned in the 1978 annual report.

Through its ownership of Montgomery Ward and Container Corporation of America Mobil is engaged in a great variety of extra-energy activities. These activites include: timber holdings, pulp and paperboard milling, life insurance, direct-mail services, and the range of activities of Wards. These operations contributed almost 20 percent of Mobil's total revenues.

Occidental Petroleum Corporation

Occidental reports no operations in the area of solar energy, but it is involved in geothermal steam prospecting in northern California. The company is also involved in developing shale oil technology, and cogenerates process steam and electricity from refuse at a plant in Niagra Falls, New York. These unconventional energy activities are being persued via subsidiaries called Occidental Geothermal, Inc.; Occidental Oil Shale, Inc.; and Hooker Chemical Division.

With respect to extra-energy business activities, these comprised no more than 15 percent of total revenue in 1978 and included: the mining of base and precious metals (Occidental Minerals Corp.); agricultural seed products and equipment (Ring Around Products, Inc., and the Zoecon group); and some non-hydrocarbon chemical products and processes (Hooker Chemical).

Phillips Petroleum Company

Phillips reports no solar energy projects. The company's only nonconventional energy operations involve prospecting and developing geothermal reservoirs in Nevada and Utah.

The company does not seem to have diversified out of the area of energy production.

Shell Oil Company

Shell has better than 80 percent interest in SES Inc., which is a solar energy company in Delaware. Research there continues on cadmium sulfide photovoltaic devices. The investment in the firm exceeds $8.6 million. During 1978 the firm employed more than 100 people. No nonconventional energy resources were detailed in the annual report.

Extra-energy business is negligable in Shell and probably accounts for only a fraction of a percent of total revenues.

Standard Oil Company of California

Socal does not mention solar energy in its annual report. The two nonconventional energy sources that it is involved with are geothermal and oil shale. Socal has operations in the area of geothermal energy through its holdings in Chevron Resources. At the end of 1978 the company was studying geothermal prospects on a total of 260 thousand leased acres. Chevron has contracted with Southern California Edison to supply hot water to a 50 megawatt power plant at Heber, California. The Chevron Shale Oil Company's 4 billion barrels of reserves in place make it one of the largest private holders of domestic oil shale. Both these companies are wholly owned by Socal.

Socal derives slightly more than 5 percent of its net income outside the area of energy production. Socal owns 20 percent of Amax Inc., which is a significant investment in a variety of natural resources. Amax and its affiliates are producing molybdenum, iron ore, aluminum, coal, tungsten, copper, lead, zinc, nickel, potash, and forest products. Socal has offered to merge with Amax; but has not been accepted.

Another extra-energy area of business in which Socal operates is that of real estate. These activities are carried on through the Chevron Land and Development Company and through a 64 percent interest in the Huntington Beach Company. Among Socal's more valuable real estate holdings are 65 thousand acres of irrigated San Joaquin Valley farmland.

Standard Oil Company of Indiana

Aside from some studies on solar energy recovery for space heating, heat-pump systems for refrigeration and waste-heat recovery, and on the applications of microbiology in biomass conversion, this company's nonconventional energy operations are limited to oil shale and tar sands projects. These areas are not yet revenue-producing and the company seems conservative about future development.

Extra-energy derived sales and revenues account for slightly less than 3 percent of total revenues. The following selected subsidiaries and affiliates give an idea of these operations: Amoco Credit Corporation (financing); Imperial Casualty and Indemnity Company (insurance); Amoco Realty Company (real estate); Amoco Food Company (production and sale of yeast); Ocean Minerals Company (ocean mining technology).

Standard Oil Company of Ohio

~~Sohio reports no solar energy activity. The company has interest~~ in the Parahoe Oil Shale Development project in Colorado. There are no reported non-energy revenues beyond royalties on patented processes, which amount to no more than .1 percent of total 1978 revenues.

Sun Company

There is no reported solar energy activity.

The Sunoco Energy Development Co. is engaged in exploration activities in geothermal areas. Great Canadian Oil Sands Ltd. produces crude oil from the Athabasca oil sands.

Non-energy activities accounted for about 7 percent of the company's total revenues. These activities included regional motor-carriers, computer services to banks, and real estate holdings in the southeast. The company reported "significant diversification" in 1978 with its purchase of Becton Dickinson, a multinational health care products firm.

Tenneco, Inc.

Tenneco reports no solar energy activities. With respect to other alternative energy prospects, Tennessee Gas Transmission, a subsidiary, wants to participate with four other companies in a coal gasification plant in North Dakota.

Although Tenneco is an energy company, it is the most diversified of the U.S. oil companies, and is proud of already being horizontally integrated successfully. It has six large non-energy segments:

1) J.I. Case and its divisions manufacture construction equipment and farm machinery, worldwide. Its 1978 revenues comprised 22 percent of the company total.
2) Tenneco Automotive includes three operating companies - Walker Manufacturing (auto exhaust systems), Monroe Auto Equipment (shock absorbers and control products), Speedy Muffler King. Revenues from this segment were about 9 percent of the total.
3) Tenneco Chemicals, Inc., is a major producer of polyvinyl chloride and plasticizers. It also produces a variety of organic chemicals, colorings, and additives. Albright & Willson, fully acquired by Tenneco in 1978, is a leading producer of phosphorous and phosphorous derivatives. Another 9 percent of the company's total revenue came from this segment of operations.
4) Tenneco West grows and markets fresh produce and manages land in California, Arizona, and Texas. 1978 share of total revenue for this company was 3 percent.
5) Packaging Corporation of America is a major producer of paperboard, shipping containers, etc. It also owns more than 683 thousand acres of managed timberland and operates eight waste paper recovery facilities. It accounted for 6 percent of Tenneco's revenues.
6) Newport News Shipbuilding builds vessels for the U.S. Navy. Because this firm also supplies components for the commercial nuclear power industry it is difficult to determine how much of its 8 percent of total revenue should be properly described as non-energy based.

The final tally for percent of revenue derived from non-energy operations is about 50 percent.

Texaco, Inc.

Texaco does not report any solar energy activity. The firm has oil shale reserves in Colorado and Utah and is involved in the tar sands project in Canada.

No non-energy operations are reported in the annual report of 1978.

Union Oil of California

There is no indication of any solar energy activity. However, Union Oil is the largest producer of geothermal energy in the world. It has half interest in and operates the Geysers in northern California. Potential geothermal reserves are also being explored in New Mexico and in the Phillipines. Union Oil also has holdings of heavy oil in carbonate rock in Canada.

Non-energy operations included construction, paving and rock plant operations. These were sold in May of 1978. Other non-energy related activities involved real estate development. Non-energy operations accounted for about 3 percent of total revenue.

Appendix B. Acquisition and Merger Developments for Petroleum Companies, January-June, 1979

Prepared by Kathleen Cole

Appendix B.
Acquisition and Merger Developments for Petroleum Companies, January-June, 1979

Acquiring Company	Name of Company Whose Assets or Stock Are To Be Acquired or Merged	Status	Description of Property Acquired or Merged	Consideration Given or Estimated Value	Date of Report 1/
"Top 20" Petroleum Companies					
* Ashland Oil Co.	NLT Corp.	Ashland announced it has the option to purchase	about 3 million shares of the common stock of this company (an insurance, real estate, broadcasting and computer services co.) held by American General Insurance Co.	about $90 million	6/15/79
Atlantic Richfield	Anaconda Canada Ltd.	has the approval of the Canadian government to acquire this co.	this co. is a unit of Anaconda Co. which owns mineral properties in several provinces	not stated	6/26/79
Anaconda Co., a subsidiary of Atlantic Richfield 2/	not given	acquired	unexploited copper deposit in Chile	$20 million	5/18/79
* British Petroleum Co. Ltd. (England) 3/	Peninsular & Oriental Steam Navigation Co.	agreement in principle	P&O's British North Sea oil exploration and development holdings including a 15% interest in the Beatrice field	equivalent of $59.9 million	6/29/79
* BP Chemicals International Ltd., subsidiary of British Petroleum Co. Ltd.	Bakelite Xylonite Ltd. and Union Carbide Belgium, N.V.	acquired, effective 3/5/79	these companies were two wholly-owned subsidiaries of Union Carbide Corp.	not stated	3/13/79
* a German subsidiary of British Petroleum Co. Ltd.	Ruhrgas, A.G.	to be acquired	Veba A.G.'s 25% stake in Ruhrgas A.G., W. Germany's largest importer and distributor of natural gas	$430.2 million	3/9/79

Acquisition and Merger Developments for Petroleum Companies, January–June, 1979 (continued)

Acquiring Company	Name of Company Whose Assets or Stock Are To Be Acquired or Merged	Status	Description of Property Acquired or Merged	Consideration Given or Estimated Value	Date of Report 1/
Enco, Inc., a wholly owned subsidiary of Exxon Corp.	Reliance Electric Co.	commenced tender offer for any and all common and series A preferred stock of this co.	manufacturer of automated systems	$1.2 billion (Science, Vol. 205, 7/13/79, p. 169)	6/26/79
Getty Oil Co.	an Ashland Oil, Inc., unit	acquired	certain Gulf of Mexico oil and gas properties	$267 million, cash	4/17/79
Gulf Oil Corp.	Scallop Nuclear, Inc.	agreed to acquire	Scallop's interest in the uranium supply and reactor fuel fabrication activities of the two companies' joint venture, General Atomic Co.	$60 million	3/20/79
Gulf Oil Chemicals Co., a division of Gulf Oil Corp.	Taita Chemical Co. Ltd., Taiwan	announced intention to purchase a 30% equity interest in this company		not stated	4/17/79
Gulf Canada Ltd., controlled by Gulf Oil Corp.	Commercial Alcohols Ltd.	acquired all the issued and outstanding shares of this co. as at 12/31/78	Commercial Alcohols was a wholly owned subsidiary of Canadian International Paper Co. Ltd.	not stated	5/22/79
Mobil Oil Corp.	General Crude Oil	in process; expect sale to be completed this summer	oil and gas properties of this company, which is a subsidiary of International Paper	$800 million	4/17/79
Mobil Oil Corp.	Bodcaw Co.	agreement in principle	a privately held producer of forest products, liner board and oil and gas	preferred stock with an estimated value of $475 million	3/2/79
Standard Oil Co. (Calif.)	Crocker Land Co., a unit of Foremost-McKesson	acquired	1700 acre industrial park site in Vacaville, Calif.	$9 million	6/8/79

Acquisition and Merger Developments for Petroleum Companies, January–June, 1979 (continued)

Acquiring Company	Name of Company Whose Assets or Stock Are To Be Acquired or Merged	Status	Description of Property Acquired or Merged	Consideration Given or Estimated Value	Date of Report 1/
Standard Oil Co. (Calif.)	American Nuclear Corp.	merger discussions terminated		not stated	2/13/79
Standard Oil Co. (Ind.)	Cyprus Mines Corp.	agreement in principle	the named company, which mines metallic minerals and manufactures products for the electrical industry	an indicated value of about $460 million	5/15/79
Amoco Container Co., a unit of Standard Oil Co. (Ind.)		acquired	8.6 acre site with two buildings in Orlando, Florida for production of polyester carbonated beverage containers	not stated	5/11/79
Standard Oil Co. (Ind.)	Blue Diamond Coal Co.	negotiations terminated	Blue Diamond's coal properties	not stated	3/30/79
Amoco Canada, a unit of Standard Oil Co. (Ind.)	Texasgulf, Inc.	agreement by Texasgulf to sell to Amoco Canada, Hudson's Bay Oil & Gas, and Petrofina Canada Ltd.	Texasgulf's Whitecourt sulphur recovery plant in Alberta	$8.3 million	1/9/79
* Standard Oil Co. (Ohio)	Webb Resources Inc. and Newco Exploration Co.	Standard Oil directors approved the acquisition of these two cos.		not stated	7/3/79
* Old Ben Coal Co., a div. of Sohio Natural Resources Co., a subsidiary of Standard Oil Co. (Ohio)	Dahlgren-Moores Prairie Coal Association	acquired	rights to an estimated 200 million recoverable tons of underground coal in southern Illinois	about $54 million	3/13/79

Acquisition and Merger Developments for Petroleum Companies, January–June, 1979 (continued)

Acquiring Company	Name of Company Whose Assets or Stock Are To Be Acquired or Merged	Status	Description of Property Acquired or Merged	Consideration Given or Estimated Value	Date of Report 1/
a subsidiary of Sun Co.	Metridata Computing Inc.	acquired (acquisition approved by Metridata stock-holders)	Metridata's computing division	not stated	Wall St. Journal, 2/6/79, p. 47
Sunmark Industries, a unit of Sun Co.	Fast Fare, Inc.	acquired (merger approved by Fast Fare stockholders)	Fast Fare, Inc., which operates 224 convenience stores (160 with gasoline stations) in the South. (Sunmark is Sun Co.'s marketing outlet and operates Stop-N-Go convenience stores)	not stated	3/13/79
*a subsidiary of Tenneco Oil Co., a unit of Tenneco Inc.	Shenandoah Oil Corp.	acquired	Shenandoah's midcontinent producing properties	$65.9 million	4/3/79
*Tenneco Oil Co., a unit of Tenneco Inc.	Ashland Exploration Inc., a subsidiary of Ashland Oil Inc.	acquired, with Mesa Petroleum as equal partner	Ashland Exploration's midcontinent region oil and gas properties	$340 million	5/4/79
Union Oil Co. of Calif.	Silver Bell Industries, Denver, and Mancos Corp., Rocky Ford, Colorado	acquired	most of the assets of these companies: Silver Bell has mineral properties including a 35% interest in a Wyoming uranium mining & milling project that is being developed by a unit of Union Oil. Mancos holds mining claims and other properties	common stock worth about $24 million	12/12/78
Union Oil Co. of Calif.	Union Oil Co. of Calif.	reacquired	about 1.5% of its outstanding common stock from International Mining Corp., a subsidiary of Pacific Holding Corp.	about $41.3 million	3/9/79

Acquisition and Merger Developments for Petroleum Companies, January-June, 1979 (continued)

Acquiring Company	Name of Company Whose Assets or Stock Are To Be Acquired or Merged	Status	Description of Property Acquired or Merged	Consideration Given or Estimated Value	Date of Report 1/
"Other" Petroleum Companies					
Adobe Oil & Gas Corp.	I.W. Lovelady, independent oil operator	acquired	certain oil and gas properties in Texas and New Mexico	$3 million	1/5/79
Allied Chemical Co. 4/	Eltra Corp.	will commence a tender offer to acquire	all outstanding shares of common stock of this diversified producer of electrical, consumer and industrial goods	$51.50 per share; 11,359,865 outstanding shares of common stock	7/6/79
Charter Co. 5/	Crum & Forster Life Insurance Co. of N.Y. & N.J.	tentatively agreed to acquire		$19 million	6/8/79
Charter Co.	Carey Energy Corp.	acquired		not stated	5/18/79
Consolidated Oil & Gas Co.	a Mississippi gas company	Consolidated decides to go ahead with the acquisition	one half of R.L. Burns Corp.'s interest in this company	$25.8 million	4/6/79
Crown Central Petroleum	Continental American Life Insurance Co.	agreement in principle		$32 million in stock	6/29/79; 5/25/79
Damson Oil Corp.	Merchants Petroleum Co.	acquired (merger approved by Merchants' stockholders)		not stated--*via* an exchange of stock	2/13/79
Diamond Shamrock Corp.	animal health div. of Shell Chemical Co., a div. of Shell Oil Co.	acquired		undisclosed	4/20/79

Acquisition and Merger Developments for Petroleum Companies, January-June, 1979 (continued)

Acquiring Company	Name of Company Whose Assets or Stock Are To Be Acquired or Merged	Status	Description of Property Acquired or Merged	Consideration Given or Estimated Value	Date of Report 1/
Inexco Oil Co.	Fred Wilson Drilling Co. Inc. and Wilson Brothers Corp.	acquired	all outstanding stock	$28 million	2/9/79
Mapco Inc.	Filon Exploration Corp., Denver	Mapco agreed to acquire	privately held oil and gas exploration co.	undisclosed	6/29/79
Mapco Inc.	Chem-Nuclear Systems Inc.	both cos. voted against proposed merger		stock currently valued at more than $47 million	2/23/79; 6/19/79
Mesa Petroleum Co.	Equity Oil Co.	acquired by Mesa and persons affiliated with Mesa; Mesa says it has no present plans for merger	166,300 shares (about 6%) of outstanding stock	not stated	6/29/79
Mesa Petroleum Co.	Ashland Exploration Inc.	acquired, with Tenneco Oil Co. as equal partner	Ashland Exploration's midcontinent region oil and gas properties	$340 million	5/4/79
Petro Lewis	Ashland Exploration Inc.	acquired	Ashland Exploration's oil and gas properties in the Rocky Mountain, southeast and south-west regions	$120.5 million	5/22/79
Southland Royalty	Shenandoah Oil Co.	acquired	Shenandoah's Rocky Mountain producing properties	$8 million cash and a $4.7 million note	4/17/79
Sundance Oil Co.	not stated	acquired	an additional 9600 gross acres in the Hoadley area of central Alberta	$2.6 million	4/6/79
Superior Oil Co.	Canadian Superior Oil Ltd.	studying a merger	the 49% of Canadian Superior stock that Superior Oil does not already own	$380 million	3/16/79

Notes

Prepared by Kathleen Cole.

Sources: Moody's Industrial News Reports; Moody's 1978 Industrial Manual

1/ refers to date of Moody's Industrial News Reports unless otherwise stated.

2/ As reported in Moody's Industrial News Reports, 3/13/79, Atlantic Richfield reached a provisional settlement with the Federal Trade Commission concerning its divestiture of Anaconda Co. whereby Atlantic Richfield would keep Anaconda but Anaconda would be required to sell its interest in copper properties and its refining and smelting assets in Montana and Arizona and would be barred from making new investments in the copper business for a minimum of 5 years and a maximum of 10 years.

3/ British Petroleum Co. Ltd. (England) and Standard Oil Co. (Ohio) merged in 1969; British Petroleum owns a controlling interest (52%) in Standard Oil Co. (Ohio). (British Petroleum Co. Ltd. Annual Report, 1978, p. 12)

4/ Allied Chemical Co. is engaged in the petroleum business through Union Texas Petroleum, a division of the company; Uno-Tex Petroleum Corp. is a wholly owned subsidiary of Allied Chemical.

5/ Charter Co. is a holding company engaged through subsidiaries in land, oil, money, and communications; Charter Oil Co. is a subsidiary of the Charter Co.

*Major companies unaffected by S.1246.