

ALASKA LEGISLATURE SPECIAL COMMITTEE / SUBFILES 86 / 2

426 SCOM11: INTERIM COMM. ON TAXATION & REVENUE 1975-76

Gasoline prices

(Suggested prices for major-brand regular)

	Price ex. tax 7-16-74	Pump price 7-16-74	Pump price 7-17-73
Albany	45.9	57.9	39.9
Albuquerque	46.9	57.9	37.9
+ Amarillo	40.1	49.1	33.9
Atlanta	44.2	55.7	38.9
Baltimore	42.9	55.9	38.9
Birmingham	42.9	54.9	37.9
Boston*	44.2	55.7	38.9
Buffalo	45.9	57.9	39.9
Charlotte	42.9	55.9	38.9
Cheyenne	47.9	58.9	39.9
Chicago*	45.6	58.6	40.4
Cleveland	43.9	54.9	37.9
+ Corpus Christi	40.6	49.6	33.9
+ Dallas	40.6	49.6	33.9
Denver	47.9	58.9	38.9
Des Moines	42.9	53.9	37.9
Detroit	42.5	55.5	39.9
+ Fort Worth	40.6	49.6	33.9
+ Houston	40.6	49.6	33.9
Indianapolis	44.9	56.9	39.9
Jacksonville	42.9	54.9	37.9
Kansas City	46.9	57.9	37.9
Little Rock	41.4	52.9	36.9
Louisville	45.9	56.9	37.9
- Los Angeles	41.9	52.9	38.9
Memphis	42.9	53.9	37.9
Miami	43.7	55.7	38.9
Milwaukee	44.9	55.9	38.9
Minn.-St. Paul	43.9	54.9	38.9
Newark	45.7	56.7	39.9
New Orleans	41.9	53.9	36.9
New York*	46.9	59.9	41.9
Norfolk	41.7	54.7	37.9
Okla. City	46.3	56.9	36.9
Omaha	44.4	56.9	39.9
Philadelphia	42.9	54.9	37.9
+ Phoenix	42.9	53.9	38.9
Pittsburgh	42.9	54.9	37.9
- Portland, Ore.	43.7	54.7	38.9
Salt Lake City	45.9	56.9	36.9
+ San Antonio	40.1	49.1	33.9
+ San Diego	41.9	52.9	39.9
+ San Francisco	42.8	53.8	38.9
+ Seattle	42.1	55.1	39.9
- Spokane	11.7	54.7	39.9
Springfield, Ill.*	43.9	56.9	40.9
St. Louis	44.9	55.9	38.9
Tampa	43.7	55.7	38.9
+ Texarkana	40.1	49.1	33.9
Tulsa	42.3	52.9	36.9
Wichita	43.9	54.9	37.9
+ Wichita Falls	40.1	49.1	33.9
Week's avg.	43.48	54.75	38.03
June avg.	43.21	54.50	37.95
May avg.	41.93	53.20	37.78
1974 to date	38.83	50.11	
1973 to date	26.09	37.35	

+ Increase, - decrease from previous week. *Pump price includes local tax ranging from 0.5 to 2.0 cents/gal.

Refined-products prices

Following quotations are realistic spot prices for refined products moving intrastate on Tuesday each week. They may differ from refiners' prices for branded products. They should not be considered as postings.

Light products are in cents per gallon. Residual prices are in dollars per barrel.

Gasoline

Mid-Continent (Group 3):

Regular (92 octane)	28.00-32.00
Premium (99 octane)	30.00-34.00

California (rack) Los Angeles:

+ Regular (91 octane)	25.50-33.55
+ Regular (95 octane)	27.00-34.65
+ Premium (100 octane)	28.00-35.65

Chicago:

Regular (94 octane)	28.00-33.00
Premium (100 octane)	30.00-35.00

Kerosine, distillate

Chicago:

- Distillate No. 1	27.50-30.50
- Distillate No. 2	26.50-29.50

Gulf Coast (cargoes):

Kerosine (42-43)	27.50-29.00
Distillate No. 2	25.50-28.00

Mid-Continent (Group 3):

Kerosine (42-44)	22.50-28.75
Diesel oil (58 d.i. & above)	23.00-27.00
Distillate No. 1	22.00-27.50
Distillate No. 2	20.50-26.00

New York Harbor (barges):

+ Kerosine (42-44)	29.50-33.75
+ Distillate No. 2	25.75-27.55
+ Diesel fuel (48-52 d.i.)	26.80

Residual fuel

Mid-Continent (Group 3):

No. 6 (max. 1% S)	\$9.25
No. 6 (over 1% S)	\$8.25

Chicago:

No. 6 (max. 1% S)	\$13.02
No. 5 (max. 1% S)	\$13.86

New York Harbor (barges):

+ No. 6 (max. 0.3% S)	\$13.39-13.99
No. 5 (0.3% S)	\$13.59-14.57

California (marine pipeline):

Bunker C Los Angeles	\$5.01
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API imports of crude and products

(Thousands of barrels daily)

	DISTRICTS 1-4			DISTRICT 5			TOTAL U.S.		
	7-12 1974	7-5 1974	7-13 1973	7-12 1974	7-5 1974	7-13 1973	7-12 1974	7-5 1974	7-13 1973
Gasoline	153	290	72	2			155	290	72
Special Naphthas		5	12					5	12
Kerosine	5	5					5	5	
Distillate	133	100	64	5		5	138	105	64
No. 4 Fuel Oil	44	59	29				44	59	29
Residual	1,825	1,691	1,412	100	29	75	1,925	1,766	1,441
Jet Fuel (Naphtha)					5				5
Jet Fuel (Kerosine)	77	65	119	47	55	22	124	87	174
Asphalt	40	31	22				40	31	22
LP-Gas	112	141	119	16	23	21	128	162	142
Petrochem Feedstocks	5	15					5	15	
Unfinished	126	137	65	53	46	46	179	183	111
Plant Condensate	83	115	116	10	10	10	93	125	126
Total Prod.	2,603	2,654	2,030	233	168	179	2,836	2,833	2,198
Canadian Crude	468	496	934	208	323	153	676	649	1,259
Other Foreign	2,282	1,864	1,429	840	682	448	3,122	2,312	2,109
Total Crude	2,750	2,360	2,363	1,048	1,005	601	3,798	2,961	3,368
Total Imports	5,353	5,014	4,393	1,201	1,173	780	6,634	5,794	5,566

Worldwide crude production

(Daily average in thousands of bbl)

	April 1974	March* 1974	Daily prod. 1973	4-month average Daily prod. 1974	Change from Vol.	%
WESTERN HEMISPHERE						
Argentina	420.0	423.0	424.0	426.0	2.0	0.5
Bolivia	50.0	50.0	50.0	50.0		
Brazil	170.0	170.0	169.0	170.0	1.0	0.6
Canada	1,810.0	1,881.0	1,819.0	1,845.0	26.0	1.4
Chile	30.0	30.0	34.0	30.0	- 4.0	- 11.8
Colombia	175.0	175.0	198.0	176.0	- 22.0	- 11.1
Ecuador	245.0	240.0	211.0	235.0	24.0	11.4
Mexico	530.0	520.0	453.0	523.0	70.0	15.5
Peru	75.0	75.0	67.0	75.0	8.0	11.9
Trinidad	170.0	170.0	163.0	173.0	10.0	6.1
United States	8,965.0	9,023.0	9,236.0	9,024.0	-212.0	- 2.3
Venezuela	3,044.0	3,179.0	3,313.0	3,186.0	-127.0	- 3.8
Total	15,684.0	15,936.0	16,137.0	15,913.0	-224.0	- 1.4
WESTERN EUROPE						
Austria	50.0	50.0	50.0	50.0		
Denmark	2.0	4.0	4.0	4.0		
France	25.0	25.0	27.0	24.0	- 3.0	- 11.1
West Germany	125.0	125.0	131.0	126.0	- 5.0	- 3.8
Italy	15.0	15.0	15.0	15.0		
Netherlands	30.0	30.0	30.0	30.0		
Norway	13.0	17.0	34.0	14.0	- 20.0	- 58.8
Spain	35.0	35.0	7.0	33.0	26.0	371.4
United Kingdom	2.0	2.0	2.0	2.0		
Yugoslavia	65.00	65.0	66.0	66.0		
Total	362.0	368.0	368.0	364.0	- 2.0	- 0.6
MIDDLE EAST						
Abu Dhabi	1,616.0	1,489.0	1,332.0	1,401.0	69.0	5.2
Bahrain	67.0	68.0	68.0	69.0	1.0	1.5
Dubai	241.0	250.0	220.0	230.0	10.0	4.5
Iran	6,175.0	6,125.0	5,816.0	6,142.0	326.0	5.6
Iraq	1,871.0	1,812.0	1,863.0	1,820.0	17.0	0.9
Israel	100.0	100.0	100.0	100.0		
Kuwait	2,836.0	2,841.0	3,136.0	2,841.0	-295.0	- 9.4
Oman	296.0	292.0	284.0	296.0	12.0	4.2
Qatar	519.0	518.0	597.0	518.0	- 79.0	- 13.2
Saudi Arabia	8,653.0	8,135.0	7,229.0	8,027.0	798.0	11.0
Syria	150.0	150.0	118.0	138.0	20.0	16.9
Turkey	65.0	65.0	62.0	66.0	4.0	6.5
Total	22,589.0	21,845.0	20,765.0	21,648.0	883.0	4.3
ASIA-PACIFIC						
Afghanistan						
Australia	404.0	415.0	395.0	435.0	40.0	10.1
Burma	20.0	20.0	20.0	21.0	1.0	5.0
Brunei-Malaysia	375.0	350.0	305.0	356.0	51.0	16.7
India	150.0	150.0	148.0	149.0	1.0	0.7
Indonesia	1,413.0	1,440.0	1,236.0	1,424.0	188.0	15.2
Japan	15.0	15.0	15.0	15.0		
Pakistan	8.5	8.5	8.5	8.5		
Taiwan	2.0	2.0	2.0	2.0		
Thailand	0.2	0.2	0.5	0.5		
Total	2,387.7	2,250.7	2,129.7	2,410.7	281.0	13.2
AFRICA						
Algeria	990.0	980.0	1,109.0	962.0	- 14.7	- 13.3
Angola	20.0	20.0	14.0	20.0	6.0	42.9
Cabinda	150.0	150.0	132.0	149.0	17.0	12.9
Congo	35.0	35.0	32.0	34.0	2.0	6.3
Egypt	130.0	110.0	201.0	114.0	- 87.0	- 43.3
Gabon	165.0	165.0	129.0	162.0	33.0	25.6
Libya	1,734.0	1,882.0	2,301.0	1,898.0	-403.0	- 17.5
Morocco	1.0	1.0	1.0	1.0		
Nigeria	2,300.0	2,290.0	1,938	2,257.0	319.0	16.5
Tunisia	70.0	70.0	85.0	70.0	- 15.0	- 17.6
Total	5,595.0	5,703.0	5,942.0	5,667.0	-275.0	- 4.6
COMMUNIST						
China	860.0	860.0	600.0	860.0	260.0	43.3
Romania	280.0	280.0	275.0	280.0	5.0	1.8
U.S.S.R.†	9,028.0	8,948.0	8,280.0	8,942.5	662.5	8.0
Other	110.0	110.0	100.0	110.0	10.0	10.0
Total	10,278.0	10,198.0	9,255.0	10,192.5	937.5	10.1
WORLD TOTAL	56,895.7	56,300.7	54,594.7	56,195.2	1,600.5	2.9

*Figures adjusted. †Includes condensate.

Worldwide gas production

(Billion cu ft)

	April 1974	March 1974	1974 cum.
WESTERN HEMISPHERE			
Argentina	21.0	16.8	81.2
Bolivia	14.1	12.9	53.1
Brazil	4.6	3.5	15.0
Canada	271.2	268.4	1,096.4
Chile	11.9	12.0	57.6
Colombia	5.0	4.6	28.9
Ecuador	0.3	0.2	1.2
Mexico	56.3	56.4	224.2
Peru	3.5	7.9	26.6
Trinidad	4.9	4.8	25.7
United States	1,770.2	1,775.2	7,667.8
Venezuela	140.1	141.2	622.2
Total	2,303.1	2,303.9	9,899.9
WESTERN EUROPE			
Austria	10.1	9.6	37.9
Denmark			
France	24.1	24.4	95.1
West Germany	60.2	51.4	229.5
Italy	49.3	52.4	198.0
Netherlands	271.2	266.1	1,019.3
Norway			
Spain	141.2	135.4	467.9
United Kingdom	5.0	4.9	18.9
Yugoslavia			
Total	561.1	544.2	2,066.6
MIDDLE EAST			
Abu Dhabi	0.1	0.2	1.1
Bahrain			
Dubai			
Iran	140.8	141.7	569.5
Iraq	11.0	10.9	44.1
Israel	1.0	0.9	2.9
Kuwait	0.1	0.1	0.5
Oman			
Qatar	0.2	0.2	0.6
Saudi Arabia			
Syria			
Turkey			
Total	153.2	154.0	618.7
ASIA-PACIFIC			
Afghanistan	8.1	7.8	30.5
Australia	10.2	11.4	45.0
Burma	0.4	0.6	1.9
Brunei-Malaysia			
India	1.8	2.0	7.9
Indonesia	12.0	13.7	52.8
Japan	9.0	8.4	33.7
Pakistan	10.1	11.2	43.6
Taiwan	3.8	4.2	15.1
Thailand			
Total	55.4	59.3	230.5
AFRICA			
Algeria	2.0	2.1	7.6
Angola	3.0	2.3	9.3
Cabinda			
Congo	0.2	0.4	1.6
Egypt	3.0	2.9	10.8
Gabon	1.0	1.2	4.4
Libya	2.1	1.9	8.9
Morocco	1.5	2.0	7.4
Nigeria	5.0	4.7	17.7
Tunisia	0.2	0.4	3.1
Total	18.0	17.9	70.8
COMMUNIST			
China	16.0	15.6	59.7
Romania	70.1	77.1	301.8
U.S.S.R.†	737.7	776.6	3,000.5
Other	35.0	37.8	204.9
Total	858.8	907.1	3,566.8
WORLD TOTAL	3,949.6	3,986.4	16,453.3

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Worldwide crude production

(Daily average in thousands of bbl)

	Mar. 1974	Feb.* 1974	Daily prod. 1973	6-month average Daily prod. 1974	Change from Vol. %	
WESTERN HEMISPHERE						
Argentina	430.0	430.0	426.0	430.0	4.0	0.9
Bolivia	50.0	50.0	50.0	50.0		
Brazil	170.0	170.0	168.0	170.0	2.0	1.2
Canada	1,881.0	1,844.0	1,830.0	1,857.0	27.0	1.5
Chile	30.0	30.0	34.0	30.0	- 4.0	- 11.8
Colombia	175.0	176.0	198.0	176.0	- 22.0	- 11.1
Ecuador	230.0	228.0	219.0	228.0	9.0	4.1
Mexico	580.0	580.0	450.0	580.0	130.0	28.9
Peru	75.0	75.0	67.0	76.0	9.0	13.4
Trinidad	170.0	171.0	165.0	173.0	8.0	4.8
United States	9,023.0	9,047.0	9,238.0	9,044.0	-194.0	- 2.1
Venezuela	3,150.0	3,233.0	3,297.0	3,223.0	- 74.0	- 2.2
Total	15,964.0	16,034.0	16,142.0	16,037.0	-105.0	- 0.7
WESTERN EUROPE						
Austria	50.0	50.0	50.0	50.0		
Denmark	4.0	4.0	4.0	4.0		
France	25.0	25.0	27.0	25.0	- 2.0	- 7.4
West Germany	125.0	125.0	132.0	125.0	- 7.0	- 5.3
Italy	15.0	15.0	15.0	15.0		
Netherlands	30.0	32.0	29.0	30.0	1.0	3.4
Norway	17.0	25.0	36.0	15.0	- 21.0	- 58.3
Spain	25.0	25.0	3.0	25.0	22.0	733.3
United Kingdom	2.0	2.0	2.0	2.0		
Yugoslavia	60.0	60.0	65.0	59.0	- 6.0	- 9.2
Total	353.0	363.0	363.0	350.0	- 13.0	- 3.6
MIDDLE EAST						
Abu Dhabi	1,489.0	1,273.0	1,318.0	1,329.0	11.0	0.8
Bahrain	68.0	69.0	68.0	69.0	1.0	1.5
Dubai	250.0	250.0	217.0	225.0	9.0	4.1
Iran	6,125.0	6,167.0	5,832.0	6,130.0	298.0	5.1
Iraq	1,812.0	1,802.0	1,699.0	1,803.0	104.0	6.1
Israel	100.0	100.0	100.0	100.0		
Kuwait	2,841.0	2,849.0	3,282.0	2,842.0	-440.0	- 13.4
Oman	292.0	295.0	281.0	295.0	14.0	5.0
Qatar	518.0	515.0	599.0	517.0	- 82.0	- 13.7
Saudi Arabia	8,135.0	7,795.0	7,185.0	7,818.0	633.0	8.8
Syria	100.0	50.0	113.0	75.0	- 38.0	- 33.6
Turkey	70.0	70.0	61.0	69.0	8.0	13.1
Total	21,800.0	21,235.0	20,755.0	21,273.0	518.0	2.5
ASIA-PACIFIC						
Australia	376.0	490.0	386.0	442.0	56.0	14.5
Burma	20.0	20.0	20.0	21.0	1.0	5.0
Brunei-Malaysia	350.0	350.0	302.0	350.0	48.0	15.9
India	150.0	150.0	149.0	152.0	3.0	2.0
Indonesia	1,440.0	1,435.0	1,218.0	1,428.0	210.0	17.2
Japan	15.0	15.0	15.0	15.0		
Pakistan	8.5	8.5	8.5	8.5		
Taiwan	2.0	2.0	2.0	2.0		
Thailand	0.2	0.2	0.2	0.2		
Total	2,361.7	2,320.7	2,100.7	2,418.7	318.0	15.1
AFRICA						
Algeria	980.0	980.0	1,107.0	952.0	-155.0	- 14.0
Angola	20.0	20.0	14.0	20.0	6.0	42.9
Cabinda	150.0	150.0	132.0	149.0	17.0	12.9
Congo	35.0	35.0	26.0	34.0	8.0	30.8
Egypt	110.0	110.0	195.0	109.0	- 86.0	- 44.1
Gabon	180.0	180.0	126.0	180.0	54.0	42.9
Libya	1,882.0	1,945.0	2,290.0	1,953.0	-337.0	- 14.7
Morocco	1.0	1.0	1.0	1.0		
Nigeria	2,290.0	2,260.0	1,932.0	2,249.0	317.0	16.4
Tunisia	70.0	70.0	85.0	70.0	- 15.0	- 17.6
Total	5,718.0	5,751.0	5,908.0	5,717.0	-191.0	3.2
COMMUNIST						
China	860.0	860.0	600.0	860.0	260.0	43.3
Romania	280.0	280.0	275.0	280.0	5.0	1.8
U.S.S.R.†	8,948.0	8,838.0	8,260.0	8,922.0	662.0	8.0
Other	110.0	110.0	100.0	110.0	10.0	10.0
Total	10,198.0	10,088.0	9,235.0	10,172.0	937.0	10.2
WORLD TOTAL	56,394.7	55,791.7	54,503.7	55,967.7	1,464.0	2.7

*Figures adjusted. †Includes gas liquids.

Worldwide gas production

	Mar. '74	Feb. '74	1974 cum.
Argentina	16.8	19.5	60.2
Bolivia	12.9	13.1	39.0
Brazil	3.5	3.5	10.4
Canada	268.4	274.5	825.2
Chile	12.0	11.9	45.7
Colombia	4.6	9.6	23.9
Ecuador	0.2	0.3	0.9
Mexico	56.4	55.7	167.9
Peru	7.9	8.1	23.1
Trinidad	4.8	4.8	20.8
United States	1,775.2	2,111.2	5,897.6
Venezuela	141.2	169.7	482.1
Total	2,303.9	2,681.9	7,596.8
Austria	9.6	9.6	27.8
Denmark			
France	24.4	23.4	71.0
West Germany	51.4	51.4	169.3
Italy	52.4	49.6	148.7
Netherlands	266.1	241.0	748.1
Norway			
Spain	135.4	86.4	326.7
United Kingdom	4.9	4.9	13.9
Yugoslavia			
Total	544.2	466.3	1,505.5
Abu Dhabi			
Bahrain	0.2	0.3	1.0
Dubai			
Iran	141.7	141.3	428.7
Iraq	10.9	11.1	33.1
Israel	0.9	0.9	1.9
Kuwait	0.1	0.1	0.4
Oman			
Qatar	0.2	0.1	0.4
Saudi Arabia			
Syria			
Turkey			
Total	154.0	153.8	465.5
Australia	7.8	6.9	22.4
Burma	11.4	10.9	34.8
Brunei-Malaysia	0.6	0.4	1.5
India			
Indonesia	2.0	1.9	6.1
Japan	13.7	13.7	40.8
Pakistan	8.4	8.4	24.7
Taiwan	11.2	11.2	33.5
Thailand	4.2	4.1	11.3
Total	59.3	57.5	175.1
Algeria	2.1	1.9	5.6
Angola	2.3	1.9	6.3
Cabinda			
Congo	0.4	0.5	1.4
Egypt	2.9	2.5	7.8
Gabon	1.2	1.1	3.4
Libya	1.9	2.4	6.8
Morocco	2.0	1.9	5.9
Nigeria	4.7	4.7	12.7
Tunisia	0.4	0.4	2.9
Total	17.9	17.3	52.8
China	15.6	14.9	43.7
Romania	77.1	77.1	231.7
U.S.S.R.†	776.6	709.5	2,262.7
Other	37.8	60.9	169.9
Total	907.1	862.4	2,708.0
WORLD TOTAL	3,986.4	4,239.2	12,503.7

*Figures adjusted.

Refined-products prices

Following quotations are realistic spot prices for refined products moving intrastate on Tuesday each week. They may differ from refiners' prices for branded products. They should not be considered as postings.

Light products are in cents per gallon. Residual prices are in dollars per barrel.

Gasoline

Mid-Continent (Group 3):

Regular (92 octane)	28.00-30.00
Premium (99 octane)	30.00-32.00

Gulf Coast (cargoes for coastwise or export movements):

Regular (94 octane)	30.50-34.50
Premium (100 octane)	32.25-36.25

California (rack) Los Angeles:

Regular (91 octane)	24.50-33.55
Regular (95 octane)	24.70-34.65
Premium (100 octane)	26.00-35.65

Chicago:

Regular (94 octane)	31.00-36.00
Premium (100 octane)	33.00-38.00

Kerosine, distillate

Chicago:

Distillate No. 1	30.00-34.50
Distillate No. 2	29.00-33.50

Gulf Coast (cargoes):

-Kerosine (42-43)	26.00-28.50
-Distillate No. 2	24.00-26.50

Mid-Continent (Group 3):

Kerosine (42-44)	25.00
Diesel oil (58 d.i. & above)	24.75
Distillate No. 1	23.00
Distillate No. 2	22.00

New York Harbor (barges):

Kerosine (42-44)	27.50-33.75
Distillate No. 2	24.50-26.45
Diesel fuel (48-52 d.i.)	24.80

Residual fuel

Mid-Continent (Group 3):

+No. 6 (max. 1% S)	\$9.00
+No. 6 (over 1% S)	\$8.00

Chicago:

No. 6 (max. 1% S)	\$12.60
No. 5 (max. 1% S)	\$13.44

Gulf Coast (cargoes):

Bunker C fuel (0.6% S)	\$4.95
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New York Harbor (barges):

No. 6 (max. 0.3% S)	\$13.36-13.39
-No. 5 (max. 1.0% S)	\$12.17
No. 5 (0.3% S)	\$13.56-14.57

California (marine pipeline):

Bunker C Los Angeles	\$5.01
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Gasoline prices

(Suggested prices for major-brand regular)

	Price ex. tax 5-21-74	Pump price 5-21-74	Pump price 5-22-73
Albany	45.9	57.9	39.9
Albuquerque	43.9	54.9	37.9
Anarillo	38.7	47.7	33.9
Atlanta	40.2	51.7	38.9
Baltimore	42.9	55.9	38.9
Birmingham	42.9	54.9	37.9
Boston*	40.2	51.7	38.9
Buffalo	45.9	57.9	39.9
Charlotte	42.9	55.9	38.9
Cheyenne	45.9	56.9	39.9
Chicago*	45.6	58.6	40.4
Cleveland	43.9	54.9	37.9
Corpus Christi	38.2	48.2	33.9
Dallas	39.2	48.2	33.9
Denver	44.9	55.9	38.9
Des Moines	39.9	50.9	37.9
Detroit	42.5	55.5	39.9
Fort Worth	39.2	48.2	33.9
Houston	41.9	50.9	33.9
Indianapolis	44.9	56.9	39.9
Jacksonville	42.9	54.9	37.9
Kansas City	43.9	54.9	37.9
Little Rock	38.4	49.9	36.9
Louisville	45.9	56.9	37.9
Los Angeles	41.8	52.8	36.9
Memphis	39.9	50.9	37.9
Miami	39.7	51.7	38.9
Milwaukee	44.9	55.9	38.9
Minn.-St. Paul	40.9	51.9	38.9
Newark	41.7	52.7	39.9
New Orleans	41.9	53.9	36.9
New York*	46.9	59.9	41.9
Norfolk	37.7	50.7	37.9
Oklahoma City	43.3	53.9	36.9
Omaha	44.4	56.9	38.9
Philadelphia	42.9	54.9	37.9
Phoenix	41.7	52.7	37.9
Pittsburgh	42.9	54.9	37.9
Portland, Ore.	42.7	53.7	36.9
Salt Lake City	42.9	53.9	36.9
San Antonio	38.7	47.7	33.9
San Diego	41.7	52.7	36.9
San Francisco	42.5	53.5	36.9
Seattle	40.2	53.2	37.9
Spokane	41.0	54.0	37.9
Springfield, Ill.*	40.9	53.9	40.9
St. Louis	44.9	55.9	38.9
Tampa	35.2	47.2	38.9
Texarkana	38.7	47.7	33.9
Tulsa	39.3	49.9	36.9
Wichita	43.9	54.9	37.9
Wichita Falls	38.7	47.7	33.9
Week's avg.	41.97	53.27	37.76
Apr. avg.	38.73	50.01	34.41
Mar. avg.	36.93	49.20	34.52
1974 to date	37.14	48.41	
1973 to date	25.87	37.12	

+ Increase, - decrease from previous week. *Pump price includes local tax ranging from 0.5 to 2.0 cents/gal.

API imports of crude and products

(Thousands of barrels daily)

	DISTRICTS 1-4			DISTRICT 5			TOTAL U.S.		
	5-17 1974	5-10 1974	5-18 1973	5-17 1974	5-10 1974	5-18 1973	5-17 1974	5-10 1974	5-18 1973
Gasoline	281	151	77	43	4		324	155	77
Special naphthas									
Kerosine									
Distillate	251	168	153	5	5		256	173	153
No. 4 fuel oil	59	63	155				59	63	155
Residual	1,651	1,745	1,718	50	50	22	1,701	1,795	1,740
Jet fuel (naphtha)			4			10			14
Jet fuel (kerosine)	67	80	94	42	42	63	109	122	157
Asphalt	106	37	35				106	37	35
LP-gas	186	184	115	10	10	24	196	194	139
Petrochem feedstocks	20	20	7				20	20	7
Unfinished	100	209	82	83	13	27	183	222	109
Plant condensate	55	61	85	10	10	5	65	71	90
Total prod.	2,776	2,718	2,525	243	134	151	3,019	2,852	2,676
Canadian crude	647	652	557	201	149	268	848	801	825
Other foreign	1,774	1,505	1,729	717	696	524	2,491	2,201	2,253
Total crude	2,421	2,157	2,286	918	845	792	3,339	3,002	3,078
Total imports	5,197	4,875	4,811	1,161	979	943	6,358	5,854	5,754

Worldwide crude production

(Daily average in thousands of bbl)

	Feb. 1974	Jan. 1974	Daily prod. 1973	2-month average Daily prod. 1974	Change from Vol.	%
WESTERN HEMISPHERE						
Argentina	430.0	430.0	429.0	430.0	1.0	0.2
Bolivia	50.0	50.0	50.0	50.0		
Brazil	170.0	170.0	168.0	170.0	2.0	1.2
Canada	1,844.0	1,845.0	1,819.0	1,845.0	26.0	1.4
Chile	31.0	31.0	34.0	31.0	- 3.0	- 8.8
Colombia	200.0	200.0	200.0	200.0		
Ecuador	230.0	230.0	214.0	230.0	16.0	7.5
Mexico	485.0	485.0	450.0	485.0	35.0	7.8
Peru	75.0	75.0	67.0	75.0	8.0	11.9
Trinidad	165.0	165.0	165.0	165.0		
United States	9,047.0	9,061.0	9,271.9	9,054.0	-217.0	- 2.3
Venezuela	3,220.0	3,274.0	3,283.0	3,248.0	- 35.0	- 1.1
Total	15,947.0	16,016.0	16,150.0	15,983.0	-167.0	- 0.1
WESTERN EUROPE						
Austria	50.0	50.0	50.0	50.0		
Denmark	4.0	4.0	4.0	4.0		
France	25.0	24.0	27.0	24.0	- 3.0	-11.1
West Germany	125.0	125.0	132.0	125.0	- 7.0	- 5.3
Italy	15.0	15.0	15.0	15.0		
Netherlands	32.0	28.0	30.0	30.0		
Norway	25.0	2.0	33.0	13.0	- 20.0	-60.6
Spain	20.0	20.0	3.0	20.0	17.0	556.7
United Kingdom	2.0	2.0	2.0	2.0		
Yugoslavia	70.0	70.0	62.0	70.0	8.0	12.9
Total	368.0	340.0	358.0	353.0	- 5.0	- 1.4
MIDDLE EAST						
Abu Dhabi	1,263.0	1,210.0	1,314.0	1,235.0	- 79.0	- 6.0
Bahrain	69.0	70.0	68.0	70.0	2.0	2.9
Dubai	250.0	180.0	213.0	213.0		
Iran	6,157.0	6,103.0	5,831.0	6,129.0	298.0	5.1
Iraq	1,802.0	1,794.0	1,553.0	1,798.0	245.0	15.8
Israel	100.0	100.0	110.0	100.0	- 10.0	- 9.1
Kuwait	2,849.0	2,838.0	3,562.0	2,843.0	-719.0	-20.2
Oman	295.0	299.0	290.0	297.0	17.0	6.1
Qatar	517.0	518.0	596.0	518.0	- 78.0	-13.1
Saudi Arabia	7,795.0	7,522.0	7,029.0	7,652.0	623.0	8.9
Syria	50.0	50.0	115.0	50.0	- 65.0	-56.5
Turkey	70.0	70.0	61.0	70.0	9.0	14.8
Total	21,217.0	20,754.0	20,732.0	20,975.0	243.0	1.2
ASIA-PACIFIC						
Afghanistan						
Australia	490.0	464.0	404.0	476.0	72.0	17.8
Burma	20.0	20.0	20.0	20.0		
Brunei-Malaysia	350.0	350.0	302.0	350.0	48.0	15.9
India	150.0	150.0	148.0	150.0	2.0	1.4
Indonesia	1,435.0	1,450.0	1,216.0	1,443.0	227.0	18.7
Japan	15.0	15.0	15.0	15.0		
Pakistan	8.5	8.5	8.5	8.5		
Taiwan	2.0	2.0	2.0	2.0		
Thailand	2.0	0.2	0.2	0.2		
Total	2,470.7	2,459.0	2,115.7	2,464.7	349.0	16.5
AFRICA						
Algeria	980.0	960.0	1,106.0	969.0	-137.0	-12.4
Angola	15.0	15.0	14.0	15.0	1.0	7.1
Cabinda	150.0	150.0	132.0	150.0	18.0	13.6
Congo	35.0	35.0	15.0	35.0	20.0	133.3
Egypt	80.0	80.0	199.0	80.0	-119.0	-40.2
Gabon	160.0	156.0	120.0	158.0	38.0	31.7
Libya	1,945.0	2,032.0	2,285.0	1,991.0	-294.0	-12.9
Morocco	1.0	1.0	1.0	1.0		
Nigeria	2,185.0	2,185.0	1,930.0	2,185.0	255.0	13.2
Tunisia	82.0	82.0	85.0	82.0	- 3.0	- 3.5
Total	5,633.0	5,696.0	5,887.0	5,666.0	-221.0	- 3.8
COMMUNIST						
China	860.0	860.0	600.0	860.0	260.0	43.3
Romania	280.0	280.0	275.0	280.0	5.0	1.8
U.S.S.R.†	8,838.0	8,948.0	8,236.0	8,896.0	660.0	8.0
Other	110.0	110.0	100.0	110.0	10.0	10.0
Total	10,088.0	10,198.0	9,211.0	10,146.0	935.0	10.2
WORLD TOTAL	55,723.7	55,463.7	54,453.7	55,587.7	1,134.0	2.1

*Figures adjusted.
†Includes gas liquids.

Worldwide gas production

(Billion cu ft)

	Feb. '74	Jan. '74	1974 total
WESTERN HEMISPHERE			
Argentina	19.5	23.9	43.4
Bolivia	13.1	13.0	25.1
Brazil	3.5	3.4	6.9
Canada	274.5	282.3	556.8
Chile	11.9	21.8	33.7
Colombia	9.6	9.7	19.3
Ecuador	0.3	0.4	0.7
Mexico	55.7	55.8	111.5
Peru	8.1	7.1	15.2
Trinidad	4.8	11.2	16.0
United States	2,111.2	2,011.2	4,122.4
Venezuela	169.7	171.2	340.9
Total	2,681.9	2,611.0	5,292.9
WESTERN EUROPE			
Austria	9.6	8.6	18.2
Denmark			
France	23.4	23.2	46.6
West Germany	51.4	66.5	117.9
Italy	49.6	46.7	96.3
Netherlands	241.0	241.2	482.0
Norway			
Spain			
United Kingdom	86.4	104.9	191.3
Yugoslavia	4.9	4.1	9.0
Total	466.3	495.2	961.5
MIDDLE EAST			
Abu Dhabi	0.3	0.5	0.8
Bahrain			
Dubai			
Iran	141.3	145.7	287.0
Iraq	11.1	11.1	22.2
Israel	0.9	0.1	1.0
Kuwait	0.1	0.2	0.3
Oman			
Qatar	0.1	0.1	0.2
Saudi Arabia			
Syria			
Turkey			
Total	153.8	157.7	311.5
ASIA-PACIFIC			
Afghanistan	6.9	7.7	14.6
Australia	10.9	12.5	23.4
Burma	0.4	0.5	0.9
Brunei-Malaysia			
India	1.9	2.2	4.1
Indonesia	13.7	13.4	27.1
Japan	8.4	7.9	16.3
Pakistan	11.2	11.1	22.3
Taiwan	4.1	3.0	7.1
Thailand			
Total	57.5	58.3	115.8
AFRICA			
Algeria	1.9	1.6	3.5
Angola	1.9	2.1	4.0
Cabinda			
Congo	0.5	0.5	1.0
Egypt	2.5	2.4	4.9
Gabon	1.1	1.1	2.2
Libya	2.4	2.5	4.9
Morocco	1.9	2.0	3.9
Nigeria	4.7	3.3	8.0
Tunisia	0.4	2.1	2.5
Total	17.3	17.6	34.9
COMMUNIST			
China	14.9	13.2	28.1
Romania	77.1	77.5	154.6
U.S.S.R.†	709.5	720.1	1,429.6
Other	60.9	71.2	132.1
Total	862.4	882.0	1,744.4
WORLD TOTAL	4,239.2	4,221.8	8,461.0

Refined-products prices

Following quotations are realistic spot prices for refined products moving intrastate on Tuesday each week. They may differ from refiners' prices for branded products. They should not be considered as postings.

Light products are in cents per gallon. Residual prices are in dollars per barrel.

Gasoline

Mid-Continent (Group 3):	
+ Regular (92 octane)	30.00
+ Premium (99 octane)	32.00

Gulf Coast (cargoes for coastwise or export movements):	
+ Regular (94 octane)	30.50-34.50
+ Premium (100 octane)	32.25-36.25

California (rack) Los Angeles:	
Regular (91 octane)	24.50-30.25
Regular (95 octane)	24.70-31.35
Premium (100 octane)	26.00-32.40

Chicago:	
+ Regular (94 octane)	31.00-36.00
+ Premium (100 octane)	33.00-38.00

Kerosine, distillate

Chicago:	
+ Distillate No. 1	34.50
+ Distillate No. 2	33.50
Gulf Coast (cargoes):	
+ Kerosine (41-43)	30.50-34.50
Distillate No. 2	27.00-38.00

Mid-Continent (Group 3):	
+ Kerosine (42-44)	24.00
+ Diesel oil (58 d.i. & above)	23.75
+ Distillate No. 1	23.00
+ Distillate No. 2	22.00

New York Harbor (barges):	
Kerosine (42-44)	24.50-33.75
Distillate No. 2	21.50-26.45
Diesel fuel (48-52 d.i.)	21.80

Residual fuel

Mid-Continent (Group 3):	
No. 6 (max. 1% S)	\$7.00
No. 6 (over 1% S)	\$6.50

Chicago:	
+ No. 6 (max. 1% S)	\$11.70
+ No. 5 (max. 1% S)	\$12.60

Gulf Coast (cargoes):	
Bunker C fuel (0.6% S)	\$4.95

New York Harbor (barges):	
No. 6 (max. 0.3% S)	\$5.61
No. 5 (max. 1.0% S)	\$5.16
No. 5 (0.9% S)	\$5.70-6.12

California (marine pipeline):	
Bunker C Los Angeles	\$5.01

Gasoline prices

(Major-brand regular)

	Price ex. tax 4-16-74	Pump price 4-16-74	Pump price 4-17-73
Albany	43.9	55.9	39.9
Albuquerque	37.9	48.9	37.9
Amarillo	31.9	40.9	33.9
Atlanta	35.7	47.2	37.9
Baltimore	40.9	53.9	38.9
Birmingham	40.9	52.9	37.9
Boston*	35.7	47.2	37.9
Buffalo	43.9	55.9	39.9
Charlotte	40.9	53.9	38.9
Cheyenne	38.9	49.9	39.9
Chicago*	43.6	56.6	40.4
Cleveland	41.9	52.9	37.9
Corpus Christi	31.4	41.4	33.9
Dallas	32.4	41.4	33.9
Denver	38.9	49.9	38.9
Des Moines	39.9	50.9	37.9
Detroit	40.5	53.5	39.9
Fort Worth	32.4	41.4	33.9
Houston	32.4	41.4	33.9
Indianapolis	42.9	54.9	37.9
Jacksonville	40.9	52.9	37.9
Kansas City	39.9	50.9	37.9
Little Rock	38.4	49.9	36.9
Louisville	43.9	54.9	37.9
+ Los Angeles	40.8	51.8	35.9
Memphis	39.9	50.9	37.9
Miami	35.2	47.2	37.9
Milwaukee	42.9	53.9	38.9
Minn.-St. Paul	40.9	51.9	38.9
Newark	37.2	48.2	38.9
New Orleans	39.9	51.9	36.9
New York*	44.9	57.9	41.9
Norfolk	33.2	46.2	36.9
Okla. City	39.3	49.9	36.9
Omaha	42.4	54.9	39.9
Philadelphia	40.9	52.9	37.9
+ Phoenix	40.5	51.5	37.9
Pittsburgh	40.9	52.9	37.9
+ Portland, Ore.	41.1	52.1	36.9
Salt Lake City	36.9	47.9	36.9
San Antonio	31.9	40.9	33.9
+ San Diego	40.3	51.3	36.9
+ San Francisco	41.1	52.1	36.9
+ Seattle	38.9	51.9	37.9
+ Spokane	39.5	52.5	37.9
Springfield, Ill.*	40.9	53.9	40.9
St. Louis	40.9	51.9	38.9
Tampa	35.2	47.2	37.9
Texarkana	31.9	40.9	32.9
Tulsa	39.3	49.9	36.9
Wichita	41.9	52.9	37.9
Wichita Falls	31.9	40.9	33.9
Week's avg.	38.86	50.15	37.56
Mar. avg.	36.93	48.20	37.30
Feb. avg.	34.45	45.75	36.79
1974 to date	35.87	47.14	
1973 to date	25.58	36.92	

+ Increase, — decrease from previous week. *Pump price includes local tax ranging from 0.5 to 2.0 cents/gal.

API imports of crude and products

(Thousands of barrels daily)

	DISTRICTS 1-4			DISTRICT 5			TOTAL U.S.		
	4-12 1974	4-5 1974	4-13 1973	4-12 1974	4-5 1974	4-13 1973	4-12 1974	4-5 1974	4-13 1973
Gasoline	136	156	82	10	10		146	166	82
Special naphthas									
Kerosine	1	1					1	1	
Distillate	128	135	140	10	10	3	138	145	143
No. 4 fuel oil	96	72	90				96	72	90
Residual	1,467	1,585	1,890	40	40	30	1,507	1,625	1,920
Jet fuel (naphtha)	5	5	5	8	8	10	13	13	15
Jet fuel (kerosine)	91	68	95	53	52	45	144	120	140
Asphalt	37	10	12				37	10	12
LP-gas	135	137	88	18	27	17	153	164	105
Petrochem feedstocks	8	8	51				8	8	51
Unfinished	181	171	99	55	28	20	236	199	119
Plant condensate	85	85	100	10	10		95	95	100
Total prod.	2,370	2,433	2,652	204	185	125	2,574	2,618	2,777
Canadian crude	589	691	682	231	186	260	820	877	942
Other foreign	1,486	1,315	1,515	549	392	194	2,035	1,707	1,709
Total crude	2,075	2,006	2,197	780	578	454	2,855	2,584	2,651
Total imports	4,445	4,439	4,849	984	763	579	5,429	5,202	5,428

Worldwide crude production

(Daily average in thousands of bbl)

	Dec. 1973	Nov. 1973	Daily prod. 1972	12-month average Daily prod. 1973	Change from Vol.	%
WESTERN HEMISPHERE						
Argentina	420.0	415.0	433.0	418.0	- 15.0	- 3.5
Bolivia	47.0	47.0	44.0	47.0	3.0	6.8
Brazil	170.0	170.0	165.0	169.0	4.0	2.4
Canada	1,335.0	1,831.0	1,535.0	1,798.0	263.0	17.1
Chile	31.0	31.0	34.0	32.0	- 2.0	- 5.9
Colombia	200.0	200.0	198.0	199.0	1.0	0.5
Ecuador	210.0	210.0	79.0	204.0	125.0	158.2
Mexico	480.0	480.0	441.0	465.0	24.0	5.4
Peru	74.0	74.0	67.0	69.0	2.0	3.0
Trinidad	165.0	165.0	142.0	164.0	22.0	15.5
United States	9,092.0	9,110.0	9,451.0	9,189.0	-262.0	- 2.8
Venezuela	3,330.0	3,384.0	3,220.0	3,364.0	144.0	4.5
Total	16,054.0	16,117.0	15,809.0	16,118.0	309.0	2.0
WESTERN EUROPE						
Austria	48.0	48.0	47.0	49.0	2.0	4.3
Denmark	4.0	4.0	4.0	4.0		
France	25.0	25.0	30.0	26.0	- 4.0	- 13.3
West Germany	125.0	124.9	138.0	129.3	- 9.0	- 6.5
Italy	15.0	15.0	21.0	15.0	- 6.0	- 28.6
Netherlands	26.0	26.2	31.0	29.0	- 2.0	- 6.5
Norway	3.5	19.3	33.0	32.0	- 1.0	- 3.0
Spain	20.0	20.0	3.0	16.0	13.0	433.3
United Kingdom	2.0	2.0	2.0	2.0		
Yugoslavia	70.0	70.0	65.0	68.0	3.0	4.6
Total	338.5	354.4	374.0	370.0	- 4.0	- 0.1
MIDDLE EAST						
Abu Dhabi	1,016.4	1,153.0	1,050.0	1,298.0	248.0	23.6
Bahrain	68.6	68.7	70.0	68.0	- 2.0	- 2.9
Dubai	141.0	140.0	153.0	220.0	67.0	43.8
Iran	6,070.5	6,009.0	5,021.0	5,861.0	840.0	16.7
Iraq	2,136.5	2,026.0	1,446.0	1,964.0	518.0	35.8
Israel	50.0		108.0	88.0	- 20.0	- 18.5
Kuwait	2,555.8	2,582.0	3,285.0	3,024.0	-261.0	- 7.9
Oman	302.0	302.0	282.0	293.0	11.0	3.9
Qatar	460.4	467.0	482.0	570.0	88.0	18.3
Saudi Arabia	6,615.8	6,269.4	6,019.0	7,607.0	1,588.0	26.4
Syria	50.0		120.0	99.0	- 21.0	- 17.5
Turkey	70.0	70.0	65.0	66.0	1.0	1.5
Total	19,537.0	19,086.7	18,101.0	21,158.0	3,057.0	16.9
ASIA-PACIFIC						
Afghanistan						
Australia	422.0	433.0	341.0	419.0	78.0	22.9
Burma	20.0	20.0	19.0	20.0	1.0	5.3
Brunei-Malaysia	340.0	340.0	276.0	320.0	44.0	15.9
India	150.0	150.0	151.0	148.0	- 3.0	- 2.0
Indonesia	1,400.0	1,391.0	1,060.0	1,324.0	264.0	24.9
Japan	15.0	15.0	15.0	15.0		
Pakistan	8.5	8.5	8.5	8.5		
Taiwan	2.0	2.0	2.0	2.0		
Thailand	0.3	0.3	0.3	0.3		
Total	2,359.8	2,359.8	1,872.8	2,256.8	384.0	20.5
AFRICA						
Algeria	860.0	880.0	1,064.0	1,070.0	6.0	0.6
Angola	15.0	15.0	12.0	14.0	2.0	16.7
Cabinda	150.0	150.0	128.0	140.0	12.0	9.4
Congo	50.0	50.0	7.0	42.0	35.0	500.0
Egypt	30.0	30.0	212.0	165.0	- 47.0	- 22.2
Gabon	160.0	160.0	126.0	147.0	21.0	16.7
Libya	1,769.0	1,766.0	2,215.0	2,187.0	- 28.0	- 1.3
Morocco	1.0	1.0	1.0	1.0		
Nigeria	2,255.2	2,238.3	1,817.0	2,053.0	236.0	13.0
Tunisia	82.0	82.0	83.0	83.0		
Total	5,372.2	5,372.3	5,665.0	5,902.0	237.0	4.2
COMMUNIST						
China	860.0	860.0	600.0	860.0	260.0	43.3
Romania	275.0	275.0	275.0	275.0		
U.S.S.R.	8,800.0	8,760.0	7,869.0	8,428.0	551.0	7.0
Other	110.0	110.0	100.0	110.0	10.0	
Total	10,045.0	10,005.0	8,844.0	9,665.0	821.0	9.3
WORLD TOTAL	53,706.5	53,295.2	50,665.8	55,469.8	4,804.0	9.5

*Figures adjusted

Worldwide gas production

(Billion cu ft)

(Billion cu ft)		
Dec. '73	Nov. '73	1973 total
21.2	22.2	241.9
13.5	13.4	151.5
4.2	3.5	48.1
276.7	266.6	3,241.4
11.9	12.8	238.2
10.0	9.9	126.2
0.4	0.5	6.4
60.1	55.8	686.2
7.1	6.6	65.9
11.1	12.1	137.4
1,901.7	1,899.8	22,854.0
168.4	172.0	1,741.4
2,486.3	2,475.2	29,538.6
6.8	4.6	72.2
20.7	22.2	258.5
49.8	61.2	590.1
50.2	38.6	486.9
200.7	140.1	2,589.7
101.6	90.1	1,151.6
5.0	3.4	66.2
434.8	360.2	5,215.2
1.0	1.2	20.3
144.6	143.3	1,689.3
11.2	12.0	155.3
0.1	0.1	3.1
0.2	0.1	50.6
0.1	0.1	7.4
157.2	156.8	1,926.0
4.0	13.3	80.7
15.2	12.5	149.3
0.3	0.7	6.7
1.0	2.0	18.1
7.2	13.0	129.1
7.1	8.1	87.2
7.0	7.8	128.1
2.0	2.1	28.7
43.8	59.5	627.9
1.6	1.7	119.7
1.8	2.0	24.2
0.1	0.5	2.9
2.0	3.2	30.7
0.0	0.1	1.6
5.0	4.9	43.2
1.7	1.9	37.2
4.5	4.2	60.4
4.6	4.6	20.8
21.3	23.1	340.7
12.0	12.8	158.1
110.4	77.4	1,302.6
673.2	720.1	8,262.7
60.9	27.6	631.1
856.5	837.9	10,354.5
3,999.9	3,912.7	48,002.9

bitrarily, been assigned to this area.

CANADA

Arctic Canada's petroleum potential lies in five areas; the Baffin Shelf, northern part of Hudson Bay, Northwest Territories and Yukon mainland, the Beaufort basin (Mackenzie Delta), and the Arctic Islands.

It is estimated that these sedimentary basins hold a petroleum potential of 72 billion bbl of oil and 530 Tcf of gas. This comprises about 23% of the oil and 21% of the gas potential of the world's Arctic regions, Table 1.

The bulk of Canada's Arctic potential lies in the Beaufort basin and the Arctic Islands that together account for 81% of the oil and 86% of the gas potentials assigned to Arctic Canada. The Arctic Islands area itself contains potentials estimated at 46 billion bbl of oil and 357 Tcf of gas that comprise 64% of the oil and 67% of the gas potential of Arctic Canada or some 14% of the world's Arctic petroleum potential.

Baffin Shelf. The Baffin Shelf is a narrow belt of sediments lying offshore along the western edge of Baffin Bay and Davis Strait. Here, in waters up to 5,000 ft deep, geophysical data indicate the presence of a sedimentary section up to 20,000 ft thick. This section is assumed to consist largely of Cretaceous and younger deltaic complexes involved in a series of block faults that could provide structural traps.

A potential of 6 billion bbl of oil and 40 Tcf of gas has been tentatively assigned to the Baffin Shelf.

Petroleum potential north of 60th parallel

Table 1

	Oil potential (billion bbl)	Gas potential (Tcf)
World		
Russia	200	1,600
Alaska	40	300
Canada	72	530
Western Europe and other	7	55
Total	319	2,485
Canada		
Baffin Shelf	6	40
Hudson Bay	1	3
Mainland N.W.T. and Yukon	7	30
Beaufort basin	12	100
Arctic Islands	46	357
Total	72	530
Arctic Islands		
Lowlands	7	42
Fold belt	8	50
Sverdrup basin	25	215
Arctic Coastal plain	6	50
Total	46	357

Hudson Bay. The Hudson Bay basin is a remnant of a basin occupying a large depression on the pre-Cambrian shield. Generally, basins of this type have low hydrocarbon yields.

The present basin lies almost entirely under the waters of Hudson Bay and contains only a relatively thin section of early Paleozoic beds.

Considering the basin type and the age of the sediments, the potential here is small, in the order of 1 billion bbl of oil and 3 Tcf of gas.

Northwest Territories and Yukon mainland. The sedimentary area of the Northwest Territories and Yukon mainland is an extension of the west-

ern Canada basin.

The sedimentary section here thickens westward from the preCambrian shield into the Cordillera where several intermontane basins.

Exploration and development drilling, particularly for gas, is expected to increase markedly in the next few years as a result of both higher gas prices and the prospect of a gas pipeline extending to southern markets along the Mackenzie River valley.

A total potential of 7 billion bbl of oil and 30 Tcf of gas has been assigned to the Northwest Territories and Yukon mainland, exclusive of the Mackenzie Delta region.

Beaufort Basin (Mackenzie Delta). The Mackenzie Delta area appears to be a landward embayment of sub-basin of the Arctic Coastal Plain basin, the bulk of which lies on the Continental Shelf.

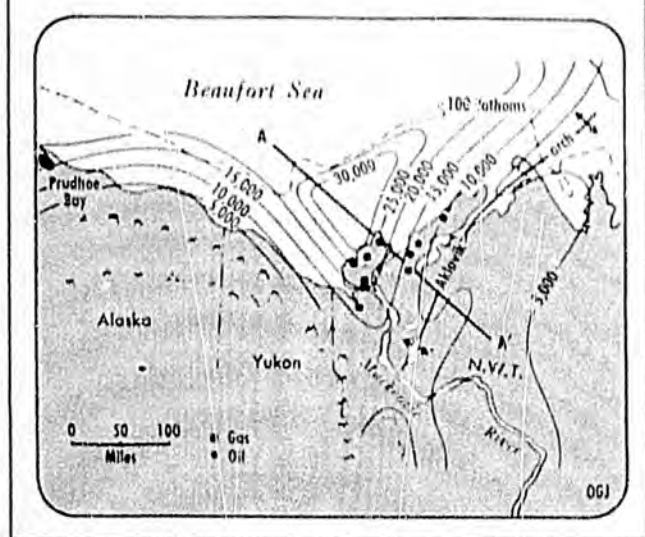
This subbasin is referred to as the Beaufort basin, and is similar in many respects to the highly petroliferous Western Gulf Coast basin, which has a proved oil yield of over 80,000 bbl/cu mile of sedimentary rock and a considerably higher potential.

The Beaufort basin is bounded on the southwest by mountain ranges and on the southeast by a basement high, referred to as the Aklavik arch (Fig. 2).

To the north the sediments thicken rapidly, reaching a maximum of about 30,000 ft. Little is known of the offshore section. Geophysical data reportedly indicate the presence of structures suggestive of diapirs (salt domes, Fig. 3). END PART 1 OF 2

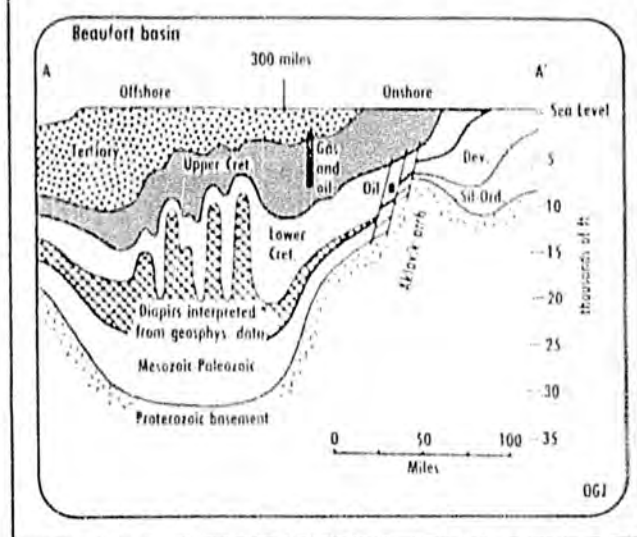
Beaufort basin

Fig. 2



Regional cross section

Fig. 3



Worldwide crude production

(Daily average in thousands of bbl)

	Nov. 1973	Oct.* 1973	Daily prod. 1972	Daily prod. 1973	10-month average Daily prod. 1973	Change from Vol. %
WESTERN HEMISPHERE						
Argentina	415.0	415.0	433.0	418.0	— 15.0	3.5
Bolivia	47.0	47.0	43.0	47.0	4.0	9.3
Brazil	170.0	169.0	165.0	169.0	4.0	2.4
Canada	1,831.0	1,812.0	1,516.0	1,793.0	277.0	18.3
Chile	31.0	31.0	34.0	32.0	— 2.0	— 5.9
Colombia	200.0	200.0	198.0	199.0	1.0	0.5
Ecuador	210.0	210.0	66.0	204.0	138.0	209.1
Mexico	480.0	480.0	441.0	464.0	23.0	5.2
Peru	74.0	73.4	67.0	69.0	2.0	3.0
Trinidad	165.0	160.0	141.0	164.0	23.0	16.3
United States	9,110.0	9,123.0	9,461.0	9,193.0	— 268.0	— 2.8
Venezuela	3,384.0	3,371.0	3,213.0	3,367.0	154.0	4.8
Total	16,117.0	16,091.4	15,778.0	16,119.0	341.0	2.2
WESTERN EUROPE						
Austria	48.0	48.0	47.0	49.0	2.0	4.3
Denmark	4.0	4.0	3.0	4.0	1.0	33.3
France	15.0	24.0	30.0	26.0	— 4.0	— 13.3
West Germany	126.0	126.4	138.0	130.0	— 8.0	— 5.8
Italy	15.0	15.0	22.0	15.0	— 7.0	— 31.8
Netherlands	26.2	27.0	27.0	29.0	2.0	6.5
Norway	38.0	38.0	34.0	36.0	2.0	5.9
Spain	20.0	20.0	3.0	15.0	12.0	400.0
United Kingdom	2.0	2.0	2.0	2.0	—	—
Yugoslavia	70.0	70.0	64.0	68.0	4.0	6.3
Total	374.2	374.4	370.0	374.0	4.0	1.8
MIDDLE EAST						
Abu Dhabi	1,155.0	1,340.0	1,041.0	1,326.0	285.0	27.4
Bahrain	68.7	68.1	70.0	68.0	— 2.0	— 2.9
Dubai	140.0	214.0	145.0	227.0	82.0	56.6
Iran	6,009.0	5,978.0	4,964.0	5,842.0	878.0	17.7
Iraq	1,923.0	1,797.0	1,423.0	1,947.0	524.0	36.8
Israel	—	20.0	107.0	92.0	— 15.0	— 14.0
Kuwait	2,615.0	3,058.4	3,303.0	3,070.0	— 233.0	— 7.1
Oman	300.0	304.0	282.0	292.0	10.0	3.5
Qatar	505.0	598.0	474.0	584.0	110.0	23.2
Saudi Arabia	6,269.4	7,797.9	5,956.0	7,699.0	1,743.0	29.3
Syria	—	20.0	119.0	104.0	— 15.0	— 12.6
Turkey	70.0	70.0	65.0	66.0	1.0	1.5
Total	19,055.1	21,265.4	17,949.0	21,317.0	3,368.0	18.8
ASIA-PACIFIC						
Afghanistan	—	—	—	—	—	—
Australia	433.0	414.0	331.0	419.0	88.0	26.6
Burma	23.0	23.0	23.0	23.0	—	—
Brunei-Malaysia	340.0	330.0	274.0	318.0	44.0	16.1
India	150.0	140.0	151.0	148.0	— 3.0	— 2.0
Indonesia	1,391.0	1,406.0	1,055.0	1,317.0	262.0	24.8
Japan	15.0	15.0	15.0	15.0	—	—
Pakistan	8.0	8.0	9.0	8.0	— 1.0	— 11.1
Taiwan	2.0	2.0	2.0	2.0	—	—
Thailand	0.2	0.2	0.2	0.2	—	—
Total	2,362.2	2,338.2	1,860.2	2,250.2	390.0	21.0
AFRICA						
Algeria	880.0	1,020.0	1,061.0	1,089.0	28.0	2.6
Angola	15.0	15.0	12.0	14.0	2.0	16.7
Cabinda	150.0	150.0	125.0	139.0	14.0	9.4
Congo	50.0	50.0	7.0	41.0	34.0	485.7
Egypt	30.0	60.0	214.0	177.0	— 37.0	— 17.3
Gabon	160.0	160.0	125.0	146.0	21.0	16.8
Libya	1,766.0	2,383.7	2,215.0	2,226.0	11.0	0.5
Morocco	0.3	0.3	0.3	0.3	—	—
Nigeria	2,200.0	2,190.4	1,809.0	2,031.0	222.0	12.3
Tunisia	83.0	83.0	83.0	83.0	—	—
Total	5,334.0	6,112.4	5,651.3	5,946.3	295.0	5.2
COMMUNIST						
China	700.0	700.0	600.0	690.0	90.0	15.0
Romania	275.0	275.0	275.0	275.0	—	—
U.S.S.R.	8,760.0	8,689.0	7,844.0	8,393.0	549.0	7.0
Other	110.0	110.0	100.0	110.0	10.0	10.0
Total	9,845.0	9,774.0	8,819.0	9,468.0	649.0	7.4
WORLD TOTAL	53,087.0	55,955.8	50,427.5	55,474.5	5,047.0	10.0

*Figures adjusted

Worldwide gas production

	Nov. '73	Oct. '73	Cum. 1973
(Billion cu ft)			
	Nov. '73	Oct. '73	Cum. 1973
Argentina	22.2	21.7	220.7
Bolivia	13.4	12.0	138.0
Brazil	3.5	2.9	43.9
Canada	266.6	259.7	2,964.7
Chile	12.8	19.7	226.3
Colombia	9.9	10.4	116.2
Ecuador	0.5	0.4	6.0
Mexico	55.8	52.8	626.1
Peru	6.6	6.7	58.8
Trinidad	12.1	11.2	126.3
United States	1,899.8	1,900.1	20,952.3
Venezuela	172.0	140.9	1,573.0
Total	2,475.2	2,438.5	27,052.3
Western Europe	4.6	6.7	65.4
Middle East	22.2	28.9	237.8
Asia-Pacific	61.2	50.4	540.3
Africa	38.6	46.7	436.7
Communist	140.1	200.7	2,389.0
World Total	90.1	80.1	1,050.0
	3.4	4.9	61.2
Total	360.2	408.4	4,780.4
Algeria	—	—	—
Angola	—	—	—
Cabinda	—	—	—
Congo	—	—	—
Egypt	1.2	1.0	19.3
Gabon	143.3	142.6	1,544.7
Libya	12.0	11.7	144.1
Morocco	0.1	0.1	3.0
Nigeria	0.1	0.2	50.4
Tunisia	—	—	—
Total	156.8	155.6	1,768.8
Australia	13.3	3.9	76.7
Brunei-Malaysia	12.5	16.0	134.1
India	0.7	0.3	6.4
Indonesia	2.0	1.0	17.1
Japan	13.0	7.6	121.9
Pakistan	8.1	7.2	80.1
Taiwan	7.8	7.1	121.1
Thailand	2.1	2.0	26.7
Total	59.5	45.1	584.1
Algeria	1.7	1.7	81.2
Angola	2.0	1.9	22.4
Cabinda	—	—	—
Congo	0.5	0.2	2.8
Egypt	3.2	2.7	28.7
Gabon	0.1	0.0	1.6
Libya	4.9	4.9	38.2
Morocco	1.9	1.7	35.5
Nigeria	4.2	4.2	55.9
Tunisia	4.6	4.1	16.2
Total	23.1	21.4	282.5
China	12.8	13.0	146.1
Romania	77.4	110.4	1,192.2
U.S.S.R.	720.1	673.2	7,589.5
Other	27.6	60.9	570.2
Total	937.9	857.5	9,498.0
World Total	3,912.7	3,926.5	43,966.1

BOOKS

CRETACEOUS AND TERTIARY ROCKS OF THE SOUTHERN COLORADO PLATEAU. Edited by J. E. Fassett. Published as a Memoir of the Four Corners Geological Society, P.O. Box 1501, Durango, Colo. 81301. 218 p., 1973, \$14 hardbound.

This handsome volume contains 19 papers and six abstracts on the economic geology, stratigraphy, and paleontology of the Cretaceous and Tertiary of the Four Corners area. Included for the first time are separate

papers on the Dakota, Mesaverde, and Pictured Cliffs gas reservoirs of the San Juan basin authored by El Paso Natural Gas Co. geologists. Other papers deal with the economic potential of the Dakota sandstone in southwest Utah, the geology of the Project Wagon Wheel area, groundwater hydrology of the San Juan basin, and stratigraphic papers on the Dakota sandstone, the Gallup sandstone, and the Ojo Alamo sandstone. Included is a geologic road log from Durango to

west and southwest of Shiprock including detailed discussion of the Upper Cretaceous sands outcropping around the northwest rim of San Juan basin.

This book offers a valuable and timely update of the geology of the Upper Cretaceous and Tertiary of the Four Corners area.

NUMBER TWO, PITFALLS IN SEISMIC INTERPRETATION. By Paul M. Tucker, Howard J. Yorston. Published by SEG, Box 3098, Tulsa, Okla. 74101. 50 pp. \$2.50 to members, \$3 to nonmembers. \$2 orders of 50 or more per copy.

Many pitfalls in seismic interpretation are concealed in seemingly straightforward reflections. Some of these pitfalls are dug by nature and some are of our own doing. Many can be avoided. Pitfalls may be classified into three groups: those related to velocity, those related to the geometry of the reflectors, and those related to the recording, processing, and playback of the seismic data.

WATER ATLAS OF THE UNITED STATES. By James J. Geraghty et al. Published by Water Information Center, 44 Sintsink Drive East, Port Washington, N.Y. 11050. 1973. \$35. 200 pp.

This undated atlas gives 122 maps in color on almost any water subject. Completely new is a group of 33 maps devoted to the nation's water quality and pollution problems.

ENCYCLOPEDIA OF EXPLORATION GEOPHYSICS. By R. E. Sheriff. Published by SEG, Box 3098, Tulsa, Okla. 74101. 263 pp. 1973. \$10 clothbound to members, \$7 paperbound. \$12.50 to nonmembers cloth, \$9 paper.

This book contains 3,000 definitions of terms used in exploration geophysics, 203 illustrations, 12 tables, and 12 appendices.

ANADARKO BASIN EXPLORATION, OKLAHOMA. Compiled and edited by R. P. Brooks, Jr. Published by Petroleum Information, Box 1208, Dallas 75221 and Box 2612, Denver 80201. 1973. 246 pp.

The search for deep production in the Oklahoma part of the basin has been going on for several years. Recent discoveries have once again focused attention on the basin.

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Worldwide crude production

(Daily average in thousands of bbl)

	Sept. 1973	Aug.* 1973	Daily prod. 1972	9-month average Daily prod. 1973	Change from Vol.	%
WESTERN HEMISPHERE						
Argentina	410.0	410.0	429.0	417.0	-12.0	-2.8
Bolivia	45.0	45.0	42.0	47.0	5.0	11.9
Brazil	168.0	168.0	165.0	168.0	3.0	1.8
Canada	1,745.0	1,809.0	1,487.0	1,793.0	306.0	20.6
Chile	31.0	31.0	34.0	32.0	-2.0	-5.9
Colombia	190.0	190.0	200.0	192.0	-8.0	-4.0
Ecuador	210.0	210.0	35.0	202.0	167.0	477.1
Mexico	470.0	470.0	441.0	460.0	19.0	4.3
Peru	67.0	67.0	66.0	67.0	1.0	1.5
Trinidad	165.0	165.0	141.0	165.0	24.0	17.0
United States	9,149.0	9,173.0	9,459.0	9,220.0	-239.0	-2.5
Venezuela	3,395.0	3,385.0	3,207.0	3,363.0	156.0	4.9
Total	16,045.0	16,123.0	15,706.0	16,126.0	420.0	2.7
WESTERN EUROPE						
Austria	50.0	50.0	47.0	50.0	3.0	6.4
Denmark	4.0	4.0	3.0	4.0	1.0	33.3
France	27.0	27.0	31.0	27.0	-4.0	-12.9
West Germany	130.0	130.0	139.0	131.0	-8.0	-5.8
Italy	22.0	20.0	22.0	20.0	-2.0	-9.1
Netherlands	34.0	30.8	31.0	30.0	-1.0	-3.2
Norway	35.0	35.0	35.0	35.0	0.0	0.0
Spain	23.0	23.0	3.0	20.0	17.0	566.7
United Kingdom	2.0	2.0	2.0	2.0	0.0	0.0
Yugoslavia	70.0	70.0	63.0	71.0	8.0	12.7
Total	395.0	391.8	376.0	390.0	14.0	3.7
MIDDLE EAST						
Abu Dhabi	1,381.0	1,330.0	1,023.0	1,343.0	320.0	31.3
Bahrain	68.0	68.0	72.0	68.0	-4.0	-5.6
Dubai	273.0	293.0	132.0	238.0	106.0	80.3
Iran	5,793.0	5,702.0	4,879.0	5,808.0	929.0	19.0
Iraq	2,167.0	2,093.0	1,394.0	1,966.0	572.0	41.0
Israel	110.0	110.0	105.0	110.0	5.0	4.8
Kuwait	3,479.5	3,010.0	3,264.0	3,106.0	-158.0	-4.8
Oman	302.1	298.0	282.0	290.0	8.0	2.8
Qatar	608.3	568.0	454.0	591.0	137.0	30.2
Saudi Arabia	8,533.5	8,425.0	5,806.0	7,829.0	2,023.0	34.8
Syria	120.0	120.0	118.0	120.0	2.0	1.7
Turkey	65.0	65.0	65.0	65.0	0.0	0.0
Total	22,900.4	22,082.0	17,594.0	21,534.0	3,940.0	22.4
ASIA-PACIFIC						
Afghanistan	427.0	439.0	314.0	418.0	104.0	33.1
Australia	20.0	20.0	19.0	20.0	1.0	5.3
Burma	330.0	330.0	270.0	320.0	50.0	18.5
Brunei-Malaysia	150.0	150.0	151.0	150.0	-1.0	-0.7
India	1,350.0	1,355.0	1,033.0	1,295.0	262.0	25.4
Indonesia	15.0	15.0	15.0	15.0	0.0	0.0
Japan	9.0	9.0	9.0	9.0	0.0	0.0
Pakistan	2.0	2.0	2.0	2.0	0.0	0.0
Taiwan	0.2	0.2	0.2	0.2	0.0	0.0
Thailand	0.2	0.2	0.2	0.2	0.0	0.0
Total	2,303.2	2,320.2	1,813.2	2,229.2	416.0	22.9
AFRICA						
Algeria	1,100.0	1,100.0	1,057.0	1,105.0	48.0	4.5
Angola	15.0	15.0	12.0	14.0	2.0	16.7
Cabinda	140.0	140.0	124.0	135.0	11.0	8.9
Congo	45.0	45.0	6.0	39.0	33.0	550.0
Egypt	235.0	235.0	216.0	212.0	-4.0	-1.9
Gabon	155.0	155.0	125.0	142.0	17.0	13.6
Libya	2,286.0	2,108.0	2,228.0	2,259.0	31.0	1.4
Morocco	0.3	0.3	0.3	0.3	0.0	0.0
Nigeria	2,101.9	2,100.0	1,789.0	1,990.0	201.0	11.2
Tunisia	85.0	85.0	82.0	80.0	-2.0	-2.4
Total	6,163.2	5,983.3	5,679.3	5,976.3	337.0	6.0
Communist						
China	47,806.8	46,900.3	41,128.5	46,255.5	5,127.0	12.5
Romania	630.0	630.0	570.0	610.0	40.0	7.0
U.S.S.R.	275.0	275.0	275.0	275.0	0.0	0.0
Other	8,663.0	8,454.0	7,845.0	8,316.0	471.0	6.0
Total	110.0	110.0	95.0	110.0	15.0	15.8
WORLD TOTAL	57,484.8	56,369.3	49,913.5	55,566.5	5,653.0	11.3

*Figures adjusted.

Gas production

	(billions cu ft)		
	Sept. *73	Aug. *73	Cum. 1973
WESTERN HEMISPHERE			
Argentina	23.6	20.0	176.8
Bolivia	12.1	14.2	112.6
Brazil	3.2	5.6	37.5
Canada	244.3	271.4	2,438.4
Chile	21.1	20.8	193.8
Colombia	9.5	12.6	95.9
Ecuador	0.5	0.6	5.1
Mexico	54.0	60.1	517.5
Peru	7.0	7.1	45.5
Trinidad	9.2	13.6	103.0
United States	1,811.9	1,870.3	17,152.4
Venezuela	141.1	140.2	1,260.1
Total	2,337.5	2,436.5	22,138.6
WESTERN EUROPE			
Austria	5.2	5.0	54.1
Denmark	17.1	16.0	196.7
France	46.2	41.7	428.7
West Germany	42.1	40.6	351.4
Italy	193.9	249.2	2,048.2
Netherlands	76.8	98.3	879.8
Norway	3.6	5.0	52.9
Spain	384.9	455.8	4,011.8
United Kingdom	1.1	1.2	17.1
Yugoslavia	143.7	143.7	1,258.8
Total	12.7	14.1	120.4
MIDDLE EAST			
Abu Dhabi	0.1	0.1	2.8
Bahrain	0.2	0.4	50.1
Dubai	0.1	0.1	7.2
Iran	157.9	163.2	1,456.4
Iraq	4.1	4.2	59.5
Israel	14.2	14.4	105.6
Kuwait	0.4	0.6	5.4
Oman	1.1	1.2	14.1
Qatar	8.9	9.8	101.3
Saudi Arabia	6.1	6.7	64.8
Syria	8.2	9.4	106.2
Turkey	1.9	2.3	22.6
Total	44.9	48.6	479.5
ASIA-PACIFIC			
Afghanistan	1.6	8.0	77.8
Australia	3.2	1.2	18.5
Burma	0.4	0.6	5.4
Brunei-Malaysia	0.4	0.6	2.1
India	3.1	2.0	22.8
Indonesia	0.1	0.1	1.5
Japan	6.2	3.0	28.4
Pakistan	2.5	6.2	31.9
Taiwan	4.9	4.3	47.5
Thailand	5.4	0.1	7.5
Total	27.4	25.5	238.0
AFRICA			
Algeria	12.4	11.9	120.3
Angola	111.2	109.4	1,004.4
Cabinda	653.1	701.2	6,142.2
Congo	51.7	48.6	481.7
Egypt	828.4	871.1	7,748.6
Gabon	3,781.0	4,090.7	36,072.9
Libya	12.4	11.9	120.3
Morocco	111.2	109.4	1,004.4
Nigeria	653.1	701.2	6,142.2
Tunisia	51.7	48.6	481.7
Total	828.4	871.1	7,748.6
Communist			
China	828.4	871.1	7,748.6
Romania	3,781.0	4,090.7	36,072.9
U.S.S.R.	12.4	11.9	120.3
Other	111.2	109.4	1,004.4
Total	653.1	701.2	6,142.2
WORLD TOTAL	3,781.0	4,090.7	36,072.9

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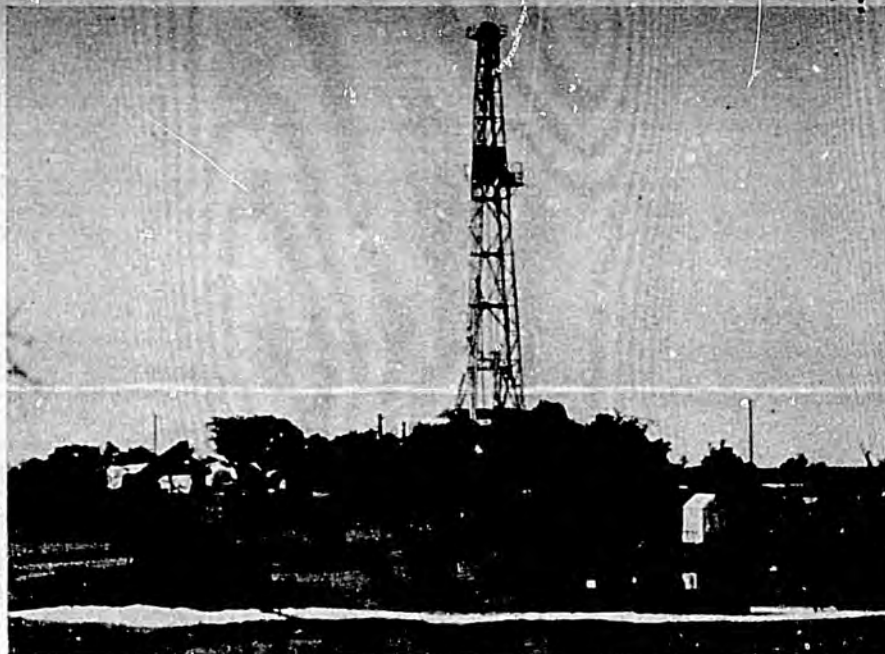
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EARLY oil giant enjoys revival.

Activity sparks pioneer oil field

ONE of oildom's oil giants, Sho-Vel-Tum field in southern Oklahoma, is enjoying a prolific revival with new drilling in new zones. Here Continental Oil Co. is drilling below 8,035 ft to a 14,000-ft Arbuckle Cambro-Ordovician objective at 1 Harris Fletcher "B" in NE SE SW 6-2s-3w. Location is in an old producing area south of the main field area, a field that covers a large section of southern Oklahoma. (Staff photo)

Springer sand hunt intensifies

SPRINGER sand exploration in Okla-
homa is picking up speed with new
successes and new plans announced.

Apexco Inc. is deep in the play with
completion reported at 1 Buell, C NW
11-11n-12w, northern Caddo County.
Location is 10 miles southwest of new
Springer production at North Niles
field in western Canadian County.
Open flow tests had 6,200 Mcfd from
perforations at 13,904 ft.

Other exploration news in the west-
ern part of Oklahoma includes a rank
wildcat in the only dry county in the
state. Woods Petroleum Co. will drill
to 5,000 ft at 1 Toler in C SW SE
14-1n-25w. Location is 40 miles from
Henderson pay production in Tillman
County. Well site is 6 miles north of
Red River in Harmon County.

Production is reported at a well in
Northwest Oakwood field, eastern
Dewey County. Wessely Energy 1
Blaine Unit, C NE NE 11-17n-15w, 2
miles southwest of Morrow Pennsyl-
vanian production, flowed gas and con-
densate on tests at 9,359-9,950 ft.

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See Page 85**

Worldwide crude production

(Daily average in thousands of bbl)

	Aug. 1973	July* 1973	Daily prod. 1972	8-month average Daily prod. 1973	Change from Vol.	%
WESTERN HEMISPHERE						
Argentina	410.0	408.0	429.0	418.0	- 11.0	- 2.6
Bolivia	45.0	45.0	41.0	47.0	6.0	14.6
Brazil	168.0	168.0	165.0	168.0	3.0	1.8
Canada	1,794.0	1,813.0	1,483.0	1,794.0	311.0	21.0
Chile	31.0	31.0	34.0	32.0	- 2.0	- 5.9
Colombia	190.0	190.0	201.0	193.0	- 8.0	- 4.0
Ecuador	210.0	210.0	22.0	201.0	179.0	813.6
Mexico	475.0	470.0	441.0	459.0	18.0	4.1
Peru	67.0	67.0	66.0	67.0	1.0	1.5
Trinidad	165.0	165.0	140.0	165.0	25.0	17.9
United States	9,173.0	9,199.0	9,457.0	9,229.0	-228.0	- 2.4
Venezuela	3,385.0	3,380.0	3,194.0	3,359.0	165.0	5.2
Total	16,113.0	16,146.0	15,673.0	16,132.0	459.0	2.9
WESTERN EUROPE						
Austria	50.0	50.0	47.0	49.0	2.0	4.3
Denmark	4.0	4.0	2.0	4.0	2.0	100.0
France	27.0	27.0	31.0	27.0	- 4.0	-12.9
West Germany	130.0	130.0	139.0	131.0	- 8.0	- 5.8
Italy	20.0	20.0	22.0	20.0	- 2.0	- 9.1
Netherlands	36.0	27.4	31.0	30.0	- 1.0	- 3.2
Norway	35.0	34.7	35.0	35.0		
Spain	23.0	23.0	3.0	19.0	16.0	533.3
United Kingdom	2.0	2.0	2.0	2.0		
Yugoslavia	70.0	70.0	62.0	71.0	9.0	14.5
Total	397.0	388.1	374.0	388.0	14	3.7
MIDDLE EAST						
Abu Dhabi	1,350.0	1,367.6	1,001.0	1,345.0	344.0	34.4
Bahrain	68.0	68.0	72.0	68.0	- 4.0	- 5.6
Dubai	293.0	247.0	132.0	234.0	102.0	77.3
Iran	5,702.0	5,873.9	4,862.0	5,810.0	948.0	19.5
Iraq	2,093.0	2,083.1	1,383.0	1,942.0	559.0	40.4
Israel	100.0	100.0	100.0	100.0		
Kuwait	3,010.0	3,281.3	3,234.0	3,060.0	-174.0	- 5.4
Oman	298.0	298.0	282.0	288.0	6.0	2.1
Qatar	568.0	605.1	452.0	588.0	136.0	30.1
Saudi Arabia	8,425.0	8,684.1	5,731.0	7,742.0	2,011.0	35.1
Syria	120.0	120.0	117.0	120.0	3.0	2.6
Turkey	65.0	65.0	65.0	65.0		
Total	22,092.0	22,793.1	17,431.0	21,362.0	3,931.0	22.6
ASIA-PACIFIC						
Afghanistan						
Australia	445.0	445.0	303.0	417.0	114.0	37.6
Burma	20.0	20.0	19.0	20.0	1.0	5.3
Brunei-Malaysia	330.0	330.0	268.0	319.0	51.0	19.0
India	150.0	150.0	151.0	149.0	- 2.0	- 1.3
Indonesia	1,347.0	1,334.0	1,061.0	1,288.0	227.0	26.8
Japan	15.0	15.0	15.0	15.0		
Pakistan	9.0	9.0	9.0	9.0		
Taiwan	2.0	2.0	2.0	2.0		
Thailand	0.2	0.2	0.2	0.2		
Total	2,318.2	2,305.2	1,783.2	2,219.2	436.0	24.5
AFRICA						
Algeria	1,100.0	1,100.0	1,055.0	1,106.0	51.0	4.8
Angolia	15.0	15.0	12.0	14.0	2.0	16.7
Cabinda	140.0	140.0	123.0	134.0	11.0	8.9
Congo	45.0	45.0	6.0	38.0	32.0	533.3
Egypt	235.0	235.0	216.0	209.0	- 7.0	- 3.2
Gabon	155.0	154.2	124.0	140.0	16.0	12.9
Libya	2,108.0	2,189.4	2,240.0	2,256.0	16.0	0.7
Morocco	0.3	0.3	0.3	0.3		
Nigeria	2,101.9	1,990.5	1,779.0	1,977.0	198.0	11.1
Tunisia	85.0	85.0	82.0	79.0	- 3.0	- 3.7
Total	5,985.2	5,954.4	5,637.3	5,953.3	316.0	5.6
COMMUNIST						
China	630.0	630.0	570.0	610.0	40.0	7.0
Romania	275.0	275.0	275.0	275.0		
U.S.S.R.	8,525.0	8,454.0	7,805.0	8,273.0	468.0	6.0
Other	105.0	105.0	90.0	105.0	15.0	16.7
Total	9,535.0	9,464.0	8,740.0	9,263.0	523.0	6.0
WORLD TOTAL	56,440.4	57,046.0	49,638.5	55,317.5	5,679.0	10.3

*Figures adjusted

Gas production

(billions cu ft)

	Aug.'73	July '73	Cum. 1973
WESTERN HEMISPHERE			
Argentina	20.0	19.8	153.2
Bolivia	14.2	12.8	100.5
Brazil	5.6	4.9	34.3
Canada	271.4	277.5	2,194.1
Chile	20.8	21.2	172.7
Colombia	12.6	13.0	86.4
Ecuador	0.6	0.7	4.6
Mexico	60.1	60.2	463.5
Peru	7.1	7.2	38.5
Trinidad	13.6	14.9	93.8
United States	1,870.3	1,871.2	15,340.5
Venezuela	140.2	139.3	1,119.0
Total	2,436.5	2,442.7	19,801.1
WESTERN EUROPE			
Austria	5.0	4.9	48.9
Denmark			
France	15.0	18.8	179.6
West Germany	41.7	48.7	382.5
Italy	40.6	39.4	309.3
Netherlands	249.2	251.1	1,854.3
Norway			
Spain			
United Kingdom	98.3	100.7	803.0
Yugoslavia	5.0	4.9	49.3
Total	455.8	468.5	3,626.9
MIDDLE EAST			
Abu Dhabi			
Bahrain	1.2	1.8	16.0
Dubai			
Iran	143.7	139.2	1,115.1
Iraq	14.1	14.2	107.7
Israel	0.1	0.1	2.7
Kuwait	0.4	4.3	49.9
Oman			
Qatar	0.1	1.1	7.1
Saudi Arabia			
Syria			
Turkey			
Total	163.2	160.7	1,298.5
ASIA-PACIFIC			
Afghanistan	4.2	6.4	55.4
Australia	14.4	11.9	91.4
Burma	0.6	0.7	5.0
Brunei-Malaysia			
India	1.2	1.1	13.0
Indonesia	9.8	10.9	92.4
Japan	6.7	7.9	58.7
Pakistan	9.4	10.3	98.0
Taiwan	2.3	1.8	20.7
Thailand			
Total	48.6	51.0	434.6
AFRICA			
Algeria	8.0	7.9	76.2
Angolia	1.2	1.6	15.3
Cabinda			
Congo	0.6	0.4	1.7
Egypt	2.0	1.9	19.7
Gabon	0.1	0.1	1.4
Libya	3.0	2.7	22.2
Morocco	6.2	6.2	29.4
Nigeria	4.3	4.8	42.6
Tunisia	0.1	0.1	2.1
Total	25.5	25.7	210.6
COMMUNIST			
China	11.9	11.2	107.9
Romania	109.4	111.7	893.2
U.S.S.R.	701.2	691.2	5,572.0
Other	43.6	50.6	430.0
Total	871.1	864.7	7,003.1
WORLD TOTAL	4,000.7	4,013.3	32,374.8

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9	Clark	RA-6	600
3	Clark	RA-5	500
3	CB	GMV	600
10	Clark	RA-32	300
12	IR	XVG	300

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- 1 — FRANKS EXPLORER 658, D/D, w/SKYTOP 96' hyd. derrick (2 yrs. old), mtd on FRANKS 4-axle, CUMMINS NHRS 320 diesel.
- 1 — FRANKS CRUISER 658 DTM, D/D, w/FRANKS derrick, mtd. on FRANKS 4-axle, CUMMINS NH 250.
- 2 — FRANKS EXPLORER 658 DTM, D/D, w/FRANKS 96' derrick, mtd. on FRANKS 4-axle, CUMMINS NH 250.
- 1 — HOPPER HOIST GXXA, D/D, w/HOPPER 96' hyd. mast 96-150-C (mast new 7-20-72) mtd. on HOPPER tandem, CUMMINS NH 220 diesel.
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Worldwide crude production

	July 1973	June* 1973	Daily prod. 1972	Daily prod. 1973	7-month average Change Vol.	from %
WESTERN HEMISPHERE						
Argentina	418.0	418.0	430.0	421.0	- 9.0	- 2.1
Bolivia	50.0	50.0	40.0	50.0	10.0	25.0
Brazil	168.0	168.0	165.0	168.0	3.0	1.8
Canada	1,813.0	1,725.0	1,472.0	1,799.0	327.0	22.2
Chile	35.0	35.0	35.0	35.0		
Colombia	200.0	200.0	201.0	200.0	- 1.0	- 0.5
Ecuador	210.0	192.5	16.0	198.0	182.0	
Mexico	470.0	460.0	442.0	457.0	15.0	3.4
Peru	70.0	70.0	65.0	70.0	5.0	7.7
Trinidad	165.0	165.0	139.0	165.0	26.0	18.7
Venezuela	3,380.0	3,417.4	3,182.0	3,355.0	173.0	5.4
TOTAL	6,979.0	6,900.9	6,187.0	6,918.0	731.0	11.8
EUROPE						
Austria	48.0	47.0	46.0	47.0	1.0	2.2
Denmark	4.0	4.0	1.0	4.0	3.0	300.0
France	27.0	27.0	32.0	27.0	- 5.0	- 15.6
West Germany	130.0	130.5	140.0	131.0	- 9.0	- 6.4
Italy	20.0	20.0	22.0	19.0	- 3.0	- 13.6
Netherlands	27.4	30.0	32.0	29.0	- 3.0	- 9.4
Norway	35.7	40.0	34.0	36.0	2.0	5.9
Spain	23.0	23.0	3.0	19.0	16.0	533.3
United Kingdom	2.0	2.0	2.0	2.0		
Yugoslavia	70.0	70.0	61.0	71.0	10.0	16.4
TOTAL	387.1	393.6	373.0	385.0	2.0	3.2
MIDDLE EAST						
Abu Dhabi	1,367.6	1,328.0	981.0	1,344.0	363.0	37.0
Bahrain	68.3	68.7	72.0	68.0	- 4.0	- 5.6
Dubai	247.0	210.0	132.0	225.0	93.0	70.5
Iran	5,873.9	5,797.0	4,845.0	5,826.0	981.0	20.2
Iraq	2,083.1	2,020.0	1,398.0	1,919.0	521.0	37.3
Israel	100.0	100.0	110.0	100.0	- 10.0	- 9.0
Kuwait	3,289.1	2,821.5	3,177.0	3,069.0	- 108.0	- 3.4
Oman	298.0	286.0	281.0	287.0	6.0	2.1
Qatar	705.1	560.0	441.0	606.0	165.0	37.4
Saudi Arabia	8,691.9	7,521.3	5,949.0	7,644.0	1,995.0	35.3
Syria	120.0	120.0	117.0	120.0	3.0	2.6
Turkey	64.0	64.0	64.0	64.0		
TOTAL	22,908.0	20,896.5	17,267.0	21,272.0	4,005.0	23.2
ASIA-PACIFIC						
Afghanistan						
Australia	445.0	436.0	292.0	413.0	121.0	41.4
Burma	20.0	20.0	18.0	20.0	2.0	11.1
Brunei-Malaysia	330.0	320.0	264.0	317.0	53.0	20.1
India	150.0	150.0	151.0	149.0	- 2.0	- 1.3
Indonesia	1,253.0	1,275.3	998.0	1,220.0	222.0	22.2
Japan	15.0	15.0	15.0	15.0		
Pakistan	9.0	9.0	9.0	9.0		
Taiwan	2.0	2.0	2.0	2.0		
Thailand	0.2	0.2	0.3	0.2	- 0.1	- 33.3
TOTAL	2,224.2	2,227.5	1,749.3	2,145.2	395.9	22.6
AFRICA						
Algeria	1,100.0	1,100.0	1,051.0	1,107.0	56.0	5.3
Angola	15.0	13.0	12.0	14.0	2.0	16.7
Cabinda	140.0	132.0	122.0	133.0	11.0	9.0
Congo (Brazzaville)	47.0	47.0	6.0	38.0	32.0	533.3
Egypt	235.0	177.0	216.0	205.0	- 11.0	- 5.1
Gabon	150.0	150.0	124.0	138.0	14.0	11.3
Libya	2,189.4	2,289.0	2,261.0	2,277.0	16.0	0.7
Morocco	0.3	0.3	0.3	0.3		
Nigeria	2,000.0	1,999.0	1,764.0	1,957.0	193.0	10.9
Tunisia	85.0	85.0	81.0	79.0	- 2.0	- 2.5
TOTAL	5,961.7	5,992.3	5,637.3	5,948.3	311.0	5.5
NONCOMMUNIST						
United States	38,460.0	36,410.8	31,213.6	36,668.5	5,454.9	17.5
TOTAL	47,659.0	45,624.8	40,662.6	45,906.5	5,243.9	12.9
COMMUNIST AREA						
China	600.0	600.0	550.0	600.0	50.0	9.1
Romania	275.0	275.0	275.0	275.0		
Russia	8,454.0	8,371.0	7,764.0	8,230.0	466.0	6.0
Other	105.0	105.0	105.0	105.0		
TOTAL	9,434.0	9,351.0	8,694.0	9,210.0	516.0	5.9
WORLD TOTAL	57,093.0	54,975.8	49,356.6	55,116.5	5,759.9	11.7

*Figures Adjusted.

Worldwide gas production

July '73	(Billions cu ft) June '73	1973 cum.
19.8	20.2	133.2
12.8	13.6	86.3
4.9	6.2	28.7
277.5	252.7	1,922.7
21.2	24.0	151.9
13.0	12.8	73.8
0.7	0.8	4.0
60.2	60.1	403.4
7.2	6.1	31.4
14.9	13.6	80.2
139.3	140.2	978.8
571.5	550.1	3,894.4
4.9	6.2	43.9
18.8	18.1	163.6
48.7	50.2	340.8
39.4	40.0	268.7
251.1	246.2	1,605.1
100.7	101.7	704.7
4.9	6.0	44.3
468.5	468.4	3,171.1
1.8	2.1	14.8
139.2	142.7	971.4
14.2	15.1	93.6
0.1	0.2	2.6
4.3	5.0	45.9
1.1	1.0	7.0
160.7	166.1	1,135.3
6.4	6.7	51.2
11.9	12.5	77.0
0.7	0.6	4.4
1.1	1.0	11.8
10.9	11.0	82.6
7.9	7.6	52.0
10.3	11.0	88.6
1.8	2.0	18.4
51.0	52.4	386.0
7.9	8.0	68.2
1.6	1.7	14.1
0.4	0.1	1.1
1.9	2.0	17.7
0.1	0.1	1.3
2.7	2.4	19.2
6.2	2.0	23.2
4.8	5.6	38.3
0.1	0.2	2.0
25.7	22.1	185.1
1,277.4	1,259.1	8,771.9
1,871.2	1,889.3	13,470.2
3,148.6	3,148.4	22,242.1
11.2	12.0	96.0
111.7	110.9	783.8
691.2	688.4	4,870.8
50.6	49.9	381.4
864.7	861.2	6,132.0
4,013.3	4,009.6	28,374.1

BOOKS

OIL AND GAS INTERNATIONAL YEAR BOOK. Published by Walter R. Skinner, 388-389 10 Bolt Court, London EC4A 3HL, England. 1973. Post paid 8 pounds or \$24. Via air 11 pounds or \$33. 812 pp.

The 1973 edition of Skinner's Oil & Gas International Year Book (formerly Oil & Petroleum International Year Book) contains particulars of over 1,200 companies including a number of new companies in the gas industry. The book is recognized as the fore-

most reference work of its kind, with a coverage both worldwide and detailed. The many companies registered abroad are distinguished by an entry immediately beneath the title giving the date and place of incorporation; where the date of registration alone is mentioned, the company is registered in the United Kingdom.

Again, each company entry has been reviewed and, where necessary, revised in the light of additional information received since the previous

volume. The information thus recorded is the latest available at the time of going to press.

This edition has been considerably enlarged with new features: (a) North Sea section showing map with major discoveries together with extensive list of U.K. concession participants, (b) a cross-reference Index to the titles of nearly 3,500 oil, gas and associate companies appearing in this volume, (c) refining, tanker and consumption tables. Established features—"Geographical Index," "Suppliers' Directory and Buyers' Guide," "World Production Table," "Professional Services," and "Australian Oil Map" have been retained and updated.

MINERAL EXPLORATION, MINING, AND PROCESSING PATENTS, 1972. By Oliver S. North. 812 South Ode St., Arlington, Va. 22204. 319 pp. 1937. \$25.

This subject-classified, fully indexed volume of abstracts of the 1972 patent literature is of both immediate and long-term reference value to executives, research and planning engineers, and all professional personnel charged with responsibility in one or more of the following areas: exploring for metallic and nonmetallic minerals, mining mineral deposits, beneficiating ores and concentrating minerals, extracting metals from ores, refining primary metals, and supplying reagents and equipment to the minerals industry.

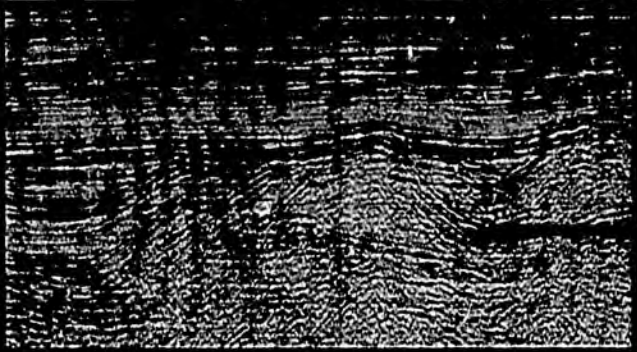
EUROPEAN MODEL CODE OF SAFE PRACTICE IN THE STORAGE AND HANDLING OF PETROLEUM PRODUCTS. PART I: OPERATIONS. Published by Applied Science Publishers Ltd., 22 Rippleside Commercial Estate, Barking, Essex, England. 1973. 84 pp.

SAND AND SANDSTONE. By Pettijohn-Potter-Siever, Published by Springer-Verlag, 175 Fifth Avenue, New York 10010. 1973. 615 pp. \$14.50.

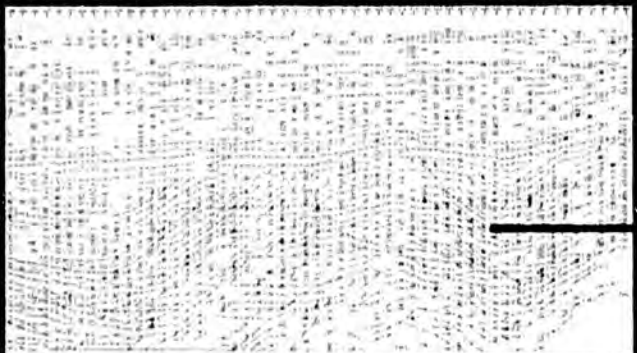
This book is the outgrowth of a week-long conference on sandstone organized by the authors in Banff, 1964 under the auspices of the Alberta Association of Petroleum Geologists and the University of Alberta. It was again held in 1965 in Bloomington, Ind., at the University of Indiana. A 200-page syllabus was prepared for the second conference.

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Worldwide crude production

(Daily average in thousands of bbl)

	June 1973	May* 1973	Daily prod. 1972	6-month average Daily prod. 1973	Change from Vol. %	
WESTERN HEMISPHERE						
Argentina	422.0	422.0	430.0	432.0	2.0	0.5
Bolivia	50.0	50.0	40.0	50.0	10.0	25.0
Brazil	165.0	165.0	168.0	165.0	- 3.0	- 1.8
Canada	1,900.3	1,731.0	1,461.0	1,809.0	348.0	23.8
Chile	35.0	35.0	32.0	35.0	3.0	9.4
Colombia	200.0	200.0	202.0	200.0	- 2.0	- 1.0
Ecuador	192.5	150.0	7.0	197.0	190.0	...
Mexico	475.0	475.0	442.0	468.0	26.0	5.9
Peru	70.0	70.0	66.0	70.0	4.0	6.1
Trinidad	165.0	165.0	141.0	165.0	24.0	17.0
Venezuela	3,373.0	3,415.0	3,166.0	3,338.0	172.0	5.4
TOTAL	7,047.8	6,878.0	6,155.0	6,929.0	774.0	12.6
EUROPE						
Austria	47.0	47.0	46.0	47.0	1.0	2.2
Denmark	4.0	4.0	...	4.0	4.0	...
France	30.0	30.0	32.0	30.0	- 2.0	- 6.3
West Germany	130.0	129.7	140.0	131.0	- 9.0	- 6.4
Italy	20.0	20.0	22.0	20.0	- 2.0	- 9.1
Netherlands	30.0	30.0	32.0	30.0	- 2.0	- 6.3
Norway	40.0	38.6	33.0	36.0	3.0	9.1
Spain	23.0	23.0	3.0	18.0	15.0	500.0
United Kingdom	2.0	2.0	2.0	2.0	...	...
Yugoslavia	70.0	70.0	60.0	70.0	10.0	16.7
TOTAL	396.0	394.3	370.0	388.0	18.0	4.9
MIDDLE EAST						
Abu Dhabi	1,298.0	1,384.0	984.0	1,335.0	351.0	35.7
Bahrain	68.7	68.4	73.0	68.0	- 5.0	- 6.8
Dubai	210.0	239.0	129.0	222.0	93.0	72.1
Iran	5,827.0	5,843.0	4,829.0	5,823.0	994.0	20.6
Iraq	2,020.0	2,046.0	1,475.0	1,891.0	416.0	28.2
Israel	110.0	110.0	120.0	110.0	- 10.0	- 8.3
Kuwait	2,855.0	2,825.0	3,239.0	3,036.0	- 203.0	- 6.3
Oman	286.0	288.0	279.0	285.0	6.0	2.2
Qatar	560.0	586.0	435.0	589.0	154.0	35.4
Saudi Arabia	7,554.8	8,318.0	5,686.0	7,470.0	1,784.0	31.4
Syria	120.0	120.0	118.0	120.0	2.0	1.7
Turkey	70.0	70.0	64.0	69.0	5.0	7.8
TOTAL	20,979.5	21,897.4	17,431.0	21,018.0	3,587.0	20.6
ASIA-PACIFIC						
Afghanistan	...	...	...	...	...	...
Australia	436.6	431.0	322.0	408.0	86.0	26.7
Burma	20.0	20.0	18.0	20.0	2.0	11.1
Brunei-Malaysia	320.0	320.0	278.0	315.0	37.0	13.3
India	150.0	150.0	152.0	150.0	- 2.0	- 1.3
Indonesia	1,350.0	1,325.0	1,029.0	1,235.0	206.0	20.0
Japan	15.0	15.0	15.0	15.0	...	...
Pakistan	9.0	9.0	9.0	9.0	...	...
Taiwan	2.0	2.0	2.0	2.0	...	...
Thailand	0.3	0.3	0.3	0.3	...	...
TOTAL	2,302.9	2,272.3	1,825.3	2,154.3	329.0	18.0
AFRICA						
Algeria	1,110.0	1,110.0	1,044.0	1,108.0	64.0	6.1
Angola	13.0	13.0	12.0	13.0	1.0	8.3
Cabinda	132.0	132.0	124.0	132.0	8.0	6.5
Congo (Brazzaville)	48.0	47.1	8.0	36.8	28.8	360.0
Egypt	210.0	216.0	218.0	200.0	- 18.0	- 8.3
Gabon	148.0	147.7	130.0	135.2	5.2	0.4
Libya	2,289.0	2,264.0	2,301.0	2,292.0	- 9.0	- 0.4
Morocco	0.3	0.3	0.3	0.3	...	...
Nigeria	1,998.0	1,948.4	1,759.0	1,941.0	182.0	10.3
Tunisia	85.0	85.0	80.0	85.0	5.0	6.3
TOTAL	6,033.3	5,963.5	5,676.3	5,943.3	267.0	4.7
NONCOMMUNIST						
United States	36,759.5	37,405.5	31,457.6	36,432.6	4,975.0	15.8
Other	9,206.0	9,216.0	9,437.0	9,242.0	- 195.0	- 2.1
TOTAL	45,965.5	46,621.5	40,894.6	45,674.6	4,780.0	11.7
COMMUNIST AREA						
China	600.0	600.0	550.0	600.0	50.0	9.1
Romania	275.0	275.0	275.0	275.0	...	...
Russia	8,371.0	8,289.0	7,795.0	8,187.0	392.0	5.0
Other	105.0	105.0	105.0	105.0	...	...
TOTAL	9,351.0	9,269.0	8,725.0	9,167.0	442.0	5.1
WORLD TOTAL	55,316.5	55,890.5	49,619.6	54,841.6	5,222.0	10.5

*Figures adjusted. †On stream July 1972.

Worldwide gas production

(Billions cu ft)

	June '73	May '73	1973 cum.
WESTERN HEMISPHERE			
Argentina	20.2	19.2	113.4
Bolivia	13.6	12.4	73.5
Brazil	6.2	4.1	23.8
Canada	252.7	267.4	1,645.2
Chile	24.0	20.7	130.7
Colombia	12.8	11.1	60.8
Ecuador	0.8	0.5	3.3
Mexico	60.1	54.4	343.2
Peru	6.1	4.0	24.2
Trinidad	13.6	12.1	65.3
Venezuela	140.0	138.7	839.5
TOTAL	550.1	544.6	3,322.9
EUROPE			
Austria	6.2	7.8	39.0
Denmark	...	...	...
France	18.1	20.0	144.8
West Germany	50.2	56.0	292.1
Italy	40.0	41.9	229.3
Netherlands	246.2	246.1	1,354.0
Norway	...	...	...
Spain	101.7	100.7	604.0
United Kingdom	6.0	7.9	39.4
Yugoslavia	...	...	...
TOTAL	468.4	480.4	2,702.6
MIDDLE EAST			
Abu Dhabi	...	...	...
Bahrain	2.1	3.0	13.0
Dubai	...	...	...
Iran	142.7	141.2	832.2
Iraq	15.1	16.1	79.4
Israel	0.2	0.4	2.5
Kuwait	5.0	6.1	41.6
Oman	...	...	...
Qatar	1.0	1.1	5.9
Saudi Arabia	...	...	...
Syria	...	...	...
Turkey	...	...	...
TOTAL	166.1	167.9	974.6
ASIA-PACIFIC			
Afghanistan	6.7	7.5	44.8
Australia	12.5	11.4	65.1
Burma	0.6	0.7	3.7
Brunei-Malaysia	...	...	...
India	1.0	1.1	10.7
Indonesia	11.0	11.9	71.7
Japan	7.6	7.8	44.1
Pakistan	11.0	12.4	78.3
Taiwan	2.0	2.8	16.6
Thailand	...	...	...
TOTAL	52.4	55.6	335.0
AFRICA			
Algeria	8.0	8.7	60.3
Angola	1.7	1.9	12.5
Cabinda	...	...	...
Congo (Brazzaville)	0.1	0.2	0.7
Egypt	2.0	2.1	15.8
Gabon	0.1	0.1	1.2
Libya	2.4	2.9	16.5
Morocco	2.0	2.4	17.0
Nigeria	5.6	5.7	33.5
Tunisia	0.2	0.3	1.9
TOTAL	22.1	24.3	159.4
NONCOMMUNIST			
United States	1,259.1	1,272.8	7,494.5
Other	1,889.3	1,910.4	11,599.0
TOTAL	3,148.4	3,183.2	19,093.5
COMMUNIST AREA			
China	12.0	12.9	84.8
Romania	110.9	111.1	672.1
Russia	688.4	688.3	4,179.6
Other	49.9	59.8	330.8
TOTAL	861.2	872.1	5,267.3
WORLD TOTAL	4,009.6	4,055.3	24,360.8

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LEGAL

U.S. DEPARTMENT OF THE INTERIOR, Bureau of Land Management, Montana State Office, 316 North 26th Street, Billings, Montana 59101. Notice is hereby given that approximately 1557.51 acres of land in eight (8) parcels within the known geologic structures of DRY CREEK, BELFRY, and CLARK'S FORK NORTH Fields, situated in Carbon County, MONTANA, will be offered for competitive oil and gas leasing through sealed bids to the qualified bidder of the highest cash amount per acre at 10:00 a.m., M.D.T., September 18, 1973, with the bids being opened at 1:00 p.m., M.D.T., September 18, 1973. Special environmental stipulations will be required on all of the parcels. Full details of the lease offering,

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Nalco Chemical Company	10
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Seismograph Service Corporation, A Subsidiary of Raytheon Company	94
Sumitomo Shipbuilding & Machinery Co., Ltd.	79
Swaco Operations, Oilfield Products Division, Dresser Industries, Inc.	27
Turbo Power & Marine Systems, Subsidiary of United Aircraft Corp.	31
Western Hemisphere, Ltd.	6
Youngstown Sheet & Tube Company	5

and how and where to submit bids, may be obtained from the Bureau of Land Management, 316 North 26th Street, Billings, Montana 59101.

LEGAL

SEALED BIDS will be received until 2:00 p.m., M.D.T., September 19, 1973, and opened at that time in the Colorado State Office, for competitive oil and gas leasing of 2,166.08 acres of land in eleven parcels within the known geologic structures of the Douglas Creek-Dragon Trail, White River Dome, and Wilson Creek Fields, Rio Blanco County, Colorado. The United States reserves the right to reject any and all bids. Lease offering and bid information may be obtained from the Bureau of Land Management, Room 700, Colorado State Bank Building, 1600 Broadway, Denver, Colorado 80202.

(Continued from p. 95)

east of State Line field and about 2 miles east-northeast of the above discovery. State Line was a 1972 discovery. Harding County lies in north-western South Dakota on the southern rim of the huge basin.

TEXAS

ATHENS Devonian field in Reeves County, West Texas, has its second well.

New producer is Getty Oil Co. 1 State "28," 10 miles north of Toyah. The Delaware basin success flowed 81,000 Mcfd on calculated absolute open flow from perforations at 12,729-12,991 ft. Total depth is 13,500 ft. Location is in Section 28, Block 55, T-5, T&P Survey, 1/2 mile northwest of the field-opener, a well dug by Coastal States Gas Producing Co. at 1 Jean Spencer trust.

ELLENBURGER gas is reported at a Pecos County wildcat in West Texas.

New strike is Coastal States Gas Producing Co. 1 C. R. Downie, 35 miles south of Fort Stockton in the Delaware basin. Flow was 18,500 Mcfd on calculated absolute open flow through perforations at 21,300-22,268 ft. Location is in Sec. 7, Block R-3, GC&SF Survey. It is 3 1/2 miles south of Grey Ranch field, a Devonian and Ellenburger pool.

DUAL Fusselman and Ellenburger gas production is reported at a new wildcat discovery in West Texas' Loving County.

Forest Oil Corp. completed the dual well at 1 El Paso-State, 4 miles southeast of Mentone, county seat. The well flowed 32,000 Mcfd on calculated absolute open flow, from perforations at 18,804-19,119 ft in the Fusselman Siluro-Devonian and 9,400 Mcfd from Ellenburger Cambro-Ordovician section at 21,298-21,479 ft. Location is in Section 54, Block 1, W&NW Survey.

DAVIDSON Ranch field in Crockett County, West Texas, has been extended to the east.

Extension success is Delta-Suburban of San Antonio 1-D McMullan, 3/4 mile to the east of field production. The well flowed 1,075 Mcfd from perforations in the Pennsylvanian at 7,827 to 8,048 ft.

GAS ENGINEERS

(Overseas)

Several Gas Engineers required for initial assignment in the Hague and subsequent transfer to Saudi Arabia. Degree in Chemical Engineering and 5-10 years in process design, facilities planning and technical service of gas processing plants and LNG plants. Knowledgeable in metallurgical problems experienced in gas processing facilities. Should have supervisory background and growth potential. Will also consider for junior positions recent graduates whose studies include gas engineering or who have had limited experience in this field.

Good schools, hospitals, community and recreational facilities similar to any small community in the U.S.A. All inclusive benefits plan. Opportunities for substantial savings and extensive travel due to liberal vacations.

Send résumé outlining education, work experience and personal history to:



EMPLOYMENT SUPERVISOR

ARABIAN AMERICAN OIL COMPANY

1345 Avenue of the Americas, New York, N.Y. 10019

an equal opportunity employer

Worldwide crude production

	Jan. 1973	Dec. 1972	(Daily average in thousands of bbl)			
			12-month average		Change from	
			Daily prod. 1972	Daily prod. 1973	Vol.	%
WESTERN HEMISPHERE						
Argentina	431.0	452.0	442.0	431.0	- 11.0	- 2.5
Bolivia	45.0	45.0	39.0	45.0	6.0	15.4
Brazil	165.0	165.0	169.0	165.0	- 4.0	- 2.4
Canada	1,788.0	1,726.0	1,579.0	1,788.0	209.0	13.2
Chile	35.0	34.0	32.0	35.0	3.0	9.4
Colombia	200.0	195.0	208.0	200.0	- 8.0	- 3.8
Ecuador	140.0	170.0	3.0	140.0	137.0	...
Mexico	460.0	450.0	439.0	460.0	21.0	4.8
Peru	70.0	70.0	62.0	70.0	8.0	12.9
Trinidad	165.0	160.0	125.0	165.0	40.0	32.0
Venezuela	3,262.0	3,284.0	3,169.0	3,262.0	93.0	2.9
TOTAL	6,761.0	6,751.0	6,267.0	6,761.0	494.0	7.9
EUROPE						
Austria	47.0	46.0	49.0	47.0	- 2.0	- 4.1
Denmark	4.0	6.0	...	4.0	4.0	...
France	30.0	30.0	34.0	30.0	- 4.0	- 11.8
West Germany	130.0	137.0	139.0	130.0	- 9.0	- 6.5
Italy	20.0	20.0	24.0	20.0	- 4.0	- 16.7
Netherlands	33.0	30.8	33.0	33.0	...	...
Norway	38.0	23.8	10.0	38.0	28.0	280.0
Spain	2.5	2.5	2.5	2.5	...	...
United Kingdom	1.6	1.6	1.6	1.6	...	...
Yugoslavia	70.0	69.0	58.0	70.0	12.0	20.7
TOTAL	376.1	367.1	351.1	376.1	25.0	7.1
MIDDLE EAST						
Abu Dhabi	1,255.0	1,142.0	1,048.0	1,255.0	207.0	19.8
Bahrain	68.0	67.3	74.0	68.0	- 6.0	- 8.1
Dubai	240.0	240.3	130.0	240.0	110.0	84.6
Iran	5,809.0	5,643.0	4,706.0	5,809.0	1,103.0	23.4
Iraq	1,487.0	1,699.0	1,930.0	1,487.0	-443.0	- 23.0
Israel	120.0	120.0	120.0	120.0	...	...
Kuwait	3,765.0	3,090.2	3,772.0	3,765.0	- 7.0	- 0.2
Oman	280.0	281.0	280.0	280.0	...	...
Qatar	581.0	575.0	452.0	581.0	129.0	28.5
Saudi Arabia	5,878.0	6,699.1	4,621.0	5,878.0	1,257.0	22.4
Syria	120.0	120.0	115.0	120.0	5.0	4.3
Turkey	67.0	67.0	61.0	67.0	6.0	9.8
TOTAL	19,670.0	19,743.3	17,309.0	19,670.0	2,361.0	13.6
ASIA-PACIFIC						
Australia	413.0	439.2	361.0	413.0	52.0	14.4
Burma	20.0	20.0	18.0	20.0	2.0	11.1
Brunei-Malaysia	320.0	310.0	265.0	320.0	55.0	20.8
India	150.0	150.0	152.0	150.0	- 2.0	- 1.3
Indonesia	1,124.0	1,121.0	933.0	1,124.0	191.0	20.5
Japan	15.0	15.0	15.0	15.0	...	...
Pakistan	9.0	9.0	9.0	9.0	...	...
Taiwan	2.0	2.0	2.0	2.0	...	...
Thailand	0.3	0.3	0.3	0.3	...	...
TOTAL	2,053.3	2,066.5	1,755.3	2,053.3	298.0	17.0
AFRICA						
Algeria	1,100.0	1,100.0	951.0	1,100.0	149.0	15.7
Angola	13.0	12.5	12.0	13.0	1.0	8.3
Cabinda	130.0	130.0	124.0	130.0	6.0	4.8
Congo (Brazzaville)	7.5	7.5	0.5	7.5	7.0	...
Egypt	202.0	202.0	227.0	202.0	- 25.0	- 11.0
Gabon	140.0	140.0	129.0	140.0	11.0	8.5
Libya	2,306.0	2,215.0	2,455.0	2,306.0	-149.0	- 6.1
Morocco	0.3	0.3	0.3	0.3	...	...
Nigeria	1,932.0	1,920.0	1,695.0	1,932.0	237.0	14.0
Tunisia	85.0	85.0	82.0	85.0	3.0	3.7
TOTAL	5,915.8	5,812.3	5,675.8	5,915.8	240.0	4.2
Non-Communist	34,776.2	34,740.2	31,258.2	34,776.2	3,418.0	10.9
United States	9,465.0	9,485.0	9,115.0	9,465.0	350.0	3.8
TOTAL	44,241.2	44,225.2	40,473.2	44,241.2	3,768.0	9.3
COMMUNIST AREA						
Red China	600.0	600.0	510.0	600.0	90.0	17.6
Romania	280.0	280.0	280.0	280.0	...	...
Russia	8,077.0	8,006.0	7,620.0	8,077.0	457.0	6.0
Other	85.0	85.0	85.0	85.0	...	...
TOTAL	9,042.0	8,971.0	8,495.0	9,042.0	547.0	6.4
WORLD TOTAL	53,283.2	53,196.2	48,968.2	53,283.2	4,315.0	8.8

*Figures adjusted. †On stream July '72.

Worldwide gas production

	(billions of cu ft)		
	Jan. '73	Dec. '72	1973 total
WESTERN HEMISPHERE			
Argentina	18.9	19.8	18.9
Bolivia	14.0	14.0	14.0
Brazil	3.2	3.6	3.2
Canada	281.6	265.9	281.6
Chile	21.0	23.0	21.0
Colombia	9.2	10.3	9.2
Ecuador	0.3	0.4	0.3
Mexico	60.2	55.8	60.2
Peru	0.1	0.2	0.1
Trinidad	10.1	9.3	10.1
Venezuela	142.0	140.0	142.0
TOTAL	560.6	542.3	560.6
EUROPE			
Austria	6.0	7.1	6.0
Denmark	20.2	21.3	20.2
France	56.0	53.0	56.0
West Germany	46.0	38.7	46.0
Italy	123.0	120.0	123.0
Netherlands	...	...	...
Norway	...	...	...
Spain	87.1	64.2	87.1
United Kingdom	4.2	5.0	4.2
Yugoslavia	...	...	...
TOTAL	342.5	309.3	342.5
MIDDLE EAST			
Abu Dhabi	0.3	0.3	0.3
Bahrain	137.9	128.5	137.9
Dubai	0.0	0.1	0.0
Iran	0.5	0.5	0.5
Iraq	14.1	16.0	14.1
Israel	...	...	...
Kuwait	0.2	0.1	0.2
Oman	...	...	...
Qatar	...	...	...
Saudi Arabia	...	...	...
Syria	...	...	...
Turkey	...	...	...
TOTAL	153.0	129.3	153.0
ASIA-PACIFIC			
Australia	7.8	7.7	7.8
Burma	10.1	9.9	10.1
Brunei-Malaysia	0.6	0.6	0.6
India	...	...	...
Indonesia	1.4	1.4	1.4
Japan	12.4	12.7	12.4
Pakistan	6.7	6.7	6.7
Taiwan	13.9	12.4	13.9
Thailand	3.0	2.9	3.0
TOTAL	55.9	54.3	55.9
AFRICA			
Algeria	9.3	10.4	9.3
Angola	3.0	3.2	3.0
Cabinda	...	...	...
Congo (Brazzaville)	0.1	0.1	0.1
Egypt	5.2	4.8	5.2
Gabon	0.1	0.1	0.1
Libya	0.5	0.4	0.5
Morocco	6.0	16.0	6.0
Nigeria	6.7	7.0	6.7
Tunisia	0.5	0.6	0.5
TOTAL	31.4	42.6	31.4
Non-Communist	1,143.4	1,077.8	1,143.4
United States	1,992.1	2,116.7	1,992.1
TOTAL	3,135.5	3,194.5	3,135.5
COMMUNIST AREA			
Red China	15.0	13.4	15.0
Romania	111.1	109.4	111.1
Russia	720.1	706.0	720.1
Other	52.0	46.0	52.0
TOTAL	898.2	874.8	898.2
WORLD TOTAL	4,033.7	4,069.3	4,033.7

Oxy plant will produce fuel oil from refuse

THE first solid-waste processing plant to produce commercial fuel oil will be designed and engineered by Occidental Petroleum Corp. under a \$4-million program funded mostly by the Environmental Protection Agency.

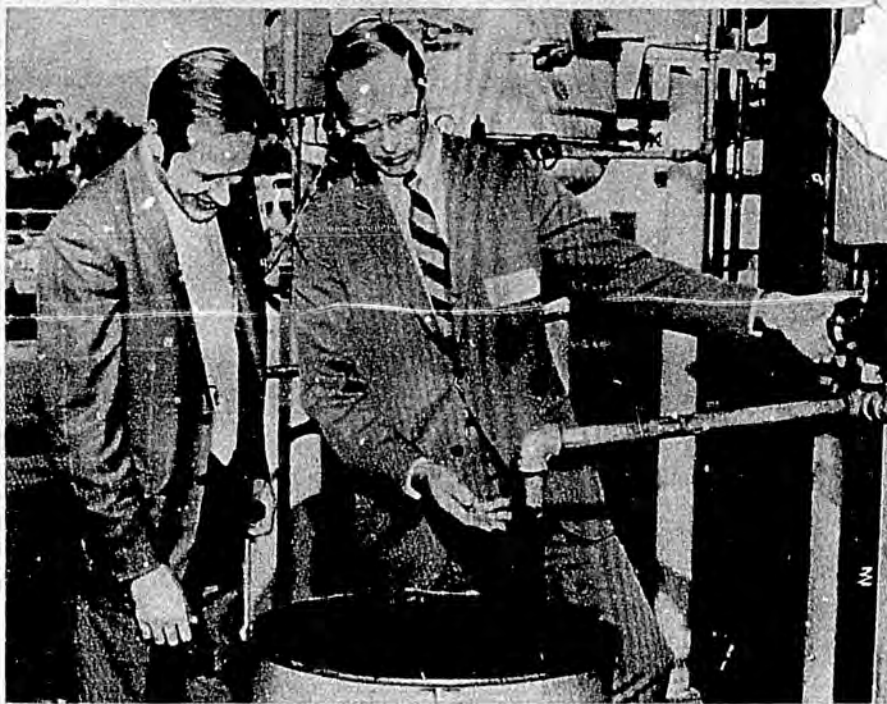
Oxy also will supervise construction of the 200-ton/day demonstration, or prototype, plant in San Diego County, Calif., and use the company's flash pyrolysis process.

The plant, scheduled for operation in late 1974, will convert 92% of the refuse into products, which include 1 bo/ton waste, or 200 b/d. Other products will be glass, metals, char.

The oil will be suitable for replacing No. 6 fuel oil which will be purchased by San Diego Gas & Electric Co. for power generation.

Oxy said that Kreisinger Development Laboratory of Combustion Engineering Inc. test-fired the low-sulfur pyrolytic oil produced earlier by Oxy and reported that the oil, or blends of it with No. 6 fuel oil, "can be successfully burned in a utility boiler with a properly designed fuels-handling and atomization system."

Oxy's Garrett Research & Development division, which has developed the pyrolysis process for converting solid wastes, such as garbage and trash, into marketable products, signed the agreement for the plant with the County of San Diego. Garrett Research will train the operators the first year, after which San Diego



DONALD E. Garrett, Occidental's executive vice-president for research and development, shows Director C. J. Houson of San Diego County's sanitation department how oil is made from garbage.

County will operate the plant.

The EPA will contribute \$2,962,000 toward financing of the plant, which will be virtually pollution-free. San Diego County will contribute \$600,000, Oxy \$300,000 and SDG&E \$150,000.

The plant will be located in the Escondido area, about 32 miles north of San Diego, and will serve a population of 40,000.

The Garrett division, which has demonstrated the pyrolysis process at

its La Verne, Calif., plant, expects the concept to be usable at a 2,000 ton/daily rate and thus serve a city of some 800,000. Such a plant, costing about \$15 million, conceivably could pay for itself through waste-products sale—including 2,000 b/d of fuel oil.

The flash pyrolysis process involves heating solid waste to about 900° F. in the absence of oxygen and requires about 30 min to recover oil after the waste material is introduced.

Companies vying for tracts in Peruvian jungles

ABOUT a dozen international oil companies are at varying stages of negotiation with Peru's state-owned Petroperu for contract exploration blocks in three separate jungle regions.

The areas are the northern Marañon-Pastaza-Napo region where eight companies already signed up are concentrated, the central Ucayali area, and the Madre de Dios area in the southwestern jungle.

The most advanced negotiations are with Cities Service (Madre de Dios region), Signal Companies Inc. with West Germany's Deminex (Ucayali region), and Andes Petroleum Exploration Corp., a Japanese consortium (Madre de Dios region).

As yet there is no indication as to when these contracts might be signed. But an important part of the negotiations, especially for blocks in the north, involve the price to be paid for moving crude through a projected pipeline that would be owned solely by Petroperu.

Stiffer terms. Most negotiations are being conducted on the basis of a 45-55 split of crude in favor of Petroperu, with a 44-56 split when production exceeds 100,000 b/d.

The first contracts, beginning with Occidental Petroleum almost 2 years ago, were based on a 50-50 deal, but Peruvian terms have since stiffened.

The minimum work program for the

first 4 years requires an investment of about \$8-9 million.

Here's a breakout of regions and other companies negotiating for contracts:

- Central Ucayali—Total (France), Hispanoil (Spain), Kleinholz (West Germany), and Texaco's Germany subsidiary.

- Madre de Dios—Getty, Phillips, and Cayman Corp.

- Marañon—Kopex (Poland), negotiating for Block 2 in the far north, Deminex, Amerada Hess, and Oceanic Exploration/El Paso Natural Gas.

Some of these companies already are working on previously acquired blocks. Others, like Deminex and His-

Total wells drilled in the United States*—Aug. 1974†

Data compiled by the American Petroleum Institute

State-district	Total completions					Total wells		Total exploratory wells				
	Oil wells‡	Gas wells§	Dry holes	Total wells excluding service wells, stratigraphic, and core tests		Total wells all types, August 1974¶		Oil wells‡	Gas wells§	Dry holes	August 1974	
				wells	Footage	Wells	Footage				Wells	Footage
Alabama			2	2	25,372	2	25,372			2	2	25,372
Alaska	5		1	6	33,347	6	33,347			1	1	14,283
Onshore	2		1	3	24,870	3	24,870			1	1	14,283
Offshore	3			3	8,477	3	8,477					
Arkansas	11	1	14	26	138,549	26	138,549	1		8	9	40,116
California	282	9	28	319	624,937	326	645,190	1	2	21	24	145,284
North		8	16	24	139,672	24	139,672		2	13	15	91,135
Central Coastal	15		4	19	51,809	19	51,809			3	3	8,624
East Central	257	1	6	264	379,596	265	381,746	1		3	4	27,435
South	5		2	7	59,454	10	51,450			2	2	18,090
Offshore	5			5	14,406	8	20,513					
Colorado	11	12	24	47	302,317	47	302,317	2	3	18	23	144,560
Onshore			3	3	41,031	3	41,031			2	2	25,716
Offshore												
Florida			3	3	41,031	3	41,031			2	2	25,716
Illinois	35	1	39	75	194,850	77	197,851	3		19	22	56,389
Indiana	11		17	28	40,335	28	40,335	1		12	13	19,763
Kansas	92	22	126	240	705,777	248	715,119	9	3	85	97	316,158
Kentucky	26	14	38	78	114,604	80	116,195	1	1	9	11	16,115
Louisiana	73	75	93	241	1,619,619	246	1,654,732	2	3	36	41	337,423
North	27	51	44	122	483,810	124	489,927	1	3	19	23	159,164
South	27	10	23	60	576,937	60	576,937	1		6	7	85,547
Offshore	19	14	26	59	558,872	62	587,868			11	11	92,712
Michigan	5	2	15	22	111,557	23	114,357	3	2	9	14	75,894
Mississippi	7		27	34	272,322	34	272,322	2		19	21	166,475
Missouri			2	2	2,977	2	2,977			2	2	2,977
Montana	4	17	32	53	169,778	53	169,778	1	2	28	31	119,710
Nebraska	4		11	15	78,597	15	78,597	1		6	7	37,882
New Mexico	29	70	39	138	812,519	140	813,279		8	24	32	144,905
East	18	25	30	73	485,352	74	485,672		8	17	25	108,645
West	11	45	9	65	327,167	66	327,607			7	7	36,260
New York	21			21	24,525	25	29,490					
North Dakota	2		6	8	68,570	8	68,570			3	3	26,494
Ohio	38	61	14	113	400,582	113	400,582	1	8	3	12	50,415
Oklahoma	81	54	110	245	1,304,005	254	1,321,715	2	3	19	24	173,597
Pennsylvania	19	14	1	34	71,534	44	92,042		3		3	9,120
South Dakota			1	1	4,000	1	4,000			1	1	4,000
Tennessee	7		3	10	15,377	10	15,377			3	3	5,650
Texas	396	141	270	807	4,380,304	836	4,460,038	26	53	169	248	1,633,911
Dist. 1	17	8	12	37	131,815	37	131,815	2	2	7	11	50,062
Dist. 2	9	18	25	52	322,284	53	325,602	1	12	17	30	203,741
Dist. 3	31	16	47	94	610,451	95	611,293	3	13	37	53	419,630
Dist. 4	25	32	37	94	571,376	94	571,376	2	12	19	33	214,049
Dist. 5	4	2	14	20	96,749	20	96,749		1	6	7	43,373
Dist. 6	14	8	14	36	219,360	41	222,305			10	10	70,393
Dist. 7B	11	3	12	26	84,990	26	84,990			5	5	20,787
Dist. 7C	50	29	25	104	578,849	114	595,378	5	7	15	27	145,718
Dist. 8	100	8	15	123	713,539	125	723,092	9	2	4	14	145,586
Dist. 8A	70	1	18	89	480,951	98	526,819	1		12	13	76,217
Dist. 9	53	10	39	102	379,650	103	380,329	3	4	25	32	152,358
Dist. 10	12	5	3	20	109,270	20	109,270			3	3	19,385
Offshore		1	9	10	81,020	10	81,020			9	9	72,638
Utah	8		4	12	115,003	12	115,003			3	3	12,560
Virginia		2		2	10,336	2	10,336					
West Virginia	13	58	7	78	208,654	78	208,654	1	4	1	6	19,415
Wyoming	30	2	41	73	518,477	75	532,826	5	1	33	39	318,719
Total—August 1974	1,210	555	968	2,733	12,409,855	2,814	12,619,981	62	96	536	694	3,942,903
Total—July 1974	1,008	461	884	2,353	11,801,777	2,390	11,903,253	73	91	522	686	4,299,061
Cum. 1974	7,960	4,632	7,271	19,868	97,392,862	20,520	98,957,337	511	749	4,187	5,447	32,391,527
Cum. 1973	6,339	3,685	6,371	16,395	82,593,265	17,062	84,200,386	388	465	3,638	4,491	

*Does not include miscellaneous drilling not related to oil and gas exploration and production. †Covers reports of completed or abandoned wells received by the API during the period from July 27, 1974, through Aug. 23, 1974. ‡Includes multiple completion wells which produce gas from one or more zones but oil from at least one zone. A multiple completion well is counted as one well. §Includes multiple completion wells that produce gas from all zones. A multiple completion well is counted as one well. Gas wells also include so-called condensate wells. ¶Exploratory wells include: new-field wildcats, new-pool wildcats, deeper-pool tests, shallower-pool tests and outpost (extension) tests. ||Includes 10 strat tests and 71 service wells, 16,529 ft and 193,597 ft, respectively.



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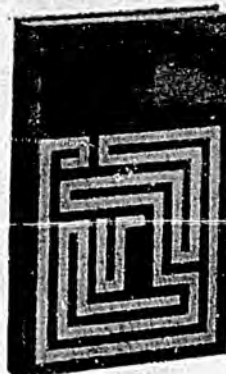
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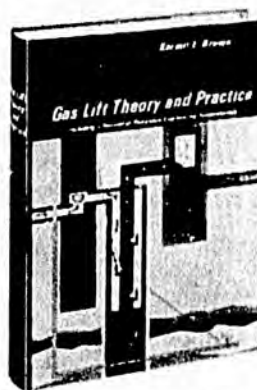
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Total wells drilled in the United States*—February 1974†

Data compiled by the American Petroleum Institute

State-district	Total completions					Total wells all types, February 1974‡		Total exploratory wells§				
	Oil wells‡	Gas wells§	Dry holes	Total wells excluding service wells, stratigraphic, and core tests	Footage	Wells	Footage	Oil wells‡	Gas wells§	Dry holes	Wells	Footage
Alabama	2	2	8	12	128,166	12	128,166	1	1	6	8	82,790
Arizona	2		6	8	55,775	8	55,775			3	3	25,661
Arkansas	9	4	11	24	154,445	24	154,445	3		6	9	71,135
California	77	3	19	99	291,342	105	305,741	2	1	9	12	77,552
North		3	5	8	52,599	9	58,032		1	2	3	23,197
Central Coastal	9		6	15	67,889	17	70,469			3	3	27,369
East Central	54		7	61	134,842	63	139,778			4	4	24,378
South	8			8	20,569	9	22,019	2			2	2,608
Offshore	6		1	7	15,443	7	15,443					
Colorado	30	28	30	88	570,634	89	574,966	2		21	23	143,768
Florida	2		3	5	74,727	5	74,727			2	2	26,803
Georgia			2	2	13,602	2	13,602			2	2	13,602
Illinois	25	2	18	45	104,951	46	105,028	1		9	10	17,969
Indiana	12		12	24	34,646	26	39,642	1		9	10	13,380
Kansas	51	21	75	147	502,161	152	513,463	7	3	46	56	198,690
Kentucky	8	11	21	40	68,374	40	68,374	2		8	10	17,052
Louisiana	68	71	70	209	1,730,468	212	1,755,331		4	31	35	344,807
North	16	44	16	76	330,806	76	330,806		2	7	9	87,073
South	19	11	33	63	664,529	64	672,302		2	15	17	199,027
Offshore	33	16	21	70	735,133	72	752,223			9	9	58,707
Michigan	5	2	14	21	98,425	21	98,425	4	2	10	16	72,530
Mississippi	6	4	28	38	296,739	38	296,739	2	2	22	26	231,890
Missouri			2	2	1,865	2	1,865			2	2	1,865
Montana	4	11	31	46	137,350	47	140,243	1	4	26	31	102,823
Nebraska	1		16	17	88,986	17	88,986	1		12	13	68,127
New Mexico	21	29	18	68	409,860	69	413,210			12	12	58,805
East	20	15	14	49	292,536	50	295,886			9	9	42,788
West	1	14	4	19	117,324	19	117,324			3	3	16,017
New York	5	3		8	14,940	15	24,906					
North Dakota	3		3	6	33,104	6	33,104			2	2	10,234
Ohio	35	74	6	115	502,125	115	502,125		2	3	5	24,248
Oklahoma	38	63	83	234	1,426,962	239	1,446,262	4	7	27	38	290,535
Pennsylvania	63	33	5	101	197,602	113	220,087			5	5	23,416
South Dakota			1	1	7,514	1	7,514					
Tennessee	4		2	6	8,215	6	8,215			2	2	2,025
Texas	339	194	281	814	4,394,184	849	4,470,251	13	59	178	250	1,672,608
Dist. 1	20	8	26	54	235,422	54	235,422	1	2	16	19	116,055
Dist. 2	6	32	24	62	341,724	62	341,724	3	14	13	30	178,832
Dist. 3	25	15	39	79	579,188	79	576,188		10	27	37	342,468
Dist. 4	17	31	37	85	561,290	85	561,290	2	10	26	38	261,412
Dist. 5	7	4	8	19	117,361	19	117,361		3	6	9	87,750
Dist. 6	3	5	5	13	105,934	13	105,934		4	2	6	52,803
Dist. 7B	58	31	50	139	505,309	151	525,355	2	8	30	40	150,713
Dist. 7C	32	23	16	71	405,622	72	407,222	1	1	9	11	58,746
Dist. 8	85	11	8	104	591,301	104	591,301	2	2	5	9	94,826
Dist. 8A	31	1	13	45	247,908	52	271,340			7	7	41,262
Dist. 9	36	6	28	70	213,181	85	244,170	2	2	18	22	89,555
Dist. 10	18	23	15	56	353,389	56	353,389		1	7	8	87,203
Offshore	1	4	12	17	139,555	17	139,555		2	12	14	110,983
Utah	10	1	4	15	159,951	15	159,951	1		3	4	31,951
Virginia		9	1	10	45,245	10	45,245					
West Virginia	1	31	8	40	148,327	40	148,327		5	6	11	47,413
Wyoming	30	4	38	72	459,623	75	467,020	4	1	28	33	238,012
Total—February 1974	901	600	816	2,317	12,160,308	2,399	12,361,735	49	91	490	630	3,909,691
Total—January 1974	763	577	803	2,143	10,391,797	2,209	10,507,480	51	71	469	591	3,390,989
Cum. 1974	1,664	1,177	1,619	4,460	22,552,105	4,608	22,869,215	100	162	959	1,221	7,300,680
Cum. 1973	1,535	893	1,664	4,092	21,628,601	4,269	22,084,270	107	96	1,022	1,225	—

*Does not include miscellaneous drilling not related to oil and gas exploration and production. †Covers reports of completed or abandoned wells received by the API during the period from Jan. 26, 1974, through Feb. 22, 1974. ‡Includes multiple completion wells which produce gas from one or more zones but oil from at least one zone. A multiple completion well is counted as one well. §Includes multiple completion wells that produce gas from all zones. A multiple completion well is counted as one well. Gas wells also include so-called condensate wells. ¶Exploratory wells include: new-field wildcats, new-pool wildcats, deeper-pool tests, shallower-pool tests, and outpost (extension) tests. ||Includes three strat tests and 79 service wells, 5,799 and 195,628 ft, respectively.

Industry gets more active in geothermal arena

THE nation's leading oil companies are becoming active in the field of geothermal energy, which experts predict will meet about 10% of western states' power needs by the year 2000. At the same time, natural-gas and chemical companies also are reported to be developing an interest in this field.

Most recent indication of this expanding oil-company interest in geothermal energy was the high bids entered at the January (1974) sale of federal geothermal area leases in California, by such firms as Shell Oil, Signal, Natomas, Union Oil, and Standard of California.

Some of those companies, and a number of others, also are actively acquiring leases, doing exploration work, or drilling in Oregon, Idaho, Nevada, Utah, New Mexico, Colorado, and Arizona, in addition to California.

Oil and natural-gas companies, however, face a different set of problems in the geothermal area, problems that grow out of the difference in techniques from those of the oil and gas industries. "But they are quickly learning the differences," according to Mike O'Donnell, executive vice-president of Geothermal Kinetics Inc., a leading geothermal drilling and exploration company headquartered in Phoenix, Ariz.

O'Donnell, whose firm is active in California, New Mexico, Utah, Idaho, and Arizona, agrees with a prediction of William H. Lyons, deputy under-secretary of Interior, who told a Congressional subcommittee studying geothermal energy that there will be abundant geothermal power by the end of this century.

"Well before the year 2000," O'Donnell said, "western utilities will be producing as much as 10% of their needs from geothermal wells."

Virtually every electric utility in the West has turned to geothermal studies to some degree or other, O'Donnell said.

Federal spending. Geothermal activity is quite likely to be accelerated if final approval is given proposed increases in government spending for research and development of known geothermal resource areas (KGRA's).

Commitments for federal-agency spending in this area have been raised for fiscal 1975 to around \$45,000,000 from \$14,232,000 in the current year.

Further, the Atomic Energy Commission, with its fiscal 1975 commitment \$10,700,000 up from \$4,700,000, plans to request and spend \$185,000,000 for geothermal R&D over the next 5 years.

Other federal agencies seeking larger geothermal budgets for fiscal 1975 include National Science Foundation, U. S. Geological Survey, Bureau of Reclamation, Bureau of Land Management, and Bureau of Mines.

This splintered federal effort underscores a proposal several months ago by a leading solar energy expert who suggested a federal NASA-type agency for energy, with total authority over all energy research and development. Dr. Aden B. Meinel, of the University of Arizona, a frequent consultant to government agencies on solar matters, said such a NASA-type agency could concentrate scattered activities with excellent results, and probably quicker than with piece-meal efforts.

Legislation furthering geothermal activities already has passed the Senate by an 82-0 vote, and would set up a Geothermal Resources Development Fund to guarantee loans secured by private and public utilities for exploration, development, construction, and operation of commercial geothermal generating facilities. Guarantees of 75% of loans, up to a maximum of \$25,000,000 would be authorized.

Sen. Paul Fannin (R.-Ariz.) feels that the federal Government has been more of a hindrance than a help thus far in geothermal affairs, but that this bill would stimulate such activity.

While most of today's geothermal activity centers in such areas as California's Imperial Valley, and in Utah, Arizona, and New Mexico, exploration work is being done in the Northern Gulf of Mexico, off the Louisiana and East Texas coasts, where "a tremendous amount of work is going on, and where hot fluid is found with natural gas," according to O'Donnell. Wells in that area are around 17,000 to 20,000 ft in depth.

Another promising area is in Baja California, around Mexicali, where the first Mexican geothermal plant was to go on line late in March, climaxing 20 years' work. This region, just south of the U.S. border is believed to be a southern extension of the 120-mile long Imperial Valley geothermal area.

Although Old Faithful in Yellowstone National Park—America's best-known geyser—was first discovered in 1870, more than 80 years slipped by before Pacific Gas & Electric pioneered U.S. use of this great natural resource for power production. This plant, the world's largest, provides electricity for San Francisco residents.

Italy, meanwhile, had touched off the geothermal age as early as 1904, with a successful commercial natural-steam powered electric plant at Lardello. Five other foreign countries—China, Iceland, Japan, New Zealand, and Russia—now produce geothermal electricity.

Mobil has pair of Wilcox pays

MOBIL Oil Co. has a pair of new Wilcox pays in Clayton field, 13 miles southwest of George West in southern Live Oak County, South Texas.

The 2 Block 86 Unit tested through lower tubing perforations at 8,350-57 ft flowing 2,848 Mcfd and 41 bbl condensate on 14/64-in. choke. Flow rate through the upper tubing perforations at 7,612-32 ft was 888,000 cu ft of gas and some condensate. Location is in Section 331, CCSD&RGNG Survey, A-495.

In Lavaca County, McCormick Oil & Gas Co. has a Frio gas-discovery zone in Esperanza field. The 1 Williams et al. Unit, 3 miles southeast of Hope, flowed 1,106 Mcfd. Pay is at 3,150-56 ft on 12/64-in. choke. Well site is in the S. Thompson Survey, A-555. Esperanza field was opened in 1959 with pays in the Miocene, Yegua, and Wilcox, at 2,300, 2,800, 5,200, and 7,800 ft.

ITALY

ITALY'S AGIP has undertaken a sweeping new appraisal of the Po Valley in northern Italy—particularly deep prospects.

Company hopes today's sophisticated geophysical techniques will reveal prospects that went undetected in early-day exploration of the valley, which has yielded much of Italy's natural-gas production over the years.

AGIP now has seven seismic crews in the field. It says that although re-

gaged in crude production alone. There is no series of data comparable to the QFR covering crude producers. This in itself is not fatal, since the major integrated companies which dominate the QFR category also produce most of the crude oil.

Still, the absence of nonintegrated crude producers raises a question. Average domestic crude prices from 1962-72 were perhaps half what they are today and were the subject of persistent complaints from the crude sector. Would not the inclusion of crude producers show a lower level of profitability for the petroleum industry as a whole?

In fact, the opposite appears to be true. Occasional tabulations of results in crude companies indicate that—during this period of presumably "low" crude prices—the crude producers as a group enjoyed rates of return far higher than either the integrated firms or the nonintegrated independent refiners. Throughout the period, there was a general presumption, never refuted by the companies themselves, that the integrated majors earned their profits primarily in crude production rather than in downstream refining and marketing. Indeed, it is often alleged that in some years several of the majors may have lost money downstream. Regardless of such allegations, it is clear that broadening the QFR industry category to include non-integrated crude producers would raise the reported profitability of the industry.

TABLE 1—RATES OF RETURN ON STOCKHOLDERS' EQUITY, 1962-72

(In percent)

Year	All manufacturing	Petroleum refining	Motor vehicles	Primary iron and steel
1972	10.60	8.62	14.45	6.05
1971	9.67	10.32	13.02	4.53
1970	9.32	10.97	6.07	4.30
1969	11.47	11.72	12.67	7.60
1968	12.07	12.27	14.97	7.57
1967	11.72	12.52	11.67	7.72
1966	13.85	12.42	15.59	9.25
1965	12.90	11.85	19.52	9.75
1964	11.66	11.42	16.87	8.77
1963	10.25	11.30	16.72	7.01
1962	9.775	10.08	16.25	5.88
Average 1962-72	11.17	11.72	14.34	7.18

Source: Average of quarterly rates reported in FTC, "Quarterly Financial Reports."

TABLE 2—TOTAL LIABILITIES AND NET WORTH, END OF YEAR, 1962 AND 1972

(Million dollars)

	Petroleum refining		Other manufacturing	
	1962	1972	1962	1972
Current liabilities:				
Long-term debt:				
Banks	598	2,200	5,127	29,054
Other	3,296	11,111	28,182	82,796
Other noncurrent liabilities	1,542	6,560	5,445	21,914
Total, liabilities	11,997	19,480	92,675	271,652
Stockholders' equity:				
Capital stock, etc.	14,053	19,607	59,185	98,565
Earned surplus	18,253	41,148	90,940	194,535
Total, net worth	32,250	60,744	150,125	293,100
Total liabilities and net worth	44,246	100,217	242,800	564,751

¹ Prior to 1965, QFR included an account, "Reserves not reflected elsewhere." The amounts in this account at the end of 1962 were \$114,000,000 for petroleum refining and \$1,751,000,000 for other manufacturing industries, in each case less than 1 percent of total liabilities and net worth. The QFR explanation when this account was dropped (1st quarter, 1965) was that 80-90 percent would be shifted into "other noncurrent liabilities" and the balance into "earned surplus." Accordingly, the 1962 figures have been restated on the basis of an 85-15 percent division.

² Restated by shifting payments on long-term debt due within 1 year from current liabilities to long-term debt, in order to better portray capital structures.

Source: FTC, "Quarterly Financial Reports", 4th quarter, 1962 and 1972.

Long-term debt:

Banks

Other

Total

Stockholders' equity:

Capital stock, etc.

Earned surplus

Total

Total increase in net

Stockholders' equity

including repayments

Source: Table 2.

Senator S.

[Whereby]

mittee stand

High profits erode in third quarter

Increased taxes and costs, buyer resistance, lower production rates, and the lack of inventory profits and devaluation gains chip away at earnings. Profits for 27 large firms total \$3.67 billion in third quarter — up 49.8%.

THOSE sharp increases in oil-company earnings recorded earlier in the year are eroding.

Although still substantial and in some instances hitting record highs, company earnings are running into such countervailing forces as increased taxes, higher costs, buyer resistance, lower production rates, and the absence of inventory profits and devaluation gains.

Higher profits, however, are still being supported by the higher level of domestic oil and gas prices, by spectacular performance of chemicals, and by improved margins.

These are the trends spotted in the Journal's quarterly review of earnings for the industry's larger firms. As a group, the larger companies showed net earnings for the year's first 9 months of \$10.9 billion, up 67.4%. The total for the third quarter was \$3.67 billion, up 49.8%.

Both 9-month and third-quarter percentage gains for the 27-company Journal group are well under the gains for the first and second quarters, 78.4 and 80.2% respectively.

The slippage for the international majors is more pronounced. Composite earnings gain for the five largest U.S. companies — Exxon, Texaco, Mobil, California Standard, and Gulf — declined from 71.5% in the first quarter to 65.3% in the second quarter—then dipped more sharply to 25.9% in the third.

Texaco, for example, recorded a profits gain of 123% in the first quarter; but by the third quarter its gain over a year earlier was running only 23%. Socal's 91.5% first-quarter gain had dwindled to 32%, and Gulf's 75% to 31%. Exxon had slipped from 39% to 25%, and Mobil from 66% to 20%.

Typical experience. The experience of Exxon Corp., the top industry performer, reveals most of the trends being encountered by oil-industry management this year.

Exxon's consolidated earnings for the first 9 months reached a record \$2,280 million, up 37.7% from \$1,656 million for the same period a year ago. Third-quarter earnings were \$800

How 27 U.S. firms fared in third quarter

In addition, Dorsey reported that it accumulated about \$130 million increased costs through Sept. 30 which it had not been able to recover under Federal Energy Administration pricing formulas.

Other factors were a \$19-million reactive tax increase in Venezuela, reduced crude output in Kuwait and Ecuador, and profits squeezes in Europe and Latin America "caused a temporary surplus of oil products in some markets."

Other gainers. Among the predominantly domestic oil companies, Shell, Arco, and Standard, Union, Phillips, and Continental recorded substantial gains in earnings.

Shell Pres. Harry Bridges, however, pointed out that extraordinary conditions prevailing in the petroleum industry this year reduce the usefulness of measuring performance against prior periods.

Among these conditions, he listed inflation, uncertain crude oil prices, the influence of changing federal regulations on prices, crude-oil allocation, the timing of recovery of increased raw-material costs under new regulations.

Intensive search for new energy resources.

Of nearly \$280 million invested so far this year in the search for oil and gas, about \$173 million went for federal offshore leases and the rest to domestic drilling.

Union Chairman and Pres. Fred L. Hartley said the company increased domestic drilling about 30% for 167 net new wells which resulted in about 5,800 b/d more initial production. The higher crude oil price also made it economically possible for Union to keep marginal wells on production and bring back retired wells whose limited output previously had been uneconomical.

"So far we have kept on production about 170 Union-operated wells and have brought back about 70 previously idle wells which would have been abandoned at crude oil prices of 2 years ago. These marginal wells collectively are adding 1,100 b/d to our domestic production," Hartley said.

Union's 9-month earnings were \$232.5 million compared with \$129.1 million last year with third-quarter income of \$79.9 million compared with \$50.7 million.

million, up 25.4% from the \$638 million for 1973.

Exxon Chairman J. K. Jamieson said "worldwide chemical operations continued to be a major contributor" to the earnings. The performance, however, was helped by a 29% gain in domestic operations. These were boosted by higher prices for domestic crude and natural gas resulting from government policies designed to stimulate development of added supplies. The 9-month result was a \$781-million profit from U.S. operations, compared to \$606 million last year.

Exxon's response to these profits was the expenditure of \$898 million in the 9 months for capital and exploration projects, including \$291 million for offshore acreage purchases.

This compares with \$400 million spent in the same period of 1973.

Exxon expects the higher level of capital spending to continue for several years due to commitments on the trans-Alaska pipeline, North Slope development, and refinery expansion. "The amount of future spending approved in the first 9 months exceeds that authorized in any previous full year," Jamieson said, "and this is indicative of the higher level of capital requirements over the coming year which will be necessary to supply future demands for energy."

Jamieson reported that 9-month earnings abroad included inventory profits of \$130 million realized in the first half of 1974 which are not expected to recur. Also, the increased

U.S. corporations and is necessary to finance Skelly's exploration and production program designed to help move the nation closer to energy self-sufficiency." Skelly's 9-month net was \$77.3 million compared to \$27.2 million in 1973.

Cities Service, with an 80% gain for the 9 months to \$168 million, showed a return on average stockholder equity of 13.3% compared with 8.3% a year earlier.

Atlantic Richfield's 9-month earnings of \$377 million represented a 15.5% annualized rate of return on shareholders equity.

Shell converts methane to protein at U.K. facility

METHANE has been successfully converted to protein at Shell Research's Sittingbourne Centre, U.K. Direct conversion to single-cell protein (SCP) was carried out in a continuous 80-gal pilot fermentation plant.

Shell SCP product has a protein content of around 75%. Its nutritive value and amino-acid spectrum approaches that of high-quality white fish meal, with a high proportion of sulfur amino acids. Animal-feed formulations would be similar to that of fish meal and methionine-supplemented soy flour.

Natural-gas feed for a SCP plant would require minimal pretreatment. Process uses mixed microbial cultures, providing more freedom in plant design than single-strain cultures.

Methane-air mixture is passed through an aqueous solution containing ammonia, phosphates and other trace mineral elements, and suspended bacteria. A broth comprising a 2-3% suspension of bacterial cells is drawn off continuously.

After separation, watery culture fluid is returned to the fermenter. SCP is dried to a powder.

Shell says that process economics and market assessments have been made. Initial nutritional and toxicological trials on protein concentrate for use in animal feeds have been satisfactorily completed.

Discussions have been initiated with Dutch authorities for construction of an integrated process and product development unit at Shell laboratories in Amsterdam.

Imperial, Shell, Elf ready tests in Canada's Far North

CANADIAN Far North areas drew three new tests last week as Arctic exploration began showing a modest upswing for the 1974-75 drilling season.

New drilling is scheduled by Imperial Oil Ltd., Shell Canada Ltd., and Elf Oil Exploration & Production Canada Ltd.

Imperial will resume its wildcat-drilling program off the Mackenzie Delta with a 13,000-ft test at B-44 Netserk, 69° 33' 3" N. Lat., 135° 55' 56" W. Long.

Staked on an artificial island in shallow waters, it is Imperial's third offshore test in the Beaufort Sea. Site is 8 miles north of F-28 Adgo, the company's second offshore test and the first offshore discovery in the North American Arctic (see map, OGC, July 22, p. 24).

Hi-Tower Drilling Division's Rig 1 will drill the Netserk test.

Shell's new operation is L-24 Kugpik, a 10,700-ft delineation well at 68° 53' 31.52" N. Lat., 135° 22' 13.09" W. Long., on the Mackenzie Delta. Loca-

tion is 2 miles northeast of Shell's O-13 Kugpik discovery of August 1973 which flowed a maximum rate of 1,355 b/d of oil and 800 Mcfd of gas through 23/64-in. choke from pay at 7,128 to 7,455 ft.

Adeco Drilling & Engineering Co. Ltd.'s Rig 5 holds the contract. It's one of three rigs Shell has under contract for its 1974-75 program on the Delta.

Banks wildcat. Elf, acting as operator for the Elfex group, staked a 12,000-ft wildcat on Banks Island as D-16 Kusshaak, 73° 25' 3.5" N. Lat., 120° 5' 18.3" W. Long. There are no nearby discoveries.

Brinkerhoff Drilling Canada Ltd.'s Rig 19 will drill the test, part of an exploration program on 11.8 million acres of exploration permits in the western Canadian Arctic.

Elf's partners are Tenneco Oil & Minerals Ltd., Columbia Gas Development of Canada Ltd., Texas Eastern Exploration of Canada Ltd., Norlands Petroleum Ltd., and Panarctic Oils Ltd.

Canada price hike allowed pass-through

THE Federal Power Commission has bowed to the 39¢/Mcf gas-price increase (to \$1/Mcf) imposed by the Canadian Government on exports to the U.S.

FPC approved a rate increase of \$121,463,326 allowing Northwest Pipeline Corp. to pass through the higher costs of imports above the previous price of 61¢/Mcf.

Northwest receives 860 MMcf from Westcoast Transmission Co., its Canadian supplier, at Sumas, Wash., and Kingsgate, B.C. The pipeline must start paying \$121.5 million more for Sumas deliveries Nov. 1 and \$13,940,113 more Jan. 1.

Northwest can't start passing through the higher rates for Sumas gas until Nov. 18, 45 days after the increase was filed with FPC. The difference will be placed in the pipeline's unrecovered purchased-gas cost account, and Northwest may attempt to recoup in a future rate filing.

Northwest said it knows of no other supply of gas in the volumes available

from Canada, and so it has no choice but to pay the higher price. FPC decided it had no choice but to approve the increase.

Exxon resumes oil flow in Libya, LNG shipments to Spain

EXXON CORP.'S Esso Libya has resumed limited oil production in Libya and is resuming shipments of LNG to Spain's Gas Natural but not to Italy's Snam Progetti.

Oil production from Zelten, Raguba, and other fields producing a total of 255,000 b/d were shut in by the government in early October when Snam refused to accept an LNG price increase ordered by the Libyan Government. The boost was reported to be about \$1.60/MMBTU from about 50¢/MMBTU. The Libyans refused to permit associated gas to be flared.

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED
AS A UNIT IN THE ORIGINAL DOCUMENT.

Annual refining survey

AILEEN CANTRELL
Director of Editorial Surveys

The following tabulation of operating refineries of the United States and Canada shows facilities on stream as of Jan. 1, 1974.

Projects completed after that date are listed in the construction table presented in the Worldwide Construction Survey issue, April 8. A list of shutdown refineries which are still operable is included below.

The list of operating plants is restricted

to facilities charging whole crude, plus lube plants not charging whole crude.

Figures for most plants are expressed in barrels per stream day. However, a few companies reported only calendar-day figures. To arrive at consistent stream-day totals for states, calendar-day figures were converted to stream-day basis, using a 0.95 factor in the case of crude and vacuum units, and a 0.90 in the case of all other processes. This explains what may appear to be discrepancies in the addition of some columns. The letters NR means not reported.

Reprints of this survey are available at \$2 per copy by writing Book Department, The Oil and Gas Journal, Box 1260, Tulsa, Okla. 74101.

Detailed breakdown by company, plant, and state starts next page. Included are:

- U.S. crude and downstream-processing totals by states, p. 84.
- Detailed U.S. survey, p. 85.
- Canadian processing totals by provinces, p. 104.
- Detailed Canadian survey, p. 104.

U.S. refineries: where, capacities, types of processing

LEGEND

Processes in table are
identified by numbers

Cat Hydrorefining

1. Residual desulfurizing
2. Heavy gas-oil desulfurizing
3. Residual visbreaking
4. Cat cracker and cycle stock feed pretreatment
5. Middle distillate
6. Other

Cat Hydrotreating

1. Pretreating cat-reformer feeds
2. Naphtha desulfurizing
3. Naphtha olefin or aromatics saturation
4. Straight-run distillate
5. Lube oil "polishing"
6. Other distillates
7. Other

Aromatics/Isomerization

1. BTX
2. Hydrodealkylation
3. Cyclohexane
4. C₁ feed
5. C₅ feed
6. C₅ and C₆ feed

Cat Reforming

- Semiregenerative:
1. Conventional catalyst
 2. Bimetallic catalyst
- Cyclic:
3. Conventional catalyst
 4. Bimetallic catalyst
- Other:
5. Conventional
 6. Bimetallic

Cat Hydrocracking

1. Distillate upgrading
2. Residual upgrading
3. Lube-oil manufacturing
4. Other

Thermal Process

1. Gas-oil cracking
2. Visbreaking
3. Fluid coking
4. Delayed coking
5. Other

Alkylation

1. Sulfuric acid
2. Hydrofluoric acid

Cat Cracking

1. Fluid
2. Thermoform
3. Houdriform

NR—Not reported

Three U.S. plants are shut down but are still in operating condition. Capacities are given in barrels per stream day.

Chevron Asphalt Co., Mobile, Ala., 6,500
Chevron Asphalt Co., Cincinnati, Ohio, 12,500
Mobil Oil Corp., East Providence, R.I., 10,000

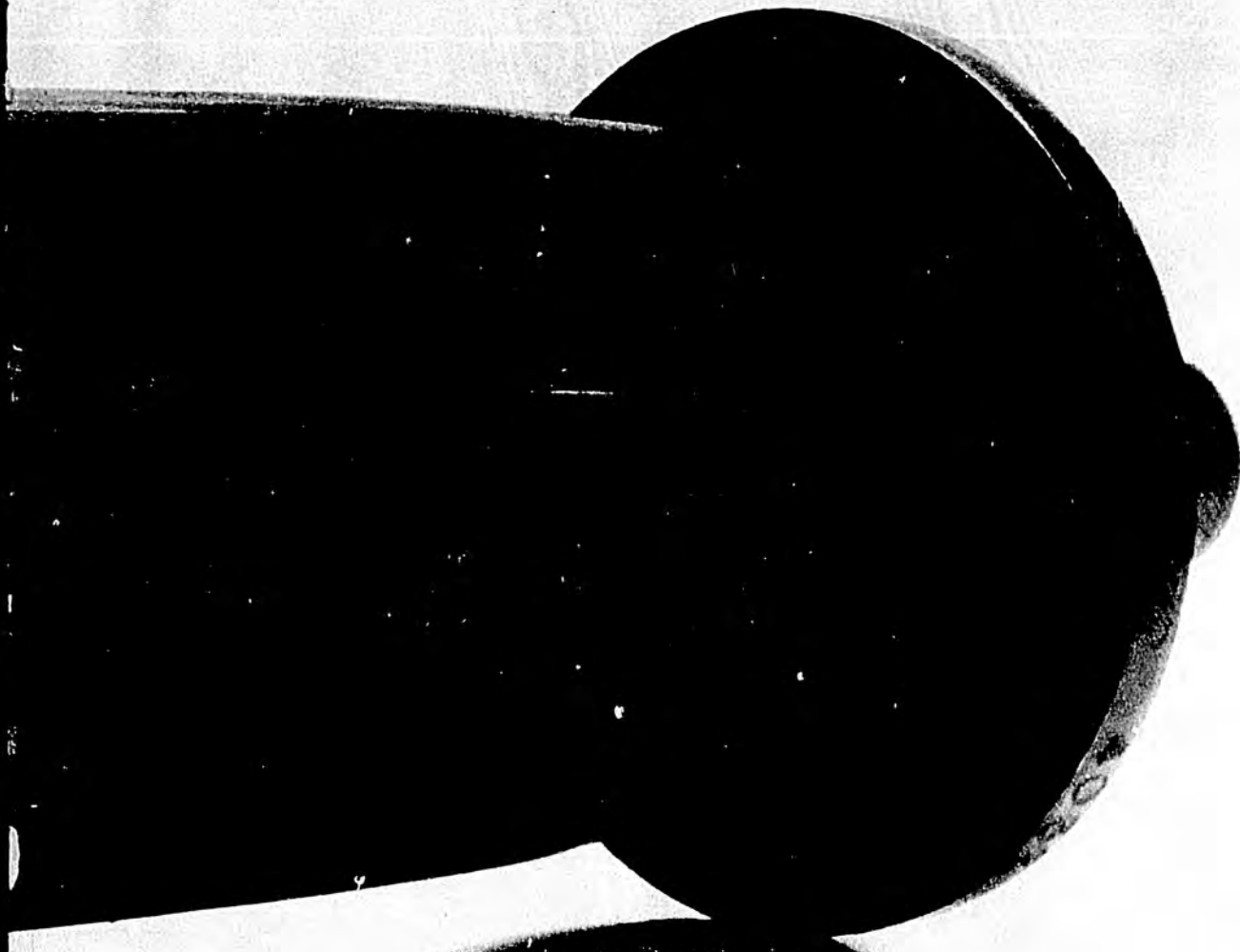
These plants will be reactivated:

Anderson Refining Corp., Tucker, Tex. bought by J&W
Refining, Palestine, Tex., 2,400 b/d.

Cosden Oil & Chemical Co., Hawley, Tex. bought by
Tesoro Petroleum Corp. 6,500 b/d.
Danahoe Refining Co., Pettus, Tex. (same owner),
10,000 b/d.
Hess Oil & Chemical Corp., Port Isabel, Tex. (same
owner) 14,300 b/d.
R. J. Oil & Refining Co. Inc., Terre Haute, Ind.,

bought by Crystal Oil Co. 7,700 b/d.
Somerset Refining, Troy Division, Troy, Ind. bought
by Indiana Farm Bureau Coop. 15,000 b/d.
U.S. Oil & Refining Co., Long Beach, Calif. (same
owner), 5,265 b/d.
Wickett Refinery Co., Wickett, Tex. bought by Adobe
Oil & Gas Corp. and Tom Brown Inc., 6,000 b/d.

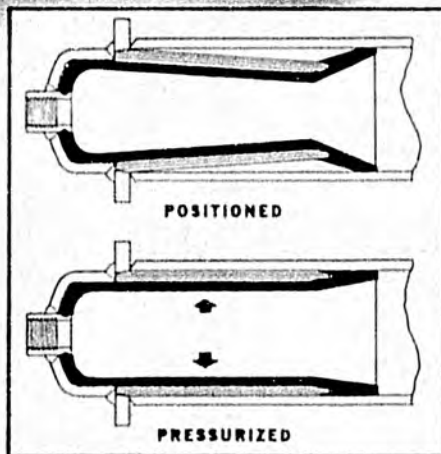
No threading. No beveling. No kidding.



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slackens automatically as pressure is relieved.

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Yellow Pages under "Pipe Fittings." Or write for bulletin TT 1188, Tube Turns, Division of Chemetron Corporation, Louisville, Kentucky 40201.

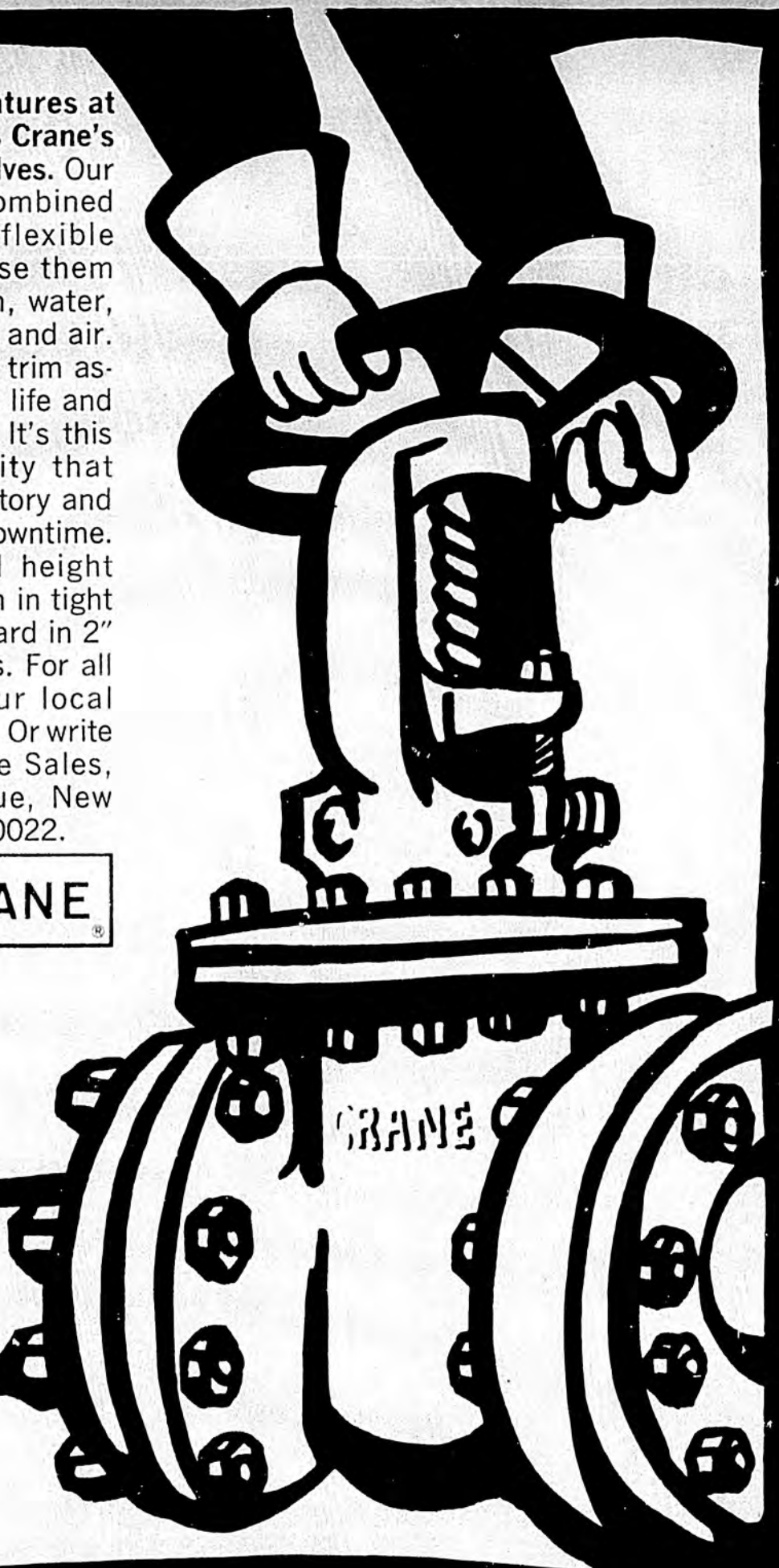
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If it flows:

CRANE



Survey of operating refineries in the U.S. (state capacities as of Jan. 1, 1974)*

State	No. plants	Crude capacity		Vacuum distillation	Thermal operations	Charge capacity—b/sd		Cat reforming	Cat hydro-cracking	Cat hydro-refining	Cat hydro-treating	Production capacity—b/sd				Coke (t/d)
		b/cd	b/sd			Fresh feed	Recycle					Alkyl-ation	Aromatics/isomerization	Lubes	Asphalt	
Alabama	4	35,421	37,010	8,660				1,400			5,000				6,926	
Alaska	4	66,050	69,020												300	
Arizona	1	9,000	10,000	4,000												
Arkansas	4	56,125	58,000	23,800	5,000	15,000	5,200	5,500		5,000	8,000	4,000		2,100	9,650	
California	34	1,809,295	1,894,800	958,200	452,820	481,610	122,730	476,540	317,629	138,250	662,020	83,390	12,490	23,770	98,410	15,165
Colorado	3	55,800	57,920	10,500	14,500	20,500	2,450	11,900			17,000				3,300	400
Delaware	1	140,000	150,000	90,700	44,000	62,000	15,000	42,000	17,000		110,000	8,000				1,800
Florida	1	5,000	5,500	2,400											2,500	
Georgia	2	14,375	15,130							1,200					9,300	
Hawaii	2	70,000	73,689	15,000		14,100	8,900				1,400	4,130	1,350		1,300	
Illinois	11	1,151,500	1,206,390	415,730	143,300	390,270	81,240	312,280	66,500	107,000	435,280	89,020	10,200	5,600	42,800	4,380
Indiana	7	551,000	588,050	243,000	22,500	206,500	36,780	98,000		29,500	213,000	35,700	6,500	8,670	47,000	730
Kansas	11	401,823	418,050	93,800	43,200	155,900	46,700	81,900	2,950	7,500	100,400	38,070	3,400	4,000	16,400	1,310
Kentucky	3	159,800	167,000	65,000	4,000	63,000	6,700	25,500			42,500	6,000	21,500		13,500	
Louisiana	18	1,666,600	1,733,180	461,090	147,830	598,280	130,830	362,930	78,500	99,000	403,410	138,290	23,500	48,450	35,880	5,250
Maryland	2	23,500	24,740	13,800											19,000	
Michigan	6	137,080	147,230	44,800		38,000	9,950	32,750		17,700	31,100	5,450	2,000		11,650	
Minnesota	3	190,420	198,000	78,000	23,000	65,400	8,200	30,100		27,000	65,100	11,500			42,000	1,300
Mississippi	5	289,700	298,390	152,563	6,700	70,500	6,350	70,700	62,000		41,450	9,200	6,000		7,270	320
Missouri	1	105,000	110,530	40,000	11,000	38,000	12,000	14,000			45,000	5,000			6,500	450
Montana	8	158,481	166,200	48,350	8,600	49,800	26,200	36,850	4,900		104,400	10,400	4,700		17,625	250
Nebraska	1	5,000	5,500	2,000		2,000	600	1,000								
New Jersey	5	619,000	646,131	318,380	40,340	249,440	63,830	100,440		50,000	236,450	21,610		6,400	71,000	975
New Mexico	6	55,359	57,130	12,500	1,250	12,200	5,060	11,700			11,450	3,100			2,240	
New York	2	107,600	111,000	43,000		39,000	12,000	22,700		20,000	26,100	4,800	2,500		17,500	
North Dakota	2	52,658	55,530		1,100	23,000	11,000	10,200			12,600	2,900				
Ohio	7	572,400	606,500	173,500	27,800	200,000	52,100	170,700	82,000	42,000	159,000	35,300		2,100	27,900	1,260
Oklahoma	12	481,000	497,695	156,110	69,070	184,100	42,230	112,490	4,500		136,590	41,280	16,610	10,600	21,010	1,445
Oregon	1	14,000	14,740	15,000											8,600	
Pennsylvania	11	689,620	729,215	247,778	26,750	196,900	20,700	197,208	32,700	133,000	227,750	38,100	57,900	29,628	35,500	
Tennessee	1	29,000	30,000			12,000						3,500			3,000	
Texas	40	3,732,875	3,896,560	1,277,560	344,750	1,199,370	268,535	980,510	151,170	289,500	1,427,650	211,160	172,410	86,020	64,720	6,025
Utah	6	133,150	140,620	34,800		53,400	17,000	18,500	1,000	7,000	13,600	8,850	2,550		4,700	
Virginia	1	53,000	55,790	28,000	14,000	26,500	4,000	8,000			22,000					710
Washington	7	346,500	361,100	132,700	36,000	89,280	27,330	76,890	35,000	20,500	133,780	21,330	2,900	1,900	9,600	1,500
West Virginia	3	19,550	20,500	8,675				6,160		4,440	7,510			6,600		
Wisconsin	1	37,000	38,000	15,500		9,700	1,000	8,200		5,800	8,200	1,200			12,000	
Wyoming	10	172,605	181,210	65,110	4,440	52,830	16,420	30,990		15,440	52,540	7,800	1,500	1,280	14,520	140
Total	247	14,216,287	14,876,050	5,300,006	1,491,950	4,610,580	1,061,035	3,358,038	855,840	1,019,830	4,760,280	849,080	348,010	237,118	683,601	43,410

*State totals include figures converted to calendar day or stream day basis.

Company and location	Crude capacity		Vacuum distillation	Thermal operations	Charge capacity—b/sd					Production capacity—b/sd				Coke (t/d)
	b/cd	b/sd			Cat cracking	Cat	Cat hydro-	Cat hydro-	Cat hydro-	Alkyl-ation	Aromatics-isomerization	Lubes	Asphalt	
					Fresh feed	Recycle	reforming	cracking	refining	treating				
ALABAMA														
Hunt Oil Co.—Tuscaloosa	15,000	15,750	8,660				1,400			1,500				5,200
Marion Corp.—Mobile	15,000	15,500								3,500				
Vulcan Asphalt Refining Co.—Cordova	3,000	NR												
Warrior Asphalt Corp.—Holt	2,421	2,600												1,726
Total*	35,421	37,010	8,660				1,400			5,000				6,926

*State total includes figures converted to stream day basis.

ALASKA															
Atlantic Richfield Co.—North Slope	4,800	NR													
British Petroleum Co.—North Slope	1,250	NR													
Standard Oil Co. of California—Kenai	22,000	NR												300	
Tesoro-Alaskan Petroleum Corp.—Kenai	38,000	39,500													
Total*	66,050	59,020												300	

*State totals include figures converted from calendar day to stream day basis.

ARIZONA															
Arizona Fuels Corp.—Fredonia	NR	10,000	4,000												
Total*	9,000	10,000	4,000												

*State total includes figure converted to calendar day basis.

ARKANSAS															
Berry Petroleum Co. (subsidiary of Crystal Oil Co.), Stephens	3,000	3,500	1,000											1,000	
Cross Oil & Refining Co., Smackover	4,850	5,000	2,000							⁵ 1,500			1,300	1,400	
Lion Oil Co., El Dorado	44,000	45,000	18,000	[*] 5,000	¹ 8,500 ² 6,500	4,000 1,200	¹ 5,500		⁵ 5,000	¹ 6,500	¹ 4,000		800	6,000	
MacMillan Ring-Free Oil Co. Inc.—Norphlet	NR	4,500	2,800											1,250	
Total†	56,125	58,000	23,800	5,000	15,000	5,200	5,500		5,000	8,000	4,000		2,100	9,650	

*Solvent. †State totals include figures converted to calendar-day basis.

CALIFORNIA															
Atlantic Richfield Co.—Carson	165,000	173,000	93,000	¹ 12,500 ² 42,000 ³ 30,000	¹ 57,000	8,000	¹ 34,000	¹ 19,700	⁵ 18,000	¹ 34,000 ² 18,000	¹ 7,200	¹ 2,490			1,800
Beacon Oil Co.—Hanford	12,000	12,100		¹ 500 ² 2,750			¹ 1,650								

Company and location	Crude capacity—		Vacuum distillation	Thermal operations	Charge capacity—b/sd					Production capacity—b/sd				Coke (t/d)	
	b/cd	b/sd			Cat cracking—Fresh feed	Cat cracking—Recycle	Cat reforming	Cat hydro-cracking	Cat hydro-refining	Bat hydro-treating	Alkyl-ation	Aromatics-isomerization	Lubes		Asphalt
Champlin Petroleum Co.—Wilmington	29,000	30,000	18,000	10,000											575
Douglas Oil Co., of California—Paramount	35,000	36,000	21,000				26,400		9,800	26,400				14,000	
Santa Maria	8,200	8,500	7,500											5,800	
Edgington Oil Co.—Long Beach	29,000	29,500	19,000											7,500	
Edgington Oxnard Refinery—Oxnard	NR	2,500													
Exxon Co.—Benicia	87,000	95,000	53,000	21,600	43,000	14,000	24,000	22,000	22,000	22,500 2,000	11,500				900
Fletcher Oil & Refining Co.—Carson	15,800	16,200					24,500			4,500					
Golden Bear Division, Witco Chemical Corp.—Oildale	10,500	11,000	9,500										4,000	3,200	
Golden Eagle Refining Co. Inc.—Carson	NR	13,000													
Gulf Oil Co.—Santa Fe Springs	51,500	53,800	25,000	13,800	13,500	300	19,000	11,000		12,000	3,000			4,000	
Kern County Refining Inc.—Bakersfield	12,900	NR		6,200			2,500								
Lunday-Thagard Oil Co.—South Gate	5,000	5,200	3,000											1,600	
MacMillan Ring-Free Oil Co. Inc.—Signal Hill	9,500	10,000													
Mobil Oil Corp.—Torrance	123,500	130,000	95,000	16,000 46,640	56,000	None	17,500 18,500	18,000		23,000 15,000 25,000	10,500				2,800
Mohawk Petroleum Corp. Inc.—Bakersfield	22,100	22,800					2,600			2,600					
Newhall Refining Co. Inc.—Newhall	7,500	8,000	5,000											3,000	
Phillips Petroleum Co.—Avon	110,000	NR	74,500	42,000	47,000	NR	32,500	22,000		34,500	10,500	2,700	1,670		1,200
Powerine Oil Co.—Santa Fe Springs	28,500	30,000	15,000		11,000	1,000	6,300		8,000 8,000 8,000	7,000	2,300			5,000	
San Joaquin Refining Co.—Oildale	17,000	18,000	7,000											3,360	
Sequoia Refining Corp.—Hercules	27,000	28,300	5,900				15,800	2,900		15,400					
Shell Oil Co.—Martinez	100,000	103,000	55,300		46,000	40,000	25,000	19,000	50,000	17,000 6,300 16,000 11,000 11,000			4,500	10,400	
Wilmington	96,000	101,000	60,000	30,000	35,000	5,000	21,000			28,000 33,000 11,000	8,600	3,800			1,800
Standard Oil Co. of California—Bakersfield	26,000	NR					5,400			5,400				1,100	
El Segundo	230,000	NR	103,000	54,000	43,500	11,000	60,000	49,000		40,000 12,000 18,000	5,900	1,500		8,300	2,200
Richmond	190,000	NR	150,000		43,500	11,000	70,500	41,500 26,000		44,000 3,200	9,200	2,000	10,000	11,000	
Sunland Refining Corp.—Bakersfield	8,800	9,000					1,000								

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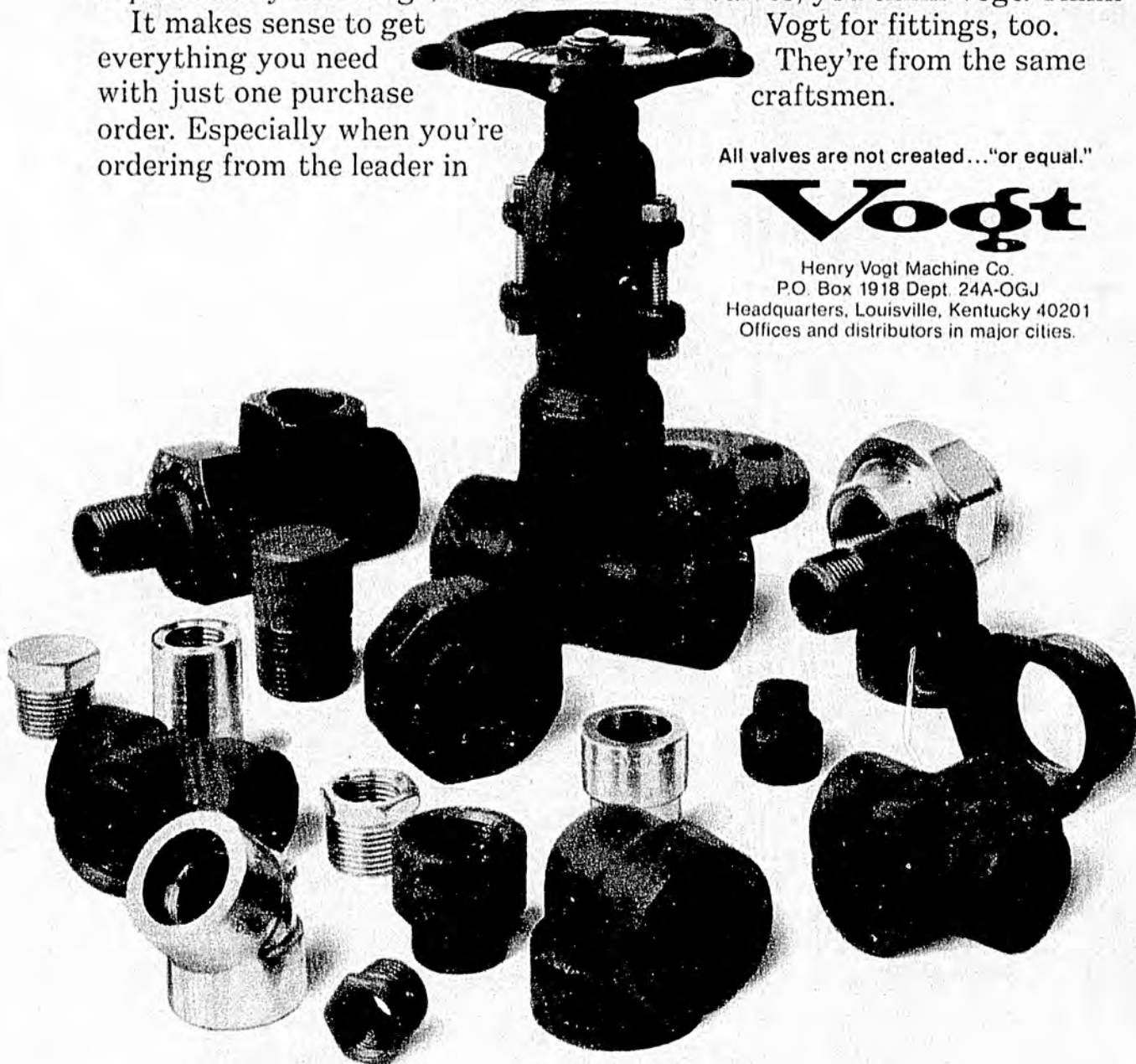
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Company and location	Crude capacity		Vacuum distillation	Thermal operations	Charge capacity—b/sd		Cat reforming	Cat hydro-cracking	Cat hydro-refining	Cat hydro-treating	Production capacity—b/sd				Coke (t/d)
	b/cd	b/sd			Fresh feed	Recycle					Alkyl-ation	Aromatics-isomerization	Lubes	Asphalt	
Tenneco Oil Co.—Bakersfield	1,200	NR	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texaco Inc.—Wilmington	75,000	NR	.....	48,000	28,000	NR	35,000	20,000	13,000	20,000	4,400	.....	.....	.....	1,650
Tosco Petro Corp.—Bakersfield	26,570	27,000	17,000	7,000	10,000	2,000	14,500	13,300	.....	5,000	1,800	.....	.....	.....	210
Union Oil Co. of California—Los Angeles	108,000	111,000	83,000	20,000	45,000	7,000	29,000	21,000	.....	37,000 33,000	8,000	.....	.....	10,000	.....
San Francisco	111,000	115,000	38,500	42,500	.....	.....	26,000	30,000	.....	21,000 9,000 14,000	.....	.....	3,600	6,150	1,850
West Coast Oil Co.—Bakersfield	16,000	NR	.....	2,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,000	.....
Total	1,809,295	1,894,800	958,200	452,820	481,610	122,730	476,540	317,620	138,250	662,020	83,390	12,490	23,770	98,410	15,165

*Gasoline. †Turbine fuel. ‡Jet fuel. \$All figures are calendar day. Stream-day figures not reported. ¶Turbine aromatics saturation ††State totals include figures converted to stream-day or calendar day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

COLORADO

Gary Western Co.—(Gilsonite) Grand Junction	8,300	8,500	.....	8,500	.....	.....	1,600	.....	.....	2,500	.....	.....	.....	.....	400
Continental Oil Co.—Commerce City	30,000	31,000	7,000	.....	14,000	500	6,500	.....	.....	7,000 7,500	.....	.....	.....	3,300	.....
The Refinery Corp.—Commerce City	17,500	NR	3,500	6,000	6,500	NR	3,800	.....	.....	.....	.....	.....	.....	.....	.....
Total*	55,800	57,920	10,500	14,500	20,500	2,450	11,900	.....	.....	17,000	.....	.....	.....	3,300	400

*State totals include calendar day figure converted to stream day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

DELAWARE

Getty Oil Co. (Eastern Operations) Inc.—Delaware City	140,000	150,000	90,700	44,000	62,000	15,000	42,000	17,000	.....	45,000 10,000 25,000 20,000	8,000	.....	.....	.....	1,800
Total	140,000	150,000	90,700	44,000	62,000	15,000	42,000	17,000		110,000	8,000				1,800

FLORIDA

Seminole Asphalt Refining Inc.—St. Marks	5,000	5,500	2,400											2,500	
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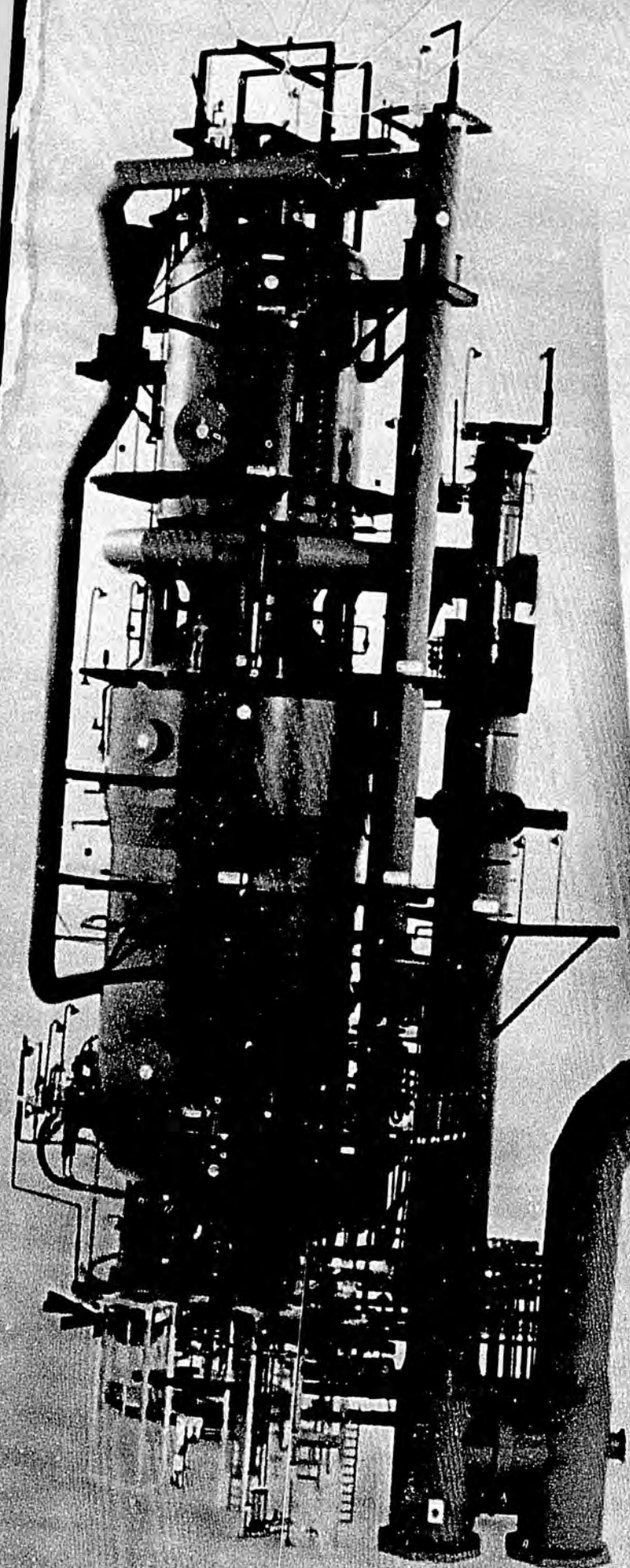
GEORGIA

Amoco Oil—Savannah	12,000	NR												8,000	
Young Refining Corp.—Douglasville	NR	2,500							1,200					1,300	
Total*	14,375	15,130	.....	.....	.....	.....	.....	.....	1,200	.....	.....	.....	.....	9,300	.....

*State total includes figures converted to stream day or calendar day basis.

HAWAII

Hawaiian Independent Refinery Inc.—Barber's Point	30,000	NR													
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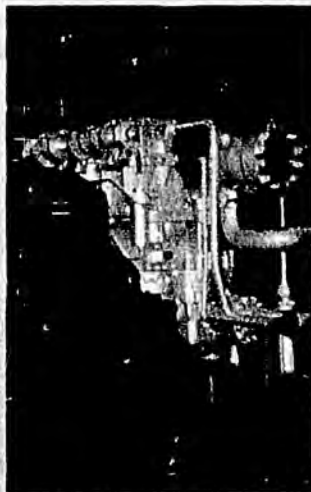
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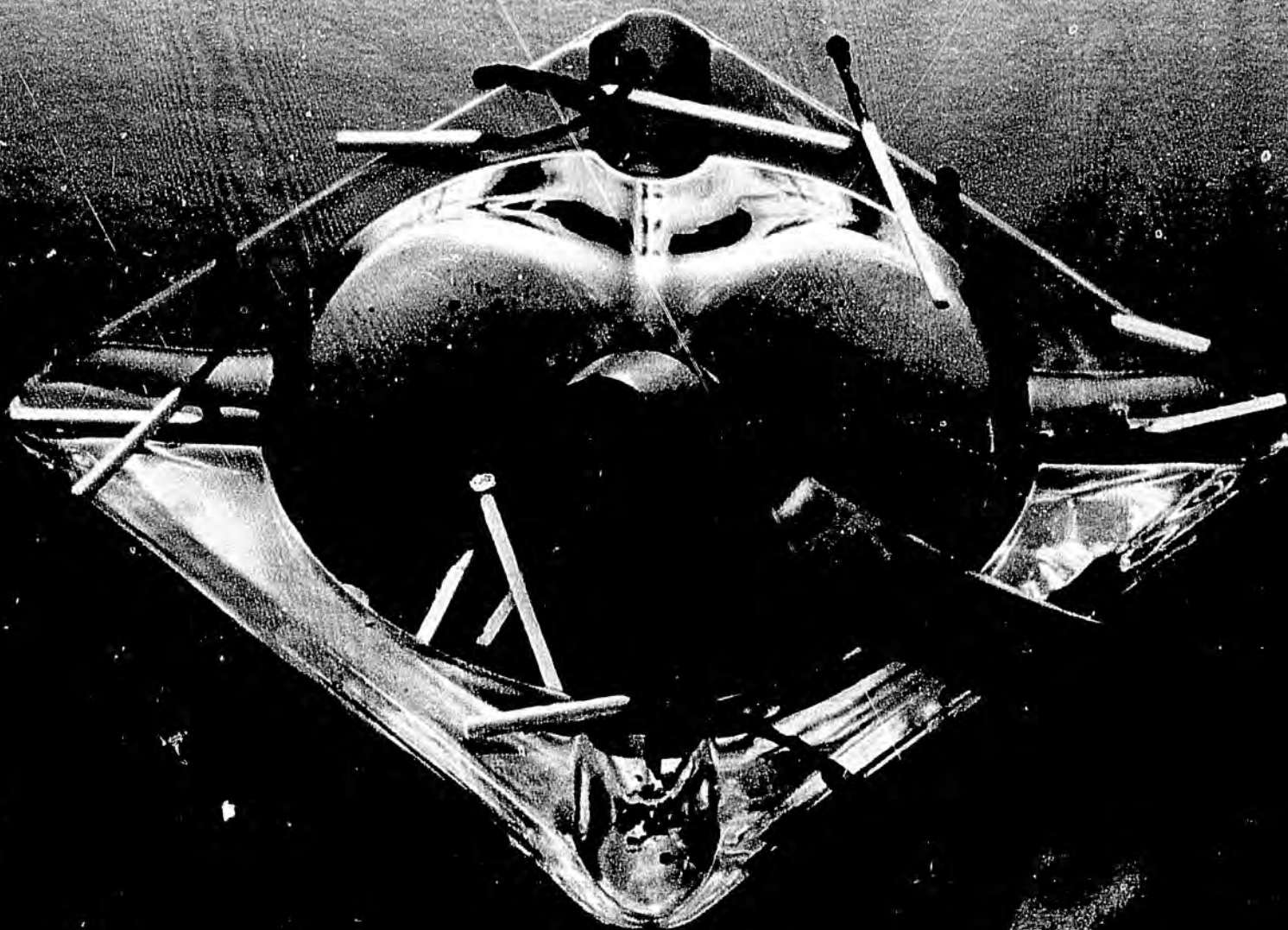
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Company and location	Crude capacity—b/cd		Vacuum distillation	Thermal operations	Charge capacity—b/sd		Cat cracking—Fresh feed	Cat cracking—Recycle	Cat reforming	Cat hydro-cracking	Cat hydro-refining	Cat hydro-treating	Production capacity—b/sd				Coke (t/d)
	b/cd	b/sd											Alkyl-ation	Aromatics-isomerization	Lubes	Asphalt	
Standard Oil Company of Calif.—Barber's Point	40,000	NR	15,000		¹ 14,100	8,900						² 1,400	² 4,130	⁴ 1,350		1,300	
Total*	70,000	73,689	15,000		14,100	8,900						1,400	4,130	1,350		1,300	
*State totals include figures converted to stream day basis.																	
ILLINOIS																	
Amoco Oil Co.—Wood River	107,000	NR	40,000		¹ 38,000	4,000	² 12,300					¹ 15,600	¹ 5,500			10,800	
Clark Oil & Refining Corp.—Blue Island	68,000	70,000	27,000		¹ 24,000	1,000	² 30,500	¹ 11,000				¹ 20,500	² 6,000			4,500	
Hartford	36,000	38,000	15,000	⁴ 13,000	¹ 26,000	1,000	² 9,200					¹ 9,200	² 7,500				450
Marathon Oil Co.—Robinson	195,000	205,000	62,000	¹ 2,800	¹ 36,500	8,000	¹ 14,000	¹ 22,000	⁶ 6,000	¹ 22,000	² 7,600						900
Mobil Oil Corp.—Joliet	175,000	186,000	82,000	⁴ 19,000	¹ 66,000	NR	² 46,200		⁵ 69,000	¹ 67,000	² 22,000						1,700
Shell Oil Co.—Wood River	260,000	268,000	91,500	² 21,000	¹ 80,000	18,000	¹ 22,000	¹ 33,500	⁴ 32,000	² 64,000	¹ 19,400	² 2,900	5,600	22,500			
							⁵ 65,000					⁶ 49,000	⁴ 4,000				
												³ 34,000					
												¹ 6,000					
Texaco Inc.—Lawrenceville	84,000	NR	24,000	¹ 9,000	¹ 31,000	NR	¹ 24,000					¹ 24,000	¹ 3,000			2,700	
Lockport	72,000	NR	14,000	⁴ 27,000	¹ 30,000	NA	¹ 19,000					¹ 19,000	¹ 4,400				300
Union Oil Co. of California—Lemont	152,000	NR	55,000	⁴ 19,500	¹ 52,000	8,000	² 32,000					¹ 32,000	¹ 12,800	¹ 3,300		2,000	1,000
												² 2,700					
												³ 4,500					
												⁴ 7,000					
												⁶ 34,500					
												⁵ 2,500					
Wireback Oil Co.—Plymouth	1,500	1,500															
Yetter Oil Co.—Colmar	1,000	NR	1,000														
Total†	1,151,500	1,206,390	415,730	143,200	390,270	81,240	312,280	66,500	107,000	435,280	89,020	10,200	5,600	42,800		4,380	

*Turbine. †Special fuels. ‡All figures are calendar day. Stream-day figures not reported. §Benzene concentrate treater. ¶State totals include figures converted to stream-day basis. Cat-cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

INDIANA																	
Amoco Oil—Whiting	315,000	NR	140,000	⁴ 14,500	¹ 118,000	28,000	⁴ 56,000			⁶ 4,500	¹ 104,000	¹ 23,000	⁴ 6,500	8,670	31,000	730	
											⁴ 39,000						
											² 18,000						
Atlantic Richfield Co.—East Chicago	126,000	140,000	70,000		¹ 48,300	2,000	¹ 20,300			⁵ 25,000	¹ 20,000	¹ 6,000			10,400		
											² 2,000						
Gladieux Refinery Inc.—Fort Wayne	10,000	NR															
Indiana Farm Bureau Cooperative Association Inc.—Mt. Vernon	15,000	15,200	6,000		¹ 5,000	780	¹ 3,000				¹ 3,000	² 1,500					
Laketon Asphalt Refining Inc.—Laketon	8,500	NR	5,000												2,600		
Mobil Oil Corp.—East Chicago	47,000	50,800	8,000	¹ 3,500	² 20,500	1,500	² 11,000				¹ 14,500	¹ 3,200					
				² 4,500													
Rock Island Refining Corp.—Indianapolis	29,500	31,000	14,000		¹ 15,000	NR	² 8,000				¹ 12,500	² 2,000			3,000		
Total*	551,000	588,050	243,000	22,500	206,500	36,780	98,000		29,500	213,000	35,700	6,500	8,670	47,000		730	

*State totals include figures converted from calendar day to stream day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

Company and location	Crude capacity		Vacuum distillation	Thermal operations	Charge capacity—b/sd				Cat hydro-cracking	Cat hydro-refining	Cat hydro-treating	Production capacity—b/sd				Coke (t/d)
	b/cd	b/sd			Cat cracking	Cat reforming	Recycle	Fresh feed				Alkylolation	Aromatics-isomerization	Lubes	Asphalt	
KANSAS																
American Petrofina Inc.— El Dorado	25,000	NR			¹ 11,000	500	¹ 4,000			¹ 4,000	² 2,000			2,000		
Apco Oil Corp.—Arkansas City	25,000	26,000	5,000		¹ 9,000	3,000	² 6,300	¹ 2,950		¹ 6,800	¹ 2,500			1,400		
CRA Inc.—Coffeyville	35,000	36,000	12,500	⁴ 8,500	¹ 13,500	700	³ 8,600		³ 3,000	¹ 11,800	² 4,500		1,500		300	
Phillipsburg	20,000	21,000	7,500		¹ 7,000	350	⁴ 3,500		¹ 4,500		² 1,570			2,000		
Derby Refining Co.—Wichita	25,873	27,000	8,800	⁴ 3,800	² 10,450	2,100	² 5,000			¹ 5,000	² 3,000				160	
Mid America Refinery Co. Inc.— Chanute	3,100	3,300	1,800													
Mobil Oil Corp.—Augusta	50,000	52,000	17,700	¹ 4,100	² 20,700	2,800	⁴ 10,000			¹ 10,000	² 3,800			8,000		
National Cooperative Refinery Association—McPherson	54,150	57,000		⁴ 17,000	¹ 20,000	1,000	⁶ 7,000*			¹ 8,000	² 6,000	⁴ 2,000			350	
North American Petroleum Corp.— Shallow Water	5,000	NR	2,500		² 2,250	2,250					² 1,200					
Phillips Petroleum Co.— Kansas City	85,000	NR	15,000		¹ 32,000	16,000	¹ 16,000			⁶ 27,500	² 7,500		2,500	3,000		
Skelly Oil Co.—El Dorado	73,700	75,000	23,000	⁴ 9,800	¹ 30,000	18,000	² 21,500			¹ 23,000 ³ 4,300	² 6,000	¹ 1,400			500	
Total†	401,823	418,050	93,800	43,200	155,900	46,700	81,900	2,950	7,500	100,400	38,070	3,400	4,000	16,400	1,310	

*Nonregenerative. †Total includes figures converted from calendar-day to stream day.

KENTUCKY															
Ashland Petroleum—Catlettsburg	132,000	138,000	55,000	² 4,000	¹ 54,000	1,000	² 22,500			¹ 22,500 ² 9,000 ³ 3,000 ⁴ 1,500 ⁵ 3,500	¹ 6,000	¹ 4,000 ² 2,500 ³ 13,000 ⁴ 5 ⁵ 12,000		10,000	
Louisville	25,000	26,000	10,000		¹ 9,000	NR	² 3,000			² 3,000				3,500	
Somerset Refinery Inc.—Somerset	2,800	3,000													
Total	159,800	167,000	65,000	4,000	63,000	6,700	25,500			42,500	6,000	21,500		13,500	

*Coal-tar, light oil. †Cumene. Cat-cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

LOUISIANA															
Atlas Processing Co.—Shreveport	29,000	NR	600				10,000			¹ 10,000 ² 1,800 ³ 4,800	¹ 1,000				
Bayou State Oil Corp.—Hosston	3,500	NR	2,000	⁵ 1,500									1,250	500	
Calumet Refining Co.—Princeton	2,400	2,400	4,100							² 2,400			1,700	480	
Canal Refining Co.—Church Point, La.	2,500	2,600					¹ 1,500								
Cities Service Oil Co.—Lake Charles	268,000	NR	60,000	⁴ 28,000	¹ 125,000	20,000	² 46,000		¹ 6,000 ⁴ 30,000	¹ 46,000 ² 14,000 ¹ 19,000 ³ 3,000	¹ 33,000 ² 2,300 ¹ 4,600		7,000		1,000
Continental Oil Co.—Westlake	83,000	85,000	8,000	¹ 7,000 ⁴ 10,000	² 30,000	7,000	² 18,500								500
Cotton Valley Solvents Co.— Cotton Valley	7,750	8,000													
Evangeline Refining Co. Inc.— Jennings	4,300	4,000					600								
Exxon Co.—Baton Rouge	445,000	460,000	165,000	⁴ 45,000	¹ 160,000	NR	² 99,500	¹ 21,000		² 3,900 ⁵ 23,800 ⁶ 80,000 ⁷ 2,200	¹ 33,100		15,000	28,900	2,160

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Company and location	Crude capacity		Vacuum distillation	Thermal operations	Charge capacity—b/sd		Cat reforming	Cat hydro-cracking	Cat hydro-refining	Cat hydro-treating	Production capacity—b/sd			Coke (t/d)
	b/cd	b/sd			Fresh feed	Recycle					Alkyl-ation	Aromatics-isomerization	Lubes	Asphalt
Good Hope Refineries Inc.— Good Hope	29,450	NR					13,500			13,500				
Gulf Oil Co.—Alliance Refinery, Belle Chasse	180,400	186,000	55,000	16,000	78,000	NR	137,500		16,000 22,000	41,000	28,400	11,100 25,400		840
Venice	28,700	29,100					18,000	11,500		14,400				
Kerr McGee Corp.—Cotton Valley	7,500	8,000												
LaJet Inc.—St. James	NR	11,000												
Murphy Oil Corp.—Meraux	92,500	95,400	14,500		10,500	500	18,000			22,500	2,900			
Shell Oil Co.—Norco	240,000	250,000	90,000	18,000	95,000	2,000	18,000	28,000	25,000	26,000	14,100		6,000	900
Tenneco Oil Co.—Chalmette	NR	97,000	23,000	9,000	22,000	NR	23,500	18,000		24,000	5,000	7,000		350
Texaco Inc.—Convent	140,000	NR	35,000	12,000	70,000	NR	30,000			55,000	12,500			
Total†	1,666,600	1,733,180	461,090	147,830	598,280	130,830	362,930	78,500	99,000	403,410	138,290	23,500	48,450	35,880 5,250

*All figures are calendar day. Stream day figures not reported. †State totals include figures converted to calendar day or stream day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

MARYLAND

Amoco Oil Co.—Baltimore	10,000	NR												8,000
Chevron Asphalt Co.—Baltimore	13,500	NR	13,800											11,000
Total*	23,500	24,740	13,800											19,000

*State total includes figures converted to stream day basis.

MICHIGAN

Bay Refining-Dow Chemical USA—Bay City	17,000	NR			25,500	2,750					750			
Crystal Refining Co.—Carson City	6,200	NR	2,800											
Lakeside Refining Co.—Kalamazoo	6,000	NR					2,000							
Marathon Oil Co.—Detroit	58,000	64,000	25,000		21,500	3,900	16,000		12,500	16,500	3,500	2,000	8,650	
Osceola Refining Co.—West Branch	NR	9,500					1,350			2,200				
Total Leonard Inc.—Alma	40,850	43,000	17,000		11,000	NR	13,400 210,000		13,800 1,400	13,400	2,200		3,000	
Total*	137,080	147,230	44,800		38,000	9,950	32,750		17,700	31,100	5,450	2,000	11,650	

*State totals include figures converted to stream day or calendar day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

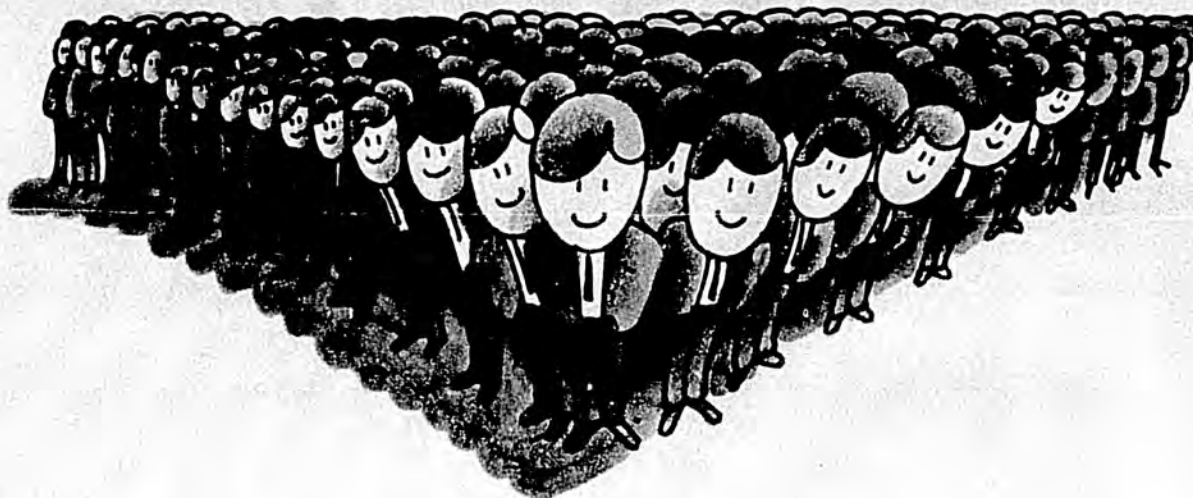
MINNESOTA

Continental Oil Co.—Wrenshall	23,500	24,000			18,500	1,000	23,600			13,600				
Koch Refining Co.—Pine Bend	106,920	110,000	40,000	23,000	22,500	500	16,500		7,000	16,500	18,500		20,000	1,300
					14,400	5,200				24,000 26,000				
Northwestern Refining Co., Division of Ashland Oil Inc.—St. Paul Park	60,000	64,000	38,000		20,000	1,500	10,000		20,000	10,000 5,000	23,000		22,000	
Total	190,420	198,000	78,000	23,000	65,400	8,200	30,100		27,000	65,100	11,500		42,000	1,300

MISSISSIPPI

Amerada-Hess Corp.—Furvis	28,500	30,000		6,700	14,500	NR	15,700	3,000		15,450				320
Southland Oil Co.—Crupp	4,200	3,200											1,440	

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Company and location	Crude capacity—b/cd		Vacuum distillation	Thermal operations	Charge capacity—b/sd		Cat reforming	Cat hydro-cracking	Cat hydro-refining	Cat hydro-treating	Production capacity—b/sd				Coke (t/d)
	b/cd	b/sd			Fresh feed	Recycle					Alkyl-tion	Aromatics-isomerization	Lubes	Asphalt	
Lumberton	6,000	4,263													
Sandersville	11,000	8,297	4,563												2,345
Standard Oil Co. of Kentucky*—Pascagoula	240,000	NR	148,000		156,000	2,000	265,000	159,000		136,000	19,200	16,000			3,485
Total	289,700	298,390	152,563	6,700	70,500	6,350	70,700	62,000		41,450	9,200	6,000		7,270	320

*Calendar day figure converted to stream day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

MISSOURI

Amoco Oil Co.*—Sugar Creek	105,000	NR	40,000	11,000	138,000	12,000	14,000			118,000 27,000	15,000			6,500	450
Total	105,000	110,530	40,000	11,000	38,000	12,000	14,000			45,000	5,000			6,500	450

*Total includes figure converted from calendar day to stream day basis.

MONTANA

Big West Oil Co.—Kevin	5,123	5,500	750	1,200			1,000			1,000				325	
Cenex—Laurel	42,000	44,000	15,400		15,000	3,000	26,800			210,000 415,000	23,200	22,100			
Continental Oil Co.—Billings	52,500	56,000	12,200		14,000	7,000	25,500 10,500			39,000	23,800	22,600		3,500	
Exxon Co.—Billings	45,000	46,000	18,000	5,200	19,000	15,000	14,500	4,900		215,500 20,000	23,400			13,000	250
Jet Fuel Refinery—Mosby	1,000	NR													
Phillips Petroleum Co.—Great Falls	5,700	NR	2,000		1,800	1,200	2600			1700 1,000				800	
Tesoro Petroleum Corp.—Wolf Point	2,500	2,650													
Westco Refining Co.—Cut Bank	4,658	5,000		2,200			2950			11,200 1,000					
Total†	158,481	166,200	48,350	8,600	49,800	26,200	36,850	4,900		104,400	10,400	4,700		17,625	250

*Light oil. †State totals include calendar day figures converted to stream day basis.

NEBRASKA

CRA Inc.—Scottsbluff	5,000	5,500	2,000		2,000	600	1,000								
Amerada-Hess Corp.—Fort Reading	70,000	75,000	30,000		30,000	15,000	16,500			16,500	14,480				
Chevron Oil Co.—Perth Amboy	88,000	92,000	50,000		30,000	8,000	214,000			14,000	13,000			25,000	
Exxon Co.—Linden	275,000	286,000	143,000	2,200	120,000	20,000	42,000		50,000	20,000	18,500			46,000	
Mobil Oil Corp.—Paulsboro	98,000	100,500	62,600	23,700	25,000	NR	23,500			23,500	2,300		6,400		975
Texaco Inc.*—Westville	88,000	NR	29,500	13,000	40,000	NR	13,000			33,000	13,000				
Total†	619,000	646,131	318,380	40,340	249,440	63,830	100,440		50,000	236,450	21,610		6,400	71,000	975

*All figures are calendar day. Stream day figures not reported. †State total includes figures converted to stream day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

Company and location	Crude capacity		Charge capacity—b/sd							Production capacity—b/sd				Coke (t/d)	
	b/cd	b/sd	Vacuum distillation	Thermal operations	Cat cracking		Cat reforming	Cat hydro-cracking	Cat hydro-refining	Cat hydro-treating	Alkyl-ation	Aromatics-isomerization	Lubes		Asphalt
NEW MEXICO															
Caribou Four Corners Inc.—Kirtland	2,200	1,400													
Famariss Oil Corp.—Monument	5,000	NR					650								
Navajo Refining Co.—Artesia	20,930	NR	4,500	1,250	25,200	NR	1,870			12,200	2,400			1,400	
Plateau Inc.—Bloomfield	5,100	5,200					2,250			2,250					
Shell Oil Co.—Ciniza	20,000	21,000	8,000		17,000	3,500	17,000			27,000	2,700			840	
Thriftway Co.—Bloomfield	2,129	NR													
Total†	55,359	57,130	12,500	1,250	12,200	5,060	11,770			11,450	3,100			2,240	

†Total includes figures converted from calendar day to stream day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

NEW YORK															
Ashland Petroleum Co.—Tonawanda	65,000	67,000	25,000	.....	20,000	NR	211,500	.....	20,000	12,000 *1,500	2,000	2,500	.....	10,000	.....
McBil Oil Corp.—Buffalo	42,600	44,000	18,000	.....	219,000	6,000	211,200	.....	.....	12,600	2,800	.....	.....	7,500	.....
Total	107,600	111,000	43,000	.....	39,000	12,000	22,700	.....	20,000	26,100	4,800	2,500	.....	17,500	.....

*Coal tar, light oil. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

NORTH DAKOTA															
Amoco Oil Co.—Mandan	48,000	NR	.....	.....	23,000	11,000	28,200	.....	.....	11,000	2,900	.....	.....	.....	.....
Westland Oil Co.—Williston	4,658	5,000	.....	1,100	.....	.....	2,000	.....	.....	1,600	.....	.....	.....	.....	.....
Total*	52,658	55,530	.....	1,100	23,000	11,000	10,200	.....	.....	12,600	2,900	.....	.....	.....	.....

*State total includes figure converted from calendar day to stream day basis.

OHIO															
Ashland Petroleum Co.—Canton	60,000	62,000	24,000	.....	22,000	NR	211,000	.....	20,000 *12,000	12,000	27,000	.....	.....	10,000	.....
Findlay (operated seasonally)	10,000	20,000	8,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6,000	.....
Gulf Oil Co.—Cleveland	42,100	43,500	13,000	.....	18,000	9,000	10,000	.....	5,000	11,000	24,500	.....	.....	2,900	.....
Toledo	50,300	51,000	12,500	.....	20,000	2,000	11,000	.....	5,000	11,000	25,500	.....	.....	2,000	.....
Standard Oil Co. of Ohio—Lima	165,000	175,000	51,000	15,000	35,000	10,500	50,000	20,000	.....	59,000	.....	.....	2,100	.....	610
Toledo	120,000	125,000	43,000	12,800	55,000	16,500	47,700	36,000	.....	38,500	11,300	.....	.....	7,000	650
Sun Oil Co.—Toledo	125,000	130,000	22,000	.....	50,000	7,500	25,000	26,000	.....	27,500	17,000	.....	.....	.....	.....
							216,000	.....	.....	.....	.....	.....	.....	.....	.....
Total	572,000	606,500	173,500	27,800	200,000	52,100	170,700	82,000	42,000	159,000	35,300	.....	2,100	27,900	1,260

Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

OKLAHOMA															
Allied Materials Corp.—Stroud	5,500	5,800	2,800	.....	.....	.....	.....	.....	.....	.....	.....	.....	900	1,210	.....
Apco Oil Corp.—Cyril	12,000	12,500	5,000	.....	16,000	1,500	1,000	.....	.....	1,000	21,350	.....	.....	1,300	.....
Champlin Petroleum Co.—Enid	49,500	52,000	18,000	43,700	19,500	1,950	215,000	.....	.....	20,400	24,500	6,000	1,100	1,400	165
Continental Oil Co.—Ponca City	117,000	120,000	34,500	13,500	44,600	NR	231,300	.....	.....	32,800	29,700	45,000	2,300	3,000	500
				18,500	.....	.....	.....	.....	.....	27,700*	.....	.....	.....	.....	.....
Kerr-McGee Corp.—Wynnewood	32,000	34,000	10,000	.....	11,500	2,000	27,500	14,500	.....	17,500	.....	.....	.....	3,500	.....
									.....	24,000†	.....	.....	.....	.....	.....
Midland Cooperatives Inc.—Cushing	19,000	19,814	7,000	4,000	17,000	3,000	14,500			14,500	22,000				80
										22,000					
										31,000					
										41,000					

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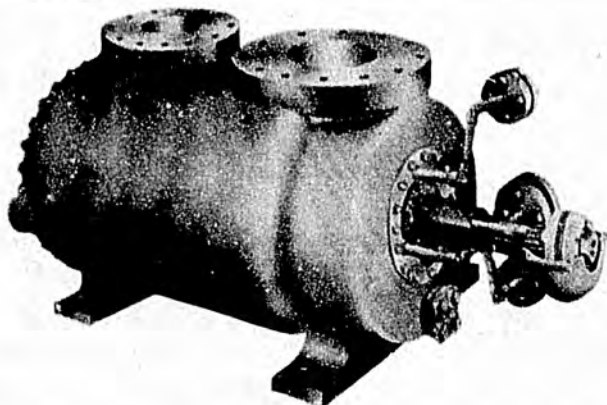
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York Industrial Barrel Compressor

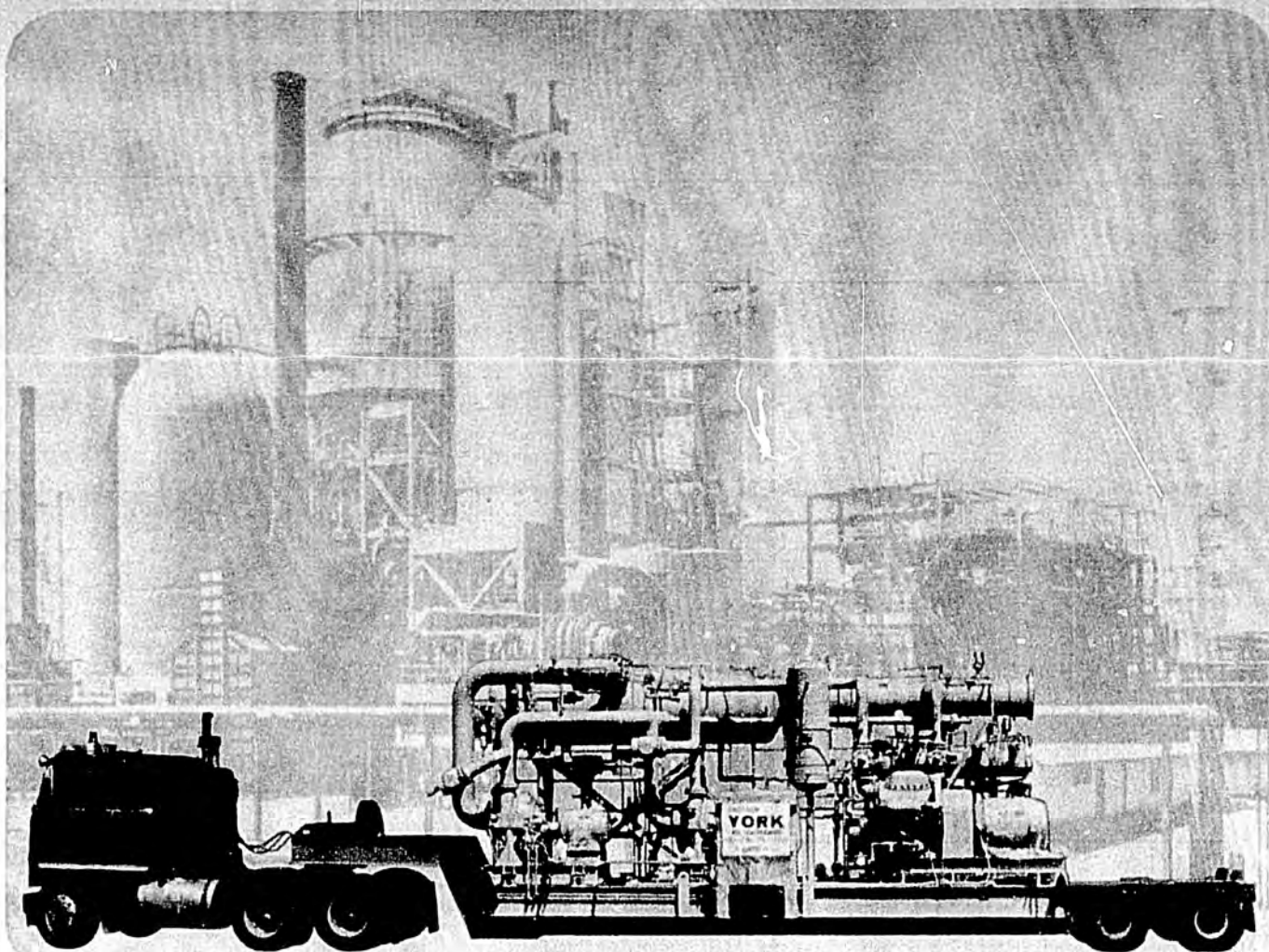
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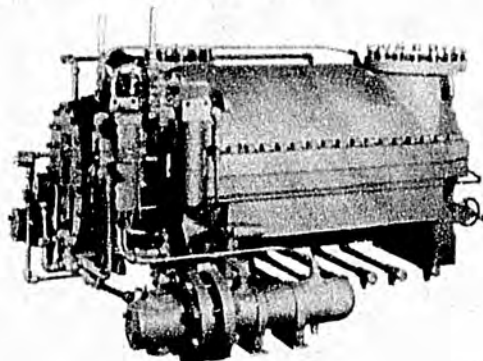


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BORG WARNER

P. O. BOX 1592, YORK, PENNSYLVANIA 17405

Company and location	Crude capacity—b/cd		Vacuum distillation	Thermal operations	Charge capacity—b/sd		Cat reforming	Cat hydro-cracking	Cat hydro-refining	Cat hydro-treating	Production capacity—b/sd				Coke (t/d)
	b/cd	b/sd			Fresh feed	Recycle					Alkyl-ation	Aromatics-isomerization	Lubes	Asphalt	
OKC Refining Inc.—Okmulgee	21,500	NR	3,200		² 8,000	2,000					² 1,500			1,400	
Sun Oil Co.—Duncan	48,500	50,000	17,000	⁴ 12,000	¹ 25,000	10,500	² 7,800			¹ 7,800	² 5,800				400
Tulsa	88,500	90,000	31,500	⁴ 8,200	¹ 30,000	1,400	² 23,000			¹ 28,000	² 2,600	¹ 2,000	6,300	4,200	300
							² 7,000			² 6,500	² 6,000	² 950			
												⁴ 2,100			
Texaco Inc.—West Tulsa	50,000	NR	14,500	¹ 6,000	¹ 18,000	NR	² 8,000			¹ 8,000	¹ 3,000	⁴ 500			
Tonkawa Refining Co.—Tonkawa	6,000	NR													
Vickers Petroleum Corp.—Ardmore	31,500	32,000	11,000	² 2,500	¹ 12,500	500	² 6,500			¹ 6,500	² 4,500			5,000	
Total [†]	481,000	497,695	156,110	69,070	184,100	42,230	112,490	4,500		136,590	41,280	16,610	10,600	21,010	1,445

*Cycle oil. †Cat charge. ‡All figures calendar day. Stream day figures not reported. \$Pitch. ††Total includes figures converted to stream day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

OREGON

Standard Oil Co. of California*—Portland	14,000	NR	15,000											8,600	
Total	14,000	14,740	15,000											8,600	

*Calendar day figure converted to stream day basis.

PENNSYLVANIA

Atlantic Richfield Co.—Philadelphia	185,000	195,000	57,000				¹ 60,000	¹ 30,000	² 32,000	¹ 54,000				19,500	
BP Oil Corp.—Marcus Hook	98,000	105,000	60,000	² 12,000	¹ 37,900	4,000	² 22,000			¹ 24,000	² 9,700				
									² 41,000	¹ 16,000					
Bradford Petroleum Division, Witco Chemical Corp.—Bradford	7,000	7,800					² 5,500			¹ 2,000			3,100		
Gulf Oil Co.—Philadelphia	168,500	174,000	65,000		¹ 74,000	6,500	¹ 32,000		² 60,000	¹ 52,000	² 15,000	¹ 3,300			
										² 1,600					
Pennzoil Co.—Rouseville	10,000	10,400	3,328				¹ 3,600	² 2,700		¹ 4,500			3,528		
Quaker State Oil Refining Corp.—Emlenton	3,320	3,495	1,700	¹ 750			² 1,250			¹ 1,450			1,700		
				² 600											
Farmers Valley	6,500	6,800	2,750	¹ 1,400			² 1,858			¹ 2,300			2,500		
Sun Oil Co.—Marcus Hook	165,000	180,900	48,000	² 12,000*	¹ 75,000	10,000	¹ 17,400			¹ 35,000	¹ 12,000	¹ 53,000	17,000	12,000	
							² 27,600			² 10,000					
										¹ 10,000					
United Refining Co.—Warren	38,000	38,000	8,000		¹ 10,000	200	² 10,000			¹ 15,000	¹ 1,400			4,000	
										⁴ 1,500					
Valvoline Oil Co., Division of Ashland Oil Inc.—Freedom	¹ 6,200	6,500	2,000										1,300		
Wolf's Head Oil Refining Division of Pennzoil Co.—Reno	2,100	2,220											500		
Total	689,620	729,215	247,778	26,750	196,900	20,700	197,208	32,700	133,000	227,750	38,100	57,900	29,628	35,500	

*Naphtha standby. †Furnace oil.

TENNESSEE

Delta Refining Co.—Memphis	29,000	30,000			² 12,000	None					² 3,500			3,000	
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Company and location	Crude capacity		Vacuum distillation	Thermal operations	Charge capacity—b/sd				Cat hydro-cracking	Cat hydro-refining	Cat hydro-treating	Production capacity—b/sd				Coke (t/d)
	b/cd	b/sd			Cat cracking Fresh feed	Recycle	Cat reforming	Alkylation				Aromatics-isomerization	Lubes	Asphalt		
TEXAS																
Adobe Refining Co. (subsidiary of Crystal Oil Co.)—LaBlanca	4,250	5,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
American Petrofina Inc.—Mt. Pleasant	26,000	NR	15,000	.....	² 9,600	2,200	¹ 3,000	.....	⁵ 6,000	² 3,500	² 2,200	.....	.....	.....	8,000	.....
Port Arthur	84,000	NR	28,000	² 10,000	¹ 26,000	2,000	¹ 12,500	.....	⁵ 30,000	¹ 15,000	¹ 2,500	¹ 3,000	.....	.....	.....	.....
Amoco Oil Co.—Texas City	333,000	NR	131,000	⁴ 22,500	¹ 128,500	56,500	³ 129,000	¹ 38,000	.....	¹ 130,000	¹ 26,700	¹ 34,000	.....	.....	5,300	800
Atlantic Richfield Co.—Houston	213,000	233,500	70,000	⁴ 27,000	¹ 69,000	5,000	¹ 100,000	³ 4,500	⁵ 35,000	¹ 100,000	¹ 9,000	¹ 10,400	6,500	.....	.....	1,300
										⁶ 6,000						
										⁸ 8,000						
Champlin Petroleum Co.—Corpus Christi	62,000	63,000	9,200	.....	¹ 10,000	105	² 6,300	.....	.....	¹ 27,000	² 2,600	¹ 2,100	.....	.....	.....	.....
							⁶ 20,000*			² 6,100		² 1,600	.....	.....	.....	.....
										⁶ 7,510						
Charter International Oil Co.—Houston	70,000	66,000	22,000	² 10,000	¹ 24,000	5,000	¹ 13,500	.....	⁵ 29,500	¹ 15,000	¹ 4,500	¹ 7,900	.....	.....	4,000	.....
Chevron Oil Co.—El Paso	71,000	NR	24,600	.....	¹ 22,000	8,000	² 25,000	.....	⁴ 14,000	¹ 25,000	¹ 5,000	⁴ 1,500	.....	.....	5,000	.....
Coastal States Petrochemical Co.—Corpus Christi	NR	135,000	33,000	⁴ 12,000	¹ 19,000	300	¹ 15,000	.....	.....	¹ 30,000	² 2,500	¹ 5,500	.....	.....	500	500
							⁶ 20,000*			² 10,000†		² 2,300				
										⁷ 10,000‡						
										⁷ 25,000§						
Cosden Oil & Chemical Co.—Big Spring	65,000	NR	25,000	¹ 10,000	¹ 24,000	1,000	² 20,000	.....	⁵ 8,000	¹ 25,000	² 6,000	¹ 4,500	.....	.....	8,000	.....
												² 2,000				
												³ 800				
Crown Central Petroleum Corp.—Houston	100,000	103,000	38,000	⁴ 9,500	¹ 43,000	9,000	¹ 8,000	.....	.....	¹ 22,000	² 10,000	¹ 2,000	.....	.....	.....	300
							² 14,000					² 2,000				
Diamond Shamrock Oil & Gas Co.—Sunray	47,000	49,000	14,500	¹ 2,500	² 11,500	2,000	² 14,000	.....	.....	¹ 14,000	¹ 7,600	⁴ 1,400	.....	.....	2,500	.....
					³ 11,500					² 2,500						
										⁷ 3,500†						
Eddy Refining Co.—Houston	3,250	NR	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Exxon Co.—Baytown	400,000	420,000	180,000	.....	¹ 124,000	21,000	³ 88,000	¹ 20,000	² 48,000	¹ 90,000	¹ 26,000	.....	.....	25,000	12,000	.....
										² 15,000						
										⁵ 41,000						
										⁶ 109,000						
										⁷ 8,500‡						
Flint Chemical Co.—San Antonio	1,200	750	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gulf Oil Co.—Port Arthur	312,100	319,000	147,400	⁴ 30,000	¹ 120,000	6,000	¹ 65,000	¹ 15,000	⁵ 65,000	¹ 65,000	¹ 5,500	¹ 2,700	¹ 13,200	.....	.....	1,390
										³ 1,200	² 14,500	² 2,500				
										⁵ 13,900		⁵ 7,200				
Howell Hydrocarbons—San Antonio	3,100	NR	.....	.....	.....	.....	¹ 500	.....	.....	.....	.....	.....	.....	.....	.....	.....
La Gloria Oil & Gas Co.—Tyler	28,000	29,000	.....	¹ 3,000	¹ 10,000	5,000	² 9,500	.....	.....	¹ 7,000	¹ 2,400	.....	.....	.....	.....	80
				⁴ 12,000												
Longview Refining Co. (subsidiary of Crystal Oil Co.)—Longview	6,600	7,500	.....	.....	.....	.....	¹ 1,500	.....	.....	¹ 3,300	.....	.....	.....	.....	.....	.....
Marathon Oil Co.—Texas City	61,000	63,000	20,000	.....	¹ 28,500	4,500	¹ 8,000	.....	.....	.....	¹ 1,650	¹ 1,600	.....	.....	.....	.....
Mobil Oil Corp.—Beaumont	325,000	335,000	103,000	⁴ 33,000	¹ 55,000	NR	¹ 45,000	¹ 29,000	.....	¹ 83,000	¹ 16,500	.....	8,800	100	1,200	.....
					² 40,000	12,000	² 49,000			⁶ 42,000						
Phillips Petroleum Co.—Borger	95,000	NR	.....	.....	¹ 55,000	15,000	¹ 26,000	.....	.....	¹ 25,000	¹ 14,500	² 2,900	.....	.....	.....	.....
										⁴ 26,000		⁴ 8,000				
										⁷ 12,000		⁵ 12,000				

Company and location	Crude capacity		Vacuum distillation	Thermal operations	Charge capacity—b/sd				Cat hydro-cracking	Cat hydro-refining	Cat hydro-treating	Production capacity—b/sd				Coke (t/d)
	b/cd	b/sd			Fresh feed	Cat cracking—Recycle	Cat reforming	Alkylation				Aromatics-isomerization	Lubes	Asphalt		
Sweeny	85,000	NR	17,000		¹ 30,000	5,000	¹ 32,000			¹ 26,000	² 9,000	¹ 1,900 ³ 3,600 ⁴ 9,000				
Pride Refining Inc.—Abilene	14,125	14,690														
Quintana-Howell—Corpus Christi	10,000	NR														
Shell Oil Co.—Deer Park	288,000	293,000	105,400	¹ 65,000 ⁴ 20,000	¹ 70,000	NR	¹ 35,000 ³ 42,000	¹ 25,000	⁴ 50,000	² 73,000 ⁵ 7,000 ⁶ 85,000 ² 9,700	¹ 6,800	¹ 13,500	6,000	3,800		
Odessa	32,000	34,000	10,000		¹ 10,500	5,000	¹ 9,700					¹ 2,800	¹ 450			
Southwestern Oil & Refining Co.—Corpus Christi	100,000	150,000	24,000		¹ 9,500	2,500	² 15,000			¹ 15,000	² 4,000	¹ 6,000				
Suntide Refining Co.—Corpus Christi	57,000	60,000	10,000	⁴ 7,700	¹ 20,000	6,500	¹ 13,000 ³ 11,000			¹ 15,500	³ 2,200	¹ 4,500 ² 1,300			235	
Tesoro Petroleum Corp.—Carrizo Springs	13,000	13,500														
Texaco Inc.—Amarillo	20,000	NR		⁴ 4,000	¹ 8,000		² 5,000			¹ 5,000	¹ 1,500				100	
El Paso	17,000	NR		⁴ 4,000	¹ 7,000	NR	² 3,500			¹ 3,500	¹ 1,500	⁴ 500			100	
Port Arthur	406,000	NR	142,000	¹ 51,000	¹ 135,000	NR	¹ 20,000 ² 40,000	¹ 15,000		¹ 60,000 ² 37,000**	¹ 15,000		20,000			
Port Neches	47,000	NR	26,000											9,000		
Texas Asphalt & Refining Co.—Fort Worth	3,000	3,500														
Texas City Refining Inc.—Texas City	60,000	63,000	14,500	² 5,000	² 22,000	1,000	² 11,000			¹ 11,000	³ 3,500					
Three Rivers Refinery—Three Rivers	1,500	NR	800										800	120		
Union Oil Co. of California—Nederland	116,000	NR	44,000		¹ 36,700	4,000	³ 35,000			¹ 35,000 ² 6,500 ⁴ 6,700	¹ 4,000	¹ 2,500 ² 1,800	3,500	5,400		
Union Texas Petroleum, Division Allied Chemical Corp.—Winnie	9,500	10,000					¹ 6,200	² 3,000		² 270 ² 250†		¹ 300				
Winston Refining Co.—Ft Worth	15,000	15,500	3,500		¹ 3,400	2,600	¹ 1,700									
Total††	3,732,875	3,896,560	1,277,560	344,750	1,199,370	268,535	980,510	151,170	289,500	1,427,650	211,160	172,410	86,020	64,720	6,025	

*Continuous. †Kerosine. ‡Diesel. §Gas oil. ¶Solvents. ||All figures are calendar day. Stream day figures not reported. **Jet fuel. ††State totals includes figures converted to stream day or calendar day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

UTAH

Amoco Oil Co.—Salt Lake City	39,000	NR			¹ 17,000	5,000	² 5,500					¹ 5,500	¹ 3,750	⁴ 1,800		2,500	
Arizona Fuels Corp.—Roosevelt	NR	11,000			¹ 6,000	None											
Caribou Four Corners Inc.—Woods Cross	4,200	5,000	1,000				¹ 2,000		¹ 1,000								
Chevron Oil Co.—Salt Lake City	45,000	NR	27,000		¹ 10,000 ³ 8,000	2,000 5,000	² 5,500			⁴ 5,500	¹ 5,500	² 4,300	⁴ 750				
Husky Oil Co.—North Salt Lake	11,500	12,000	3,800		² 4,400	2,500	¹ 1,000					¹ 1,000	² 800				
Phillips Petroleum Co.—Woods Cross	23,000	NR	3,000		² 8,000	2,500	¹ 4,500			⁴ 1,500	² 1,600					2,200	
Total*	133,150	140,620	34,800		53,400	17,000	18,500	1,000	7,000	13,600	8,850	2,550				4,700	

*State totals include figures converted to stream day or calendar day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

VIRGINIA

Amoco Oil Co.—Yorktown	53,000	NR	28,000	⁴ 14,000	¹ 26,500	4,000	³ 8,000					¹ 8,000 ⁴ 14,000					710
Total	53,000	55,790	28,000	14,000	26,500	4,000	8,000					22,000					710

Calendar day figure converted to stream day basis.

Company and location	Crude capacity		Vacuum distillation	Thermal operations	Charge capacity—b/sd					Production capacity—b/sd				Coke (t/d)	
	b/cd	b/sd			Cat cracking—Fresh feed	Recycle	Cat reforming	Cat hydro-cracking	Cat hydro-refining	Cat hydro-treating	Alkyl-ation	Aromatics-isomerization	Lubes		Asphalt
WASHINGTON															
Atlantic Richfield Co.—Ferndale	96,000	100,000	55,000	29,000			235,000	35,000	12,000	27,000					1,500
Mobil Oil Corp.—Ferndale	71,500	74,500	7,000	7,000	25,500	2,000	210,000			10,000	5,900				
										21,000					
Shell Oil Co.—Anacortes	91,000	94,000	33,000		36,000	17,000	20,000		8,500	24,000	12,100	2,900			
										21,000					
Sound Refining Inc.—Tacoma	4,500	4,700	4,500										1,900	2,600	
Standard Oil Co. of California— Richmond Beach	4,500	NR	5,000											4,000	
Texaco Inc.*—Anacortes	63,000	NR	22,500		25,000	NR	8,000			25,000	3,000				
U.S. Oil & Refining Co.—Tacoma	16,000	NR	3,200				3,000			3,000				3,000	
Total	346,500	361,100	132,700	36,000	89,280	27,330	76,890	35,000	20,500	133,780	21,330	2,900	1,900	9,600	1,500

*All figures are calendar day. Stream day figures not reported. †State totals include calendar day figures converted to stream day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

WEST VIRGINIA

Pennzoil Company, Elk Refining Division—Falling Rock	5,000	5,500	2,500				2,000			2,500			1,300		
										500					
Quaker State Oil Refining Corp.—Newell	9,700	10,000	4,000				2,860		4,440	3,060			3,600		
St. Mary's	4,850	5,000	2,175				1,300			1,450			1,700		
Total	19,550	20,500	8,675				6,160		4,440	7,510			6,600		

WISCONSIN

Murphy Oil Corp.—Superior	37,000	38,000	15,500		9,700	1,000	28,200		5,800	8,200	2,200			12,000	
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WYOMING

Amoco Oil Co.—Casper	43,000	NR	13,500		9,500	1,500	25,200			6,600	1,150		1,280	1,550	
Husky Oil Co.—Cheyenne	23,600	24,600	14,000		10,000	2,500	1,000			6,200	2,750	1,500		3,000	
							25,200			1,500					
										3,400					
Cody	10,700	11,200	6,500		3,300	1,000	1,200			1,800	800			4,000	
Little America Refining Co.—Casper	22,000	23,000	5,800		6,500	4,000	3,750			3,750				2,000	
										3,750					
Mountaineer Refining Co. Inc.—LaBarge	NR	500													
Pasco Inc.—Sinclair	40,000	42,000	14,200		12,000	840	9,700		11,000	9,700	2,200			2,300	
										11,400					
Sage Creek Refining Co.—Cowley	1,000	1,200					500								
Southwestern Refining Co.—LaBarge	330	NR													
Tesoro Petroleum Corp.—Newcastle	10,500	11,000			3,750	4,250					900				
Texaco Inc.*—Casper	21,000	NR	10,000	4,000†	7,000	NR	2,400		4,000	4,000				1,500	125
Total†	172,605	181,210	65,110	4,440	52,830	16,420	30,990		15,440	52,540	7,800	1,500	1,280	14,520	140

*All figures are calendar day. Stream-day figures not reported. †Pressure coke. ‡State totals include figures converted to calendar day or stream day basis. Cat cracking recycle total figures not reported (with recycle estimated at 30% of fresh feed).

Survey of Canadian operating refineries*

Province	No. plants	Crude capacity		Vacuum distillation	Thermal operations	Charge capacity—b/sd			Cat hydro-cracking	Cat hydro-refining	Cat hydro-treating	Production capacity—b/sd				Coke (t/d)
		b/cd	b/sd			Fresh feed	Cat cracking Recycle	Cat reforming				Alkylolation	Aromatics-isomerization	Lubes	Asphalt	
Alberta	8	176,850	190,600	67,280	9,400	56,330	25,807	28,290		6,000	64,740	14,560	3,000	3,220	10,680	1,613
British Columbia	7	133,900	141,200	53,530		40,170	15,350	27,410		19,450	49,450	2,510			8,250	
Manitoba	2	49,000	51,580	16,220		16,670	3,320	12,000	1,550		13,670	1,550			4,440	
New Brunswick	1	123,500	130,000	20,000		18,000	5,400	13,500		15,000	13,500				5,000	
Newfoundland	2	118,000	124,330	39,000	18,000			25,300	35,000		41,800					
Northwest Territories	1	2,900	3,050													
Nova Scotia	3	180,000	192,260	53,440		29,340	20,330	21,220			70,330				7,440	
Ontario	7	419,700	455,080	139,100	38,280	119,770	40,870	109,710	20,000	4,000	221,580	19,050	3,560	7,770	17,100	
Quebec	7	607,500	641,830	272,340	74,330	142,000	54,830	99,220	28,780	15,000	249,430	5,498	22,210	3,490	53,750	100
Saskatchewan	4	66,200	71,600	30,905	3,000	21,220	19,280	6,780			9,000				3,905	165
Total	42	1,877,550	2,001,530	691,815	143,010	443,500	185,187	343,430	85,330	59,450	733,500	43,168	28,770	14,480	110,565	1,878

*Province totals include figures converted to calendar day or stream day basis.

Company and location	Crude capacity		Vacuum distillation	Thermal operations	Charge capacity—b/sd			Cat hydro-cracking	Cat hydro-refining	Cat hydro-treating	Production capacity—b/sd				Coke (t/d)
	b/cd	b/sd			Fresh feed	Cat cracking Recycle	Cat reforming				Alkylolation	Aromatics-isomerization	Lubes	Asphalt	
ALBERTA															
Great Canadian Oil Sands Ltd.*— Fort McMurray	50,000	NR	.....	80,000	.....	.....	² 40,000 ² 14,000	² 16,000	.....	.....	.....	.....	.....	.....	2,800
Gulf Oil Canada Ltd.—Calgary	6,750	7,500	2,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,700	.....
Edmonton	72,000	80,000	24,400	47,200	130,000	750	¹ 5,400 ² 10,000	.....	² 6,000	.....	² 45,000	² 10,000	² 3,000	.....	431
Husky Oil Operations Ltd.— Lloydminster	10,600	11,000	6,500	.....	.....	.....	¹ 1,000	.....	.....	¹ 1,000	.....	.....	.....	5,200	.....
Imperial Oil Enterprises Ltd.†— Calgary	22,600	NR	7,400	.....	.....	.....	² 2,500	.....	.....	¹ 5,600	¹ 1,700	.....	.....	.....	1,000
Edmonton	39,900	NR	15,600	.....	.....	.....	² 2,600	.....	.....	² 2,900	² 2,400	.....	2,900	3,400	.....
Shell Canada Ltd.†—Bowden	5,000	NR	.....	.....	.....	.....	² 2,600	.....	.....	¹ 2,700	.....	.....	.....	.....	.....
Texaco Canada Ltd.†—Edmonton	20,000	NR	7,500	42,000	16,500	NR	¹ 3,000	.....	.....	¹ 3,000	.....	.....	.....	.....	65
							² 2,700			² 2,700					
Total	176,850	190,600	67,280	9,400	56,330	25,807	28,290		6,000	64,740	14,560	3,000	3,220	10,680	1,613

*Synthetic crude. Not included in totals. †All figures calendar day. Stream day figures not reported. ‡Province totals include figures converted to stream day basis.

BRITISH COLUMBIA																
Chevron Canada Ltd.—North Burnaby	20,000	21,000	8,400		15,000	4,000	² 3,400									
Gulf Oil Canada Ltd.—Kamloops	5,900	6,500	2,200		¹ 2,100	200	¹ 800			² 2,400					500	
Port Moody	30,000	32,000	12,500		¹ 9,000	2,300	¹ 4,000			² 11,700	¹ 1,050				300	
Imperial Oil Enterprises Ltd.—loco	36,800	NR	16,200		¹ 11,700	5,900	² 6,400			¹ 11,000						
Pacific Petroleum Ltd.—Taylor	11,700	12,000	1,100		¹ 4,400	300	¹ 2,200			² 2,200	² 1,460				2,800	
										² 2,400					560	
Shell Canada Ltd.—Shellburn	22,000	NR	7,500		¹ 6,000	NR	² 2,700		¹ 6,000	¹ 11,500					2,500	

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PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED
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Total wells drilled in the United States*—May 1974†

Data compiled by the American Petroleum Institute

State-district	Total wells excluding service wells, stratigraphic, and core tests					Total wells all types, May 1974‡		Total exploratory wells§				
	Oil wells‡	Gas wells§	Dry holes	Wells	Footage	Wells	Footage	Oil wells‡	Gas wells§	Dry holes	Wells	Footage
Alabama	1	3	3	7	89,282	7	89,282	1	1	3	5	58,089
Arkansas	5	4	12	21	118,112	22	120,195			4	4	24,512
California	115	3	24	142	348,455	159	387,987	4	2	12	18	99,734
North	1	3	4	8	42,140	10	53,128		2	2	4	13,727
Central Coastal	13		4	17	80,487	19	69,854	2		3	5	21,170
East Central	91		13	104	216,470	114	230,571	2		7	9	59,837
South	7		3	10	25,540	12	31,645					
Offshore	3			3	1,818	4	2,789					
Colorado	23	13	38	74	402,991	74	402,991	1	4	23	28	143,916
Florida	3		6	9	117,025	9	117,025	1		4	5	54,711
Illinois	22		24	48	113,606	48	117,347			7	7	18,493
Indiana	4	1	22	27	38,086	30	44,361	1	1	15	17	23,892
Kansas	80	53	112	245	895,035	261	712,508	5	2	61	68	238,209
Kentucky	11	8	35	54	79,122	55	80,385	2	2	15	19	29,056
Louisiana	64	53	84	201	1,541,568	202	1,554,188	1	8	30	39	368,349
North	26	18	29	73	270,177	73	270,177	7	4	9	14	73,822
South	14	13	26	53	540,128	53	540,128		4	13	17	225,045
Offshore	24	22	29	75	731,263	76	743,883			8	8	69,482
Maryland		1		1	5,120	1	5,120		1		1	5,120
Michigan	3	2	10	15	70,720	16	74,858	1	1	6	8	36,695
Mississippi	4		28	32	266,574	32	266,574			25	25	204,221
Missouri			1	1	795	1	795			1	1	795
Montana	3	2	22	27	79,323	27	79,323		1	13	14	52,805
Nebraska		1	8	9	43,934	9	43,934		1	8	9	43,934
New Mexico	19	39	31	89	470,517	91	475,700	1	3	14	18	99,899
East	18	13	23	54	330,466	56	335,649	1	3	11	15	96,517
West	1	26	8	35	140,051	35	140,051			3	3	3,382
New York	12			12	12,935	12	12,935					
North Carolina			1	1	4,102	1	4,102			1	1	4,102
North Dakota	2		2	4	34,702	5	42,637			1	1	8,302
Ohio	52	88	9	149	662,048	149	662,048	6	13	3	22	109,399
Oklahoma	92	43	80	215	1,223,617	227	1,253,496	3	1	22	26	187,468
Pennsylvania	40	33	5	78	178,679	84	187,863		2	3	5	26,028
Tennessee	4	1	4	9	17,751	9	17,751		1	4	5	11,701
Texas	363	149	275	787	4,281,911	802	4,346,649	27	42	196	265	1,764,819
Dist. 1	28	4	18	50	170,716	50	170,716		1	15	16	73,283
Dist. 2	5	30	21	58	335,070	56	333,070	2	11	14	27	174,261
Dist. 3	29	19	36	84	562,994	84	562,994	4	13	28	45	377,829
Dist. 4	23	29	33	85	507,737	85	507,737		7	24	31	197,828
Dist. 5	2	1	6	9	45,137	12	54,038		1	6	7	35,523
Dist. 6	7	8	10	25	194,201	25	194,201	1		7	8	66,346
Dist. 7B	44	18	56	118	397,443	121	408,562	2		32	34	133,207
Dist. 7C	20	16	13	49	298,132	49	298,132		1	8	9	73,111
Dist. 8	93	6	9	108	720,807	112	743,724	3	1	7	11	115,161
Dist. 8A	55		20	75	409,555	80	431,356	7		15	22	148,431
Dist. 9	38	3	25	66	214,845	66	214,845	8	3	14	25	127,975
Dist. 10	19	10	7	36	216,140	36	216,140			5	5	37,380
Offshore		5	21	26	211,134	26	211,134		4	21	25	204,484
Utah	15		5	20	166,128	20	186,128			4	4	30,658
Virginia		1	1	2	10,320	2	10,320			1	1	5,170
West Virginia	5	18	4	27	86,163	27	86,163	1	1	3	5	22,474
Wyoming	15	4	24	43	282,974	43	282,974	3	3	16	22	176,320
Total—May 1974	357	520	870	2,347	11,459,595	2,425	11,665,639	58	90	495	643	3,848,877
Total—April 1974	947	700	945	2,592	13,349,007	2,681	13,554,973	64	94	523	681	4,154,125
Cum. 1974	4,504	3,035	4,437	11,976	60,204,842	12,383	61,175,662	295	451	2,589	3,335	20,007,441
Cum. 1973	3,936	2,293	3,997	10,226	54,149,907	10,623	55,192,960	294	284	2,255	2,783	—

*Does not include miscellaneous drilling not related to oil and gas exploration and production. †Covers reports of completed or abandoned wells received by the API during the period from Apr. 27, 1974 through May 24, 1974. ‡Includes multiple completion wells which produce gas from one or more zones but oil from at least one zone. A multiple completion well is counted as one well. §Includes multiple completion wells that produce gas from all zones. A multiple completion well is counted as one well. Gas wells also include so-called condensate wells. ¶Exploratory wells include: new-field wildcats, new-pool wildcats, deeper-pool tests, shallower-pool tests, and outpost (extension) tests. ††Includes two strat tests and 76 service wells, 1,697 and 204,347 ft, respectively.

VENEZUELA

CREOLE Petroleum Corp. (Exxon Corp. subsidiary) has found oil below 15,000 ft in the Cretaceous in Urdaneta field in the western portion of Lake Maracaibo, Venezuela. The oil is 27° gravity, much lighter than the 11° gravity oil found in the field's shallower (about 10,000-ft) wells.

ALBERTA

A NEW wildcat gas discovery for West Central Alberta in Canada was reported recently by Sundance Oil Co.

The Dunvegan 10-18-82-5w6 well flowed 5,488 Mcfd through 1/2-in. choke in the Cadomin formation at 3,028-59 ft. Flow was 1,500 Mcfd in the Galata formation at 4,732-54 ft. Production casing was run to total plug-back depth of 4,953 ft for completion.

This step-out success is 175 miles northwest of Edmonton and 2 1/4 miles from Sundance's Dunvegan 6-6-82-5w6, a December 1973 strike.

ARKANSAS

FLOW of 120 b/d is reported at a new deep discovery in South Arkansas' Troy field.

C. G. Davis 1 Christopher et al., SW SW 2-24s-20w, Nevada County, flowed from perforations at 4,688-96 ft. This well is 1 3/4 miles southeast of Young and 1/4 mile northwest of the deep discovery at Troy. Other development is under way here.

In Lafayette County, Amerada Hess Corp. will drill to 11,500 ft, 2 1/2 miles southwest of Bradley. The 1 Charles G. Allen will drill in SW SW 21-19s-25w, 1 3/4 miles southwest of shallow production.

KANSAS

A REVIVAL well in McPherson County, Kan., opened Mississippian production in dry Bitkofer North field, 2 1/2 miles southeast of Canton.

Mid-America Petroleum Co. 1 Sinclair, NW NW SW 25-19s-1w, flowed 240 b/d on 1/2-in. choke from perforations at 2,946-54 ft.

OKLAHOMA

ARKLA Exploration Co. is busy developing gas reserves in the deep Anadarko basin of western Oklahoma.

The 1-3 Klein in Anthon field, Custer County, flowed 2,800 Mcfd from

Morrow Pennsylvanian through perforations at 12,971-78 ft. In Ellis County, the 1-2 Jones flowed 1,600 Mcfd from Morrow at 8,968-80 ft. The 1-34 Hutton in Taloga field, Dewey County, flowed 336 bbl oil daily from Morrow at 9,505-11 and 9,521-25 ft.

ANOTHER deep wildcat well dug in western Oklahoma's Anadarko basin.

Target for Forest Oil Corp. 1 Bobwhite unit is 23,000 ft. Well is 3 1/2 miles north of Northeast Gotebo gas field and 6 miles from 400-ft Hunton pay in ultrashallow Komalty District field, Kiowa County. The Washita County test is in NW SW NE SW 16-8n-16w. This site is at the "front door" of the deep trough of the basin.

DISCOVERIES

NEW MEXICO

Eddy County:

Samedan Oil Corp. 1 Amoco Federal, 16s-28e. Section 19. IPCAOF 3,935 Mcfd, GOR 51,099:1, Morrow Pennsylvanian 9,326-36 ft. SIWHP 2,528 psi, SIBHP 5,217 psi. TD 9,390 ft. Elev. 3,556 ft. GRD. Comp. 4-2-74. Contractor Capitan. New gas discovery.

NORTH DAKOTA

Stark County:

Farmer Union Exchange 6-30 William Tomchuck, SE NW 30-140n-98w. IPF 176 b/d, 18/64-in. choke, natural, Tyler 8,114-26 ft. TD 8,325 ft. Elev. 2,560 ft. KB. Comp. 4-25-74. Contractor Bomac. Tyler discovery, new field.

OKLAHOMA

Blaine County:

Southeast Longdale discovery. Universal Resources 1-20 Boston, C NE 20-19n-12w. IPF 25 b/d, 14/64-in. choke, 4,768 Mcfd, Mississippi and Chester 8,072-8,107 and 8,874-9,089 ft. Comp. 3-13-74.

Dewey County:

Southeast Huemac field. Wessely Energy 1 Blaine unit, C NE NE 11-17n-15w. IPF 42 b/d, 62,000 cfd, Morrow 9,632-42 ft. Comp. 3-25-74.

East Huemac field. Woods Petroleum Co. 1 Chain Ranch trust, C N 1/2 SW 6-18n-14w. IPF 379 b/d, 14/64-in. choke, 1,316 Mcfd, Morrow open hole 9,066-92 ft. Comp. 3-21-74.

Oklahoma County:

Northeast Marion discovery. An-Son Corp. 1 Choctaw, C NW NW 4-11n-1w. IPCOF 2,300 Mcf, Misener 6,219-24 ft. Comp. 3-16-74.

Texas County:

National Oil and Amarex Inc. 1 Jackson, C NE SW 6-3n-15eCM. IPF 59,109 Mcfd, COF 71,158,000 cfd. Upper Morrow 6,120-26 ft. Comp. 2-14-74. Opens North Guymon field.

TEXAS GULF COAST

Chambers County:

McMoRan 1 State Tract 64, 17 miles northeast of Texas City in St. Tr. 64, Trinity Bay. IPAOF 10,300 Mcfd, Frio Oligocene 9,781-83 ft, SITP 6,220 psi, GCR 25,365:1, 45.6°. TD 11,890 ft. Elev. 20 ft KB. Comp. 5-1-74. Contractor Marine Drilling Co. New gas discovery.

SOUTH TEXAS

Pee County:

Laura Thompson South. Exxon 14 Laura T. Barrow, 11 miles east of Skidmore in Fat Downey Sur., A-20. IPAOF 10,000 Vicksburg Oligocene 5,162-73 ft. SICP 2,014 psi, GCR 119,870, 60.5°, BHSIP 2,318 psi. TD 6,050 ft. Elev. 83 ft GRD. Comp. 2-17-74. Reported May 1974. Contractor Field Drilling Co. New gas discovery.

Webb County:

Midwest Oil Corp. 1 Dan M. Sanchez, Jr., 4 miles southwest of Encinal in S&M Sur. 397, A-2076. IPAOF 190 Mcfd, dry, Escondido Cretaceous 5,983-6,013 ft, SITP 2,414 psi, BHSIP 2,798 psi. TD 8,077 ft. Elev. 540 ft GRD. Comp. 2-14-74. Reported May 1974. New gas discovery. Contractor Baggett. Shar-Alan Oil Corp. et al. 1 Gates Ranch, 50 miles north-northwest of Laredo in C. C. Ramsey 1726, A-2860, W. Brown Sur. 1726-A-2165. IPAOF 1,400 Mcfd, Olmos Cretaceous N-4 sand, 5,615-20 ft. TD 5,750 ft. Elev. 666 ft GRD. Comp. 11-23-73. Reported May 1974. New gas discovery. Contractor Dixon.

San Patricio County:

North Portland discovery. Edwin L. Cox 1 City of Portland Gas Unit "C," north side of Portland in T. T. Williamson Sur., A-248. IPAOF 24,000 Mcfd, Frio Anderson 11,190-11,220 ft. GCR 7,214:1, 57.4°, SITP 6,955 psi, BHSIP 8,970 psi. TD 11,320 ft. Elev. 34 ft GRD. Comp. 1-27-74. New gas discovery. Contractor Flournoy.

Mary Iris discovery. Goldston Oil Corp. 2 Miller, 3 miles southwest of Sinton in M. McAuley Sur., A-13. IPAOF 10,200 Mcfd, Frio 5,510-12 ft. SITP 1,515 psi, BHSIP 1,725 psi. Dry. TD 8,327 ft. Comp. 2-20-74. Elev. 55 ft GRD. New gas discovery. Contractor BDK Drilling Co.

WEST TEXAS

Crane County:

Texas Oil & Gas Corp. 1 Reed-Butler, 19 1/2 miles west and 1 1/2 miles south of Crane in Sec. 10, Blk. 4, H&TC Survey. IPCAOF 8,250 Mcfd, dry, Wichita Albany Permian 5,458-5,538 ft. TD 6,180 ft. PB 6,124 ft. Elev. 2,418 ft GRD. Comp. 4-1-74. New gas discovery. SIWHP 2,368 psi, SIBHP 2,706 psi. Contractor Rod-Ric Drilling Co.

Edwards County:

W. B. Osborn 1 Shanklin "10," 8 miles north and 7 miles west of Rocksprings in J. H. Bunton Sur. 10, A-1862. IPCAOF 1,900 Mcfd, Canyon Pennsylvanian 4,498-4,510 ft, GOR 2,123,000:1, 53.7°, SIWHP 1,181 psi, SIBHP 1,344 psi. TD 6,050 ft. PB 4,688 ft. Elev. 2,177 ft GRD. Comp. 3-21-74. Contractor Tucker.

Irion County:

Amoco Production Co. 1 Sugg, A. A. "D," 2 miles north and 2 miles west of Mertzon in Sec. 20, Blk. 1, H&TC Sur. IPF 194 b/d, 2 bw/d, 5,605-5,723 ft. TD 7,800 ft. 16/64-in. choke, 37.2°, CP 875 psi, TP 285 psi, GOR 464:1, PBTD 6,100 ft. Comp. 4-10-74. Elev. 2,327 ft GRD. New oil discovery. Contractor Tom Brown.

Kimble County:

A. N. Norwood Inc. 1 Weisenburg, 12 miles south-southwest of Junction in Sec. 49, TW&NG Sur. A-638. IPCAOF 4,000 Mcfd, Canyon 1,733-40 ft. TD 2,411 ft. Elev. 2,153 ft GRD. Comp. 4-8-74. New gas discovery.

Total wells drilled in the United States*—July 1974†

Data compiled by the American Petroleum Institute												
State-district	Total completions					Total wells all types		Total exploratory wells				
	Oil wells†	Gas wells‡	Dry holes	Total wells excluding service wells, stratigraphic, and core tests		March 1974		Oil wells†	Gas wells‡	Dry holes	Total	
				wells	Footage	Wells	Footage				Wells	Footage
Alabama	1	1	6	8	76,032	8	76,032			3	3	24,214
Alaska	12	3	2	17	126,133	17	126,133	1	2	2	5	35,919
Onshore	6	3	2	11	73,347	11	73,347	1	2	2	5	35,919
Offshore	6			6	52,786	6	52,786					
Arkansas	8	1	15	24	98,565	24	98,565			5	5	29,219
California	116	2	19	137	327,143	141	343,886	2		10	12	71,405
North		1	11	12	72,007	12	72,007			7	7	48,158
Central Coastal	15		4	19	60,064	21	69,192	2		2	4	14,897
East Central	94	1	3	98	181,177	98	181,177			1	1	8,350
South	3		1	4	7,681	6	15,296					
Offshore	4			4	6,214	4	6,214					
Colorado	18	19	28	65	417,970	65	417,970	4	1	22	27	172,706
Florida	2		1	3	35,547	3	35,547			1	1	11,740
Illinois	13	1	30	44	129,356	44	129,356	2	1	13	16	46,591
Indiana	17	4	14	35	39,895	35	39,895	2		10	12	20,485
Kansas	63	18	95	182	525,147	186	528,059	10	3	56	69	208,930
Kentucky	14	9	30	53	90,051	55	92,590	1	4	14	19	26,868
Louisiana	71	52	124	247	1,893,142	248	1,895,403	3	7	62	72	700,502
North	33	19	55	107	443,984	108	446,245	2		25	27	169,791
South	27	26	40	93	1,044,916	93	1,044,916	1	7	25	33	456,077
Offshore	11	7	29	47	404,242	47	404,242			12	12	74,634
Michigan	13	5	24	42	214,762	44	222,674	6	4	19	29	146,886
Mississippi	13	1	37	51	445,162	51	445,162	1		29	30	278,230
Montana	3	11	35	49	125,706	49	125,706		5	25	30	85,829
Nebraska	7		24	31	154,163	31	154,163	3		18	21	105,748
New Mexico	24	49	28	101	555,305	103	564,235		5	14	19	115,928
East	18	14	24	56	385,955	58	394,885		5	12	17	111,967
West	6	35	4	45	169,350	45	169,350			2	2	3,961
New York	3			3	4,113	3	4,113					
North Dakota	5		6	11	97,355	11	97,355	1		5	6	51,751
Ohio	44	60	10	114	495,299	114	495,299	2	6	2	10	41,230
Oklahoma	63	48	66	177	1,043,674	187	1,062,244	2	5	9	16	181,182
Pennsylvania	45	26	3	74	159,854	74	159,854	2	6	2	11	43,252
South Dakota			1	1	8,730	1	8,730			1	1	8,730
Tennessee	3		5	8	10,526	8	10,526	1		4	5	5,915
Texas	394	122	242	758	4,005,635	769	4,037,095	26	41	164	231	1,604,414
Dist. 1	13	3	14	30	118,415	30	118,415		2	11	13	59,135
Dist. 2	2	19	34	59	356,626	59	356,626	2	9	26	37	241,101
Dist. 3	44	18	40	102	665,034	104	666,003	6	13	27	46	414,234
Dist. 4	22	30	18	70	478,254	70	478,254	3	8	10	21	151,997
Dist. 5		1	2	3	22,817	3	22,817		1	2	3	22,817
Dist. 6	3	5	9	17	134,522	18	135,087	1	1	9	11	94,445
Dist. 7B	32	6	35	73	240,743	73	240,743		2	22	24	99,522
Dist. 7C	33	12	16	61	346,239	62	350,239	4	2	9	15	107,210
Dist. 8	114	9	14	137	709,023	139	712,016	4		11	15	113,827
Dist. 8A	44		11	55	307,610	55	328,760	3		8	11	80,707
Dist. 9	56	5	29	90	248,650	91	249,433	2		13	15	67,226
Dist. 10	27	14	7	48	267,541	48	267,541	1	3	3	7	41,032
Offshore			13	13	111,161	13	111,161			13	13	111,161
Utah	7	1	2	10	91,398	10	91,398	1		2	3	26,760
Virginia		1		1	5,216	1	5,216					
West Virginia		24	2	26	70,593	26	70,593					
Wyoming	43	3	35	81	554,305	82	565,454	3	1	29	33	254,627
Total—July 1974	1,008	461	884	2,353	11,801,777	2,380	11,903,253	73	91	522	686	4,299,061
Total—June 1974	1,238	586	982	2,806	12,976,388	2,933	13,258,441	81	111	540	732	4,142,122
Cum. 1974	6,750	4,082	6,303	16,676	84,983,007	17,705	86,337,356	449	653	3,651	4,753	28,448,624
Cum. 1973	5,615	3,229	5,632	14,476	72,960,446	19,031	74,393,319	343	469	3,219	3,971	

*Does not include miscellaneous drilling not related to oil and gas exploration and production. †Covers reports of completed or abandoned wells received by the API during the period from June 29, 1974, through July 26, 1974. ‡Includes multiple completion wells which produce gas from one or more zones but oil from at least one zone. A multiple completion well is counted as one well. §Includes multiple completion wells that produce gas from all zones. A multiple completion well is counted as one well. Gas wells also include so-called condensate wells. ¶Exploratory wells include: new-field wildcats, new-pool wildcats, deeper-pool tests, shallower-pool tests, and outpost (extension) tests. ||Includes one strat test and 35 service wells, 750 ft and 100,726 ft, respectively.

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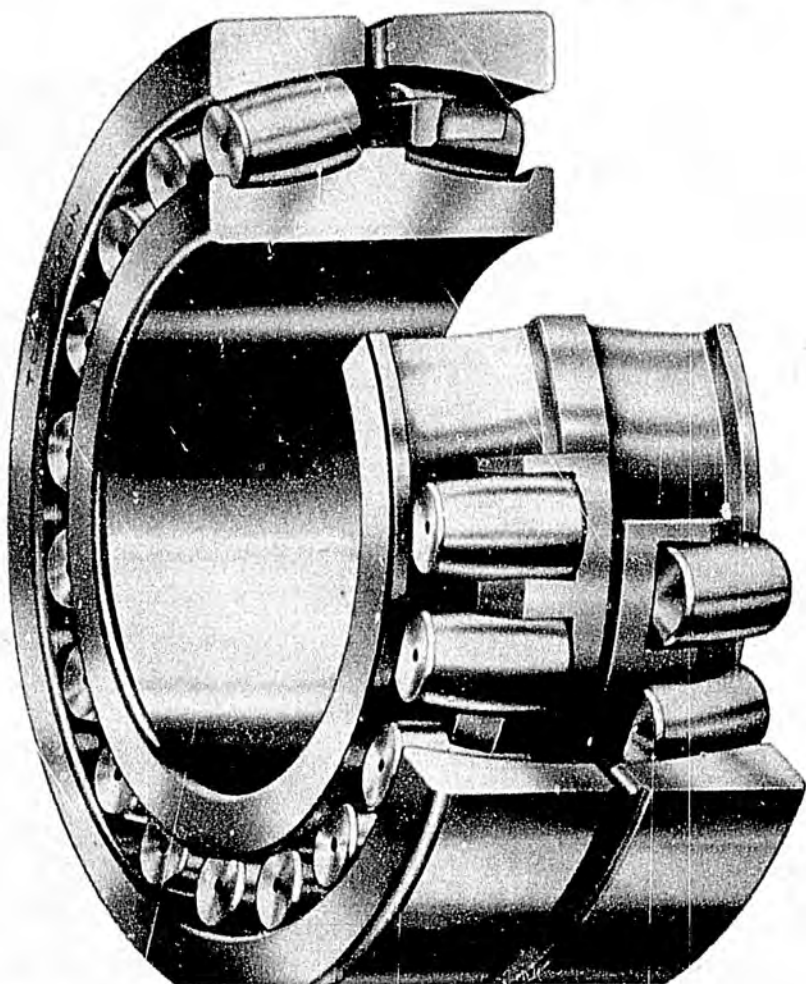


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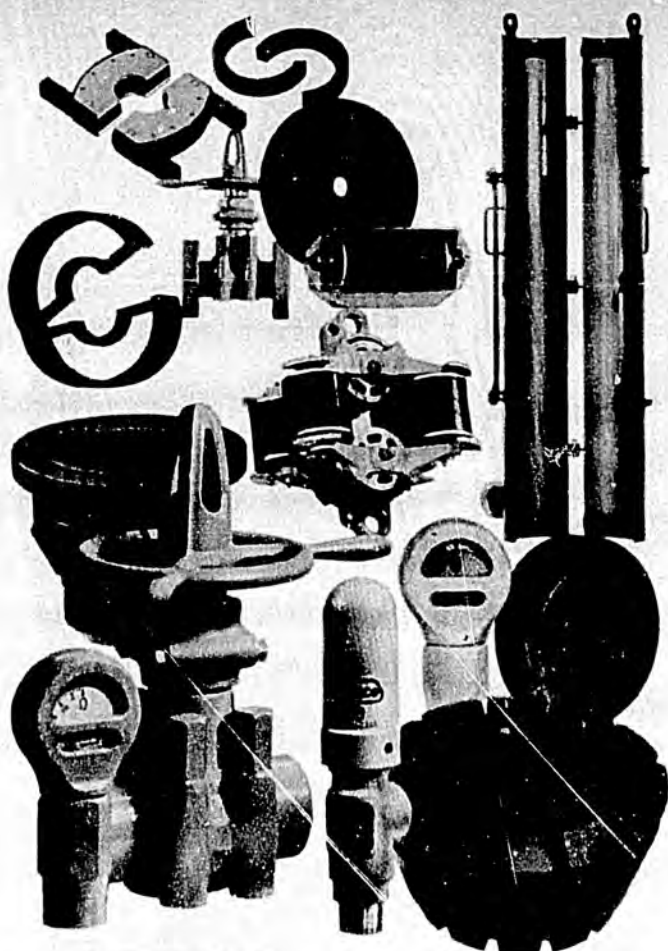


Total wells drilled in the United States*—June 1974†

Data compiled by the American Petroleum Institute.

State-district	Total wells excluding service wells, stratigraphic, and core tests					Total wells all types, June, 1974‡		Total exploratory wells*				
	Oil wells†	Gas wells§	Dry holes	Wells	Footage	Wells	Footage	Wells†	Oil wells§	Gas holes	Dry Wells	Footage
Alabama	1	....	4	5	30,522	5	30,522	....	....	3	3	26,895
Arizona	1	....	....	1	4,009	1	4,009	....	....	....	....	....
Arkansas	16	4	16	36	186,015	36	186,015	3	1	8	12	68,397
California	186	8	26	220	529,057	252	588,351	2	1	19	22	105,408
North	....	8	10	18	90,684	18	90,684	....	1	7	8	39,998
Central Coastal	24	....	9	33	126,344	33	126,344	1	....	9	10	42,059
East Central	148	....	5	153	249,394	179	284,206	1	....	1	2	9,125
South	5	....	2	7	30,473	13	54,955	....	....	2	2	14,226
Offshore	9	....	....	9	32,162	9	32,162	....	....	....	....	....
Colorado	16	12	45	73	469,201	73	469,201	3	1	30	34	205,730
Florida	3	....	4	7	91,142	7	91,142	....	....	3	3	28,419
Illinois	27	....	34	61	163,911	63	166,895	2	....	18	20	53,096
Indiana	12	2	21	35	47,237	35	47,237	1	....	17	18	22,791
Kansas	99	32	133	264	781,900	276	793,668	12	3	55	70	258,531
Kentucky	22	11	22	55	82,699	59	87,353	6	1	7	14	25,413
Louisiana	62	41	77	180	1,357,616	181	1,360,226	....	3	29	32	264,370
North	26	22	26	74	289,054	75	291,664	....	1	14	15	92,466
South	9	11	18	38	407,024	38	407,024	....	1	5	6	74,547
Offshore	27	8	33	68	661,538	68	661,538	....	1	10	11	97,357
Michigan	6	6	24	36	178,249	36	178,249	2	3	20	25	140,472
Mississippi	6	4	30	40	313,030	40	313,030	3	2	22	27	215,552
Missouri	....	....	1	1	2,375	1	2,375	....	....	1	1	2,375
Montana	3	9	27	39	102,276	39	102,276	1	2	20	23	64,834
Nebraska	1	....	16	17	89,337	17	89,337	....	....	11	11	57,290
New Mexico	52	23	37	112	619,389	118	637,226	1	5	19	25	135,169
East	45	16	28	89	516,031	95	533,868	1	4	15	20	120,740
West	7	7	9	23	103,358	23	103,358	....	1	4	5	14,429
New York	9	....	....	9	11,395	23	33,303	....	....	....	....	....
North Dakota	1	....	5	6	57,192	6	57,192	....	....	2	2	18,939
Ohio	49	83	9	141	545,947	141	545,947	1	11	1	13	61,103
Oklahoma	132	56	109	297	1,589,640	316	1,641,525	8	5	33	46	242,623
Pennsylvania	87	74	8	169	414,830	183	434,740	1	8	6	15	78,707
South Dakota	....	....	1	1	1,989	1	1,989	....	....	1	1	1,989
Tennessee	10	3	5	18	29,984	18	29,984	3	3	5	11	19,521
Texas	372	135	262	769	4,143,519	792	4,232,722	26	49	163	238	1,575,053
Dist. 1	16	8	13	37	141,850	37	141,850	....	4	7	11	59,086
Dist. 2	5	31	21	57	324,853	57	324,853	2	12	13	27	166,592
Dist. 3	20	13	20	53	378,272	53	378,272	2	8	13	23	228,154
Dist. 4	14	7	16	37	255,140	38	259,448	2	2	10	14	96,357
Dist. 5	3	2	4	9	59,196	9	59,196	....	1	4	5	50,340
Dist. 6	7	7	9	23	176,007	27	188,681	....	1	7	8	64,717
Dist. 7B	25	10	67	102	356,933	106	369,283	1	2	37	40	161,141
Dist. 7C	46	19	15	80	434,029	80	434,029	3	4	12	19	98,211
Dist. 8	95	15	20	130	932,152	130	932,152	4	8	11	23	224,995
Dist. 8A	64	6	15	85	477,291	96	529,449	1	....	11	12	81,256
Dist. 9	68	10	39	117	336,134	120	343,847	10	6	18	34	159,240
Dist. 10	9	7	7	23	141,018	23	141,018	1	1	4	6	54,320
Offshore	....	....	16	16	130,644	16	130,644	....	....	16	16	130,644
Utah	13	3	6	22	148,711	22	148,711	....	2	3	5	39,298
West Virginia	4	74	15	93	285,789	93	285,789	....	7	8	15	60,665
Wyoming	48	6	45	99	699,427	99	699,427	6	4	36	46	369,478
Total -- June, 1974	1,238	586	982	2,805	12,976,308	2,933	13,258,441	81	111	540	732	4,142,122
Total May 1974	957	520	870	2,347	16,459,595	2,425	11,665,639	58	90	495	643	3,848,877
Cum. 1974	5,742	3,621	5,419	14,323	73,181,230	15,316	74,434,103	376	562	3,129	4,067	24,149,563
Cum. 1973	4,703	2,725	4,792	12,220	61,964,507	12,679	63,193,436	291	341	2,735	3,367	....

*Does not include miscellaneous drilling not related to oil and gas exploration and production. †Covers reports of completed or abandoned wells received by the API during the period from May 25, 1974 through June 28, 1974. ‡Includes multiple completion wells which produce gas from one or more zones but oil from at least one zone. A multiple completion well is counted as one well. §Includes multiple completion wells that produce gas from all zones. A multiple completion well is counted as one well. Gas wells also include so-called condensate wells. ¶Exploratory wells include: new-field wildcats, new-pool wildcats, deeper-pool tests, shallower-pool tests, and outpost (extension) tests. ||Includes one strat test and 126 service wells, 2,026 and 280,027 ft, respectively.



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FEA reports gasoline-market breakout

REFINERS' gasoline sales to independent marketers—both branded and unbranded—decreased to 82.7% of total national gasoline sales for the first 5 months of 1974, compared with 83.4% for the first 5 months of 1972, the Federal Energy Administration reports.

FEA's definition of an independent marketer includes major-company jobbers and branded dealers as well as private-brand marketers.

Refiners' sales to their own operated retail outlets, however, increased from 7.9% of all gasoline sold in the first 5 months of 1972 to 9% during the same months of 1974.

These figures come from an FEA report on petroleum market shares, compiled by the agency itself. The study is the third in 2 months, and differs with the conclusions found in the earlier ones.

A study made by the Independent Gasoline Marketers Council showed that unbranded marketers' share of the market declined from 3.59% in February 1972 to 3.28% in 1974, a 17.1% loss.

But a study conducted by Lundberg Survey Inc. showed that this market share increased from 9.5% in February 1972 to 11.53% in February 1974, a 21% gain.

While FEA's figures may not be comparable to the previous studies, they do add more statistics to the debate over whether the independent share has declined.

FEA findings. FEA's survey of 88 refiners, accounting for 92% of U.S. refinery capacity, and 13 importers also shows that market shares of independent marketers and wholesale purchaser-resellers during 1972 amounted to 80.3 billion gal, or 83.6% of all sales. Sales to such independent marketers in 1973 were larger—84.1 billion gal. But the proportion of total sales was fractionally smaller—83.2%.

In the first 5 months of 1974, the proportion of total sales to independent marketers was smaller than in the corresponding period of either 1972 or 1973—82.7% compared with 83.4% in 1972 and 83.7% in 1973. Gallonage, however, was slightly higher in the first 5 months of 1974—32.1 billion gal compared with 31.9 billion for the same time period in 1972. But it was lower than the 34 billion gal sold dur-

Total adjusted sales: distribution and market share

Month	Total sales, Thous. gal	Share %	Market shares		
			Sales through company-operated outlets, %	Other direct sales, %	Sales to independent marketers %
Jan. 72	7,153,584	100	8.17	8.43	83.40
Feb. 72	7,078,174	100	7.81	8.65	83.55
Mar. 72	7,927,928	100	7.91	8.66	83.43
Apr. 72	7,567,110	100	8.09	8.33	83.57
May 72	8,483,729	100	7.65	9.12	83.23
Jun. 72	8,604,395	100	7.74	8.37	83.88
Jul. 72	8,421,584	100	8.22	6.62	85.16
Aug. 72	8,960,411	100	7.88	8.26	83.87
Sep. 72	8,029,019	100	7.96	8.23	83.81
Oct. 72	8,312,020	100	7.89	8.87	83.23
Nov. 72	8,031,043	100	8.02	8.41	83.58
Dec. 72	7,435,256	100	9.20	8.02	82.77
Jan. 73	7,853,849	100	8.33	8.08	83.59
Feb. 73	7,305,134	100	8.26	8.03	83.71
Mar. 73	8,405,866	100	8.12	8.02	83.86
Apr. 73	8,123,784	100	8.00	7.99	84.01
May 73	8,871,328	100	8.09	8.55	83.36
Jun. 73	8,662,211	100	8.75	7.93	83.32
Jul. 73	9,017,404	100	8.96	7.29	83.74
Aug. 73	9,398,401	100	8.80	7.69	83.52
Sep. 73	8,262,041	100	9.37	7.65	82.98
Oct. 73	8,809,817	100	9.40	8.28	82.32
Nov. 73	8,403,644	100	9.69	8.32	81.98
Dec. 73	7,907,231	100	9.81	7.73	82.46
Jan. 74	7,397,829	100	10.06	8.37	81.57
Feb. 74	6,857,549	100	9.16	8.40	82.45
Mar. 74	7,699,049	100	8.83	8.51	82.66
Apr. 74	8,052,991	100	8.54	8.24	83.22
May 74	8,797,424	100	8.32	8.38	83.30

Source: Federal Energy Administration (FEA's system of classification groups major-company jobbers and branded dealers with private-brand marketers as independent marketers).

ing the first 5 months of 1973.

The market share of total direct sales rose slightly from 1972 to 1973—16.4% to 16.8%. For the first 5 months of 1974, the share was 17.2% of all sales, compared with 16.3% for the same time period in 1973 and 16.5% for the first 5 months in 1972.

The large integrated refiners sold 71.1 billion gal of the total 96 billion in 1972, or 74.1% of the total. In 1973 the volume increased to 75.3 billion gal, and so did the proportion to 74.5%.

In the first 5 months of 1973 the volume sold by integrated refiners was 30.1 billion gal, compared with 28.6 billion in the similar period in 1972. The proportion, however, declined slightly from 74.8% to 74.1%. For the first 5 months of 1974, 28.6 billion gal were sold, accounting for 73.7% of the total.

Gasoline sales of large independent refiners, defined by FEA as controlling less than 30% of the domestic crude they refine, was 72.76% at the

end of the first 5 months of 1974, compared with 73.96% for the same time period in 1972 and 69.56% in 1973.

Sales of small refiners, defined as having less than 175,000-b/d refining capacity, also decreased from 82.4% at the end of the first 5 months in 1972 to 82% for the same period in 1974.

Sales of importers changed little in either gallonage or percentage market shares.

FEA considers these figures of great significance in the battle over whether the allocation program should be continued. The program was adopted to ensure, in part, that the independent sector of the oil industry was protected and that it retained its market share.

API survey. Meantime, the American Petroleum Institute has released a report showing that only 3.5% of U.S. service stations are directly operated by 22 of the country's largest oil companies.

The companies surveyed reported

Transworld field in U.K. North Sea called commercial

TEST results released by the Transworld exploration group indicate its wildcat has tapped a commercial oil field in Block 21/1-1 of the British North Sea.

Tests were of three Jurassic sand intervals between 9,498 ft and 9,950 ft. One, on a 24/64-in. choke, flowed 1,345 b/d. Another, on a 24/64-in. choke, flowed 890 b/d and a third, on 40/64-in. choke, made 2,177 b/d, for an aggregate of 4,412 b/d.

The unnamed discovery is the closest to shore yet in British waters, lying only about 90 miles off Peterhead, Scotland.

The group will drill its first appraisal well in first-quarter 1975.

Transworld group includes: Apexco Inc. 14%, Candel Oil Ltd. 14%, St. Joe Minerals Corp. 14%, City Investing Service 28%, C.C.P. North Sea Associates 21-1/6%, GOAL (Oil and Gas Acreage) 7 1/2%, and Petromin 1 1/3%.

Sunoco to drill deep tests in Arctic waters

SUNOCO E&P Ltd. has received drilling permits for a pair of previously announced 15,000-ft wildcats in northern Canada's Mackenzie Bay.

Contract has been let to Adeco Drilling & Engineering Co. Ltd. for both of the tests in shallow waters off the Mackenzie Delta, where the exploration pace is picking up speed (OGJ, July 22, p. 24). Both tests are to start late this month under a farm-out agreement with Bow Valley Industries Ltd., Arctic Coast Petroleums Ltd., and Numac Oil & Gas Ltd.

Sunoco's F-34 Unark is at 69° 33' 24" N. Lat., 134° 38' 48" W. Long., 8 miles west-southwest of Imperial Oil Ltd.'s J-26 Ivik oil discovery and 16 miles north-northeast of Taglu gas field, both onshore. Proposed drill site is on exploration Permit W-947.

The company's C-35 Pelly is at 69° 34' 14" N. Lat., 135° 23' 45" W. Long., 16 miles north-northwest of Taglu gas field and 14 miles east-northeast of

Imperial F-28 Adgo, drilled last March as the first offshore oil and gas discovery in the North American Arctic. Proposed site is on Permit W-948.

Both Sunoco tests are on man-made islands.

Grand Banks wildcat. Elsewhere in Canadian waters, the Amoco Canada Petroleum Co. Ltd. group scheduled a new test on the Grand Banks off the east coast. It is E-41 Skua at 45° 20'

27" N. Lat., 48° 52' 22" W. Long., 176 miles southeast of St. John's, Newf., and 75 miles south of the group's 0-46 Egret, recently abandoned at 9,000 ft.

The Skua, apparently the next to last test to be drilled in the group's Grand Banks drilling program, will be drilled by the Sedco I semisubmersible. The group plans to halt its Grand Banks campaign at year-end.

Bad petrochemical scarcity seen to worsen, Senate says

A SERIOUS shortage of petrochemicals, now being experienced by nearly 200 major corporations, is expected to get much worse, according to a study done by the Senate subcommittee on investigations.

There is "little chance of a reversal" of the shortage during the next 5 years, the report says, predicting a shortfall of 10-15% by the end of this year, a 17% shortage in 1975 and 18% in 1976.

The subcommittee sent out questionnaires to 500 major corporations, and received 258 replies. Of those, 181 companies cited a serious short supply of petrochemicals, due to the limited availability of petroleum feedstocks.

Other products listed in short supply

include steel and steel products, paper and plastics. The subcommittee will study these material shortages in hearings to be held later this month.

"Part of the shortage of some resins is due to the shift by producers of feedstocks to the most profitable products, leaving the others in very short supply," the study says.

Another reason is environmental regulations, which has created many uncertainties. The rules might change, or new ones could be imposed, after new plants are completed.

"The closing of older, marginal plants because of the expense of complying with environmental laws has reduced the capacity of the industry and intensified the petrochemical shortage," the study says.

U.S. seismic activity dips

THE COUNT of seismic crews working U.S. areas dropped slightly last month, the Society of Exploration Geophysicists reports.

Active crews numbered 321, off 13 from July.

The decrease of 12 land crews is due to three crews reported on standby in Alaska, three idle because of lack of personnel in the Lower 48, three analog crews shut down after short-term reactivation in the summer, and three included by error in previous counts. Although several marine vessels reportedly left the U.S. for foreign assignments, reactivation of vessels idle in July resulted in a net loss of only one vessel in August.

The August count of active crews is made up of 247 land crews and 27

marine vessels operated by 41 contractors and 40 land crews and 7 marine vessels operated by 12 oil companies.

Respondents to the monthly survey told SEG that the exodus of Canadian equipment and personnel to the U.S. is being followed by Canadian oil operators, who are buying seismic and velocity data in preparation for entry into U.S. exploration. Fifty-one Canadian seismic crews have halted operations since last March, leaving only 18 conventional crews at work.

Personnel and equipment shortages continue in the U.S., with drillers and shot-hole rigs heading the list. Some truck deliveries scheduled in 6-8 months are being delayed for 10 months to 1 year.

that as of June 30 they directly operated 7,375 of the country's estimated 212,000 service stations. The survey covered all stations — branded, unbranded, and secondary branded—operated by the reporting companies.

The study also shows that during the past 3 years the ratio of directly operated stations to the total of all service station has stayed essentially constant. The number of directly operated stations totaled 7,239 as of Dec. 31, 1973, and 7,641 as of Dec. 31, 1972.

Additionally, there were more conversions of company-operated station to lessee dealer operations than there were conversions from dealer operations to company stations, the survey shows.

TransCanada gets NEB approval for expansion project

CANADA'S National Energy Board has approved a \$16-million pipeline-expansion project to boost gas deliveries to eastern Canada.

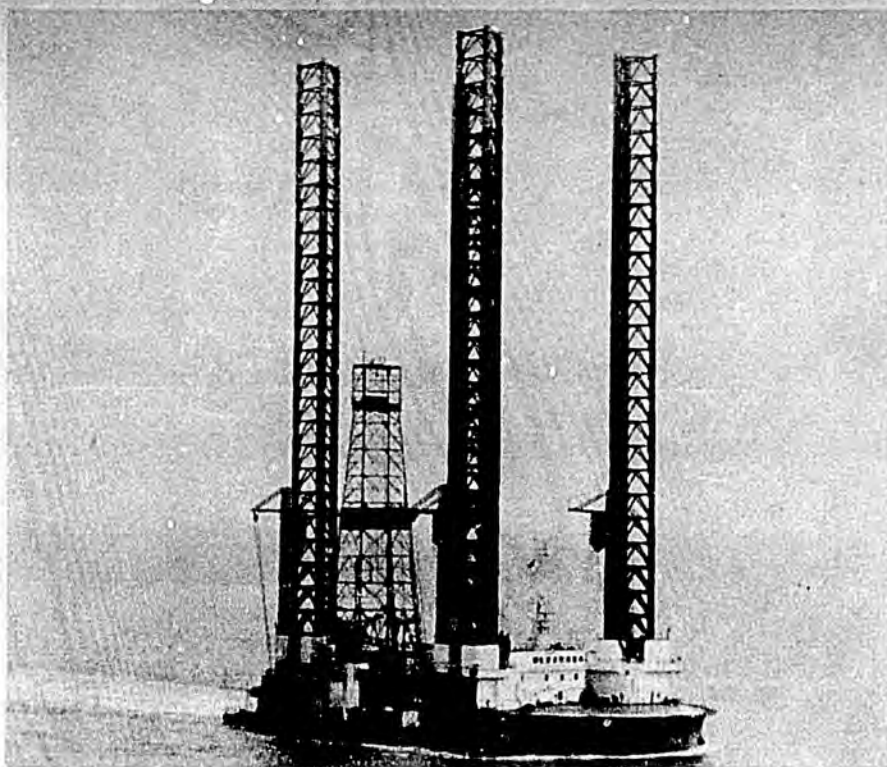
The NEB action allows TransCanada PipeLines Ltd. to lay 58½ miles of loop on its existing system in three provinces—15½ miles of 42-in. line at three locations in Saskatchewan and Manitoba and 43 miles of 24-in. line at four locations in Ontario. The project, scheduled for completion by Nov. 1, will add 45.5 MMcf/d to system capacity.

Delivery of 35.5 MMcf/d is scheduled to Gaz Metropolitan Inc., Montreal, under its first direct purchase from Pan-Alberta Gas Ltd. Greater Winnipeg Gas Co. will receive 10 MMcf/d via direct purchase from Provident Resources Ltd.

Westcoast link. Meantime, Pan-Alberta has agreed to supply up to 58 MMcf/d of gas to Westcoast Transmission Co. Ltd., Vancouver. Deliveries are to begin early in 1975, subject to regulatory approval.

The contract calls for the first direct link between the systems of Westcoast and Alberta Gas Trunk Line Co. Ltd. AGTL plans about 40 miles of line to join the two systems.

Price and terms of the agreement between Pan-Alberta and Westcoast are not disclosed, but the contract covers a period of less than 3 years.



DRILLSHIP Offshore Mercury moves through the English Channel en route to the Irish Sea.

Self-propelled jack-up rig to drill Irish Sea wells

OFFSHORE MERCURY, one of only three self-propelled jack-up drillships operating worldwide, is now on location in the Irish Sea working for Hydrocarbons Great Britain Ltd., a wholly owned subsidiary of British Gas.

The firm plans to drill two wells, the first in the northern part of its Block 110/2, 26 miles off Blackpool.

The drillship maneuvered under its own power through the English Channel from the North Sea. It was guided into position by a survey ship,

the Decca Recorder. The Decca Recorder had previously scanned the seabed to map an area where the rig could be jacked up and the legs lowered without meeting any obstruction.

Offshore Mercury, designed and owned by Offshore Co., was the first self-propelled jack up built. It worked in Argentine and Mozambique waters prior to the North Sea.

The vessel is 276 ft long and 130 ft wide. It is capable of working in waters up to 250 ft deep and can drill to 20,000 ft.

CRA to buy Cayman assets in Colombia

CRA INC. has agreed to buy Cayman Corp.'s holdings in Colombia for \$4.5 million.

CRA, in an agreement subject to approval by Cayman shareholders and the Colombian Government, would acquire about 8,000 b/d of oil production and an interest in the trans-Andean pipeline from Cayman International Exploration Co. The latter holds a 20% interest in the pipeline and in a 615,000-acre concession in the Putumayo basin.

In addition, Cayman International owns a 25% interest in two contracts of association covering a total of 440,000 acres and a seismic option on another 2.5 million acres, both in the Putumayo region of Colombia.

Cayman's operations in Ecuador wouldn't be affected by the transaction.

CRA is a subsidiary of Farmland Industries Inc., Kansas City, and Cayman International is 90% owned by Cayman Corp.

INTERNATIONAL BRIEFS

DRILLING

JAPAN Petroleum Co. (Nigeria) Ltd., says it plans to begin a 12-well drilling program next year in its six Off-shore Nigerian blocks and aims for initial production by 1976.

The company, which has found oil in four of eight wells drilled, is drilling its ninth well now and may drill another before the end of the year.

► **The Woodside Burmah group's** 1 Troubadour wildcat in permit NT-P 12 in the Bonaparte Gulf basin 275 miles northwest of Darwin, Australia, tested a combined rate of 9.84 MMcf/d of gas and 233 b/d of condensate through a 3/4-in. choke. The test intervals were between 7,307-24 ft and 7,341-60 ft. The well is in 289 ft of water and is projected to a total depth of 11,152 ft.

► **Venezuela's state-owned CVP** has launched a program to drill 32 stratigraphic holes in the 375-mile-long Orinoco heavy oil belt in Venezuela. The Mines and Hydrocarbons Ministry has budgeted \$13.2 million for the program, which is aimed at verifying the different qualities of crude in the belt. The belt has been estimated to have over 700 billion bbl of heavy oil reserves.

► **After 14 years,** drilling has been resumed in the rugged Mand Mountains of southern Iran, near the Persian Gulf shore. The Iranian consortium drilled the 1 Mand in 1960 and abandoned it at 13,541 ft. Now Oil Service Co. of Iran has drilled to about 12,500 ft in the 2 Mand and will carry the hole to about 15,000 ft in search of oil or gas in the Permian Khuff formation. Santa Fe's rig 98 is drilling the well.

TRANSPORTATION

WORK on the Moomba-Sydney gas pipeline in Australia has been held up since July by a strike of construction employees, who last week were to meet to discuss terms of a settlement with the contractors and the National Pipeline Authority.

It is estimated now that the pipeline will cost more than \$362 million, compared with an estimate of \$232 million made 2 years ago.

► **The Indian Oil Corp.** has an-

nounced plans to build an offshore crude-oil terminal in the Gulf of Kutch, northwestern India. The terminal would accommodate very large crude carriers that would off-load at sea via submarine pipelines to onshore storage tanks.

AGREEMENTS

TEXAS Gulf has signed an exploration agreement with the government of Pakistan covering 11,000 sq miles in the provinces of Sind, Baluchistan, and Punjab.

The company is to put up all the risk capital for exploration.

The government has an option to acquire up to a 40% working interest in event of commercial oil or gas production.

► **The Norwegian company of A/S Fred Olsen,** a shipowning concern, is reported by the Norwegian Information Service to have applied for an exploration license from the Government of Guatemala. Location and other details of the application were not disclosed.

EXPLORATION

AMOCO Thailand Petroleum Co., subsidiary of Standard Oil Co. of Indiana and operator for itself and partner, says it tested "a few hundred b/d of crude oil" from its first wildcat drilled in the Gulf of Thailand.

The hole, spudded last July 10 some 280 miles south of Bangkok in Block 6, had a planned depth of 10,000 ft. Actual completed depth of the well and other details of the well weren't disclosed. The company, which described the test as "encouraging," has plugged and abandoned the well and moved the drillship Investigator to another site on the block to spud a second well.

Amoco is in equal partnership with Idemitsu Exploration Co. (Thailand) Ltd. in exploration rights to Blocks 5 and 6, covering about 9,400 sq miles off the east coast of Thailand.

GOVERNMENT

JAPAN Petroleum Development Corp. and Peru's state-owned Petroperu

have signed a formal agreement under which the Japanese company will lend Peru \$330 million for oil and gas exploration and development and construction of a trans-Andean crude-oil pipeline (OGJ, June 10, p. 31).

The newly created Japan Peru Oil will be permitted to buy crude and petroleum product supplies from Petroperu as part repayment for the loan.

The 511-mile, 250,000-b/d crude pipeline itself is expected to cost \$500 million.

PROCESSING

PHILLIPS Puerto Rico Core Inc. will have Procon Inc. build its 470-million-lb/year paraxylene expansion at Guayama, Puerto Rico. Completion of the project is expected in early 1977.

The plant will be built adjacent to an existing facility. Total cost is expected to exceed \$34 million.

► **Mobil Technical Services Co.** has let a contract to Kellogg International Corp. to design its 2,740 b/d grass-roots lube-oil plant at Jeddah, Saudi Arabia. The project is a joint venture of Mobil and Petromin. Plant will consist of a vacuum unit, propane deasphalting, furfural unit, and MEK dewaxing.

► **East African Oil Refineries** has put its Mombasa, Kenya, refinery expansion on stream raising capacity to 80,000 b/d from 55,000 b/d. The Mombasa refinery is owned 50% by the government and 50% by BP, Caltex, Esso, and Shell.

► **South African Coal, Oil & Gas Corp.** is expanding capacity an undisclosed amount at its oil-from-coal plant at Sasolburg, South Africa, by the addition of two steam-generating units.

► **Petroleos del Norte** plans a 450,000-ton/year ethylene plant and refinery expansion to 240,000 b/d from 120,000 b/d at Somorostro near Bilbao, Spain. Government approval has been requested. Completion is planned for 1980.

► **Petroquimica-Dow S.A.** will double the capacity of its low-density polyethylene plant at Concepcion, Chile, to 40,000 metric tons/year from 20,000 tons/year by late 1975.

The top 10 U.S. oil companies: Their record on profits and rate of return

	Sales (billions of dollars)	Net income (millions of dollars)	Capital expenditures (millions of dollars)	Invested capital (millions of dollars)	Return on invested capital (percent)
1. EXXON					
1964	\$10.8	\$1,050.6	\$1,046.5	\$9,630	12.2%
1965	11.5	1,035.7	971.3	10,054	11.5
1966	12.2	1,090.9	1,204.8	10,482	11.6
1967	13.3	1,192.3	1,618.6	11,361	11.9
1968	14.1	1,276.7	1,944.1	12,803	11.8
1969	14.9	1,242.6	1,690.7	13,207	10.9
1970	16.6	1,309.5	1,793.6	14,418	10.8
1971	18.7	1,516.6	1,810.8	15,360	11.5
1972	20.3	1,531.8	1,984.0	16,173	10.9
1973 est.	28.5*	2,440.0	2,252.0	17,706**	14.0**

2. MOBIL					
1964	\$ 4.5	\$ 294.2	\$ 460.2	\$3,812	8.3%
1965	4.9	320.1	557.3	3,999	8.7
1966	5.3	356.1	682.2	4,147	9.3
1967	5.8	385.4	678.5	4,568	9.4
1968	6.2	430.7	713.2	5,027	9.8
1969	6.6	456.5	800.0	5,274	9.6
1970	7.3	482.7	879.5	5,729	9.5
1971	8.2	540.8	1,037.6	6,183	9.7
1972	9.2	574.2	1,180.0	6,482	9.6
1973 est.	12.7*	842.8	1,340.0	6,958**	11.7**

3. TEXACO					
1964	\$ 3.6	\$ 577.4	604.8	\$4,300	14.4%
1965	3.8	636.7	718.9	4,591	14.8
1966	4.4	709.9	737.4	5,265	14.9
1967	5.1	754.4	893.7	5,945	14.2
1968	5.5	835.5	1,065.3	7,358	13.4
1969	5.9	769.8	791.9	7,928	10.9
1970	6.3	822.0	906.1	8,363	10.9
1971	7.5	903.9	1,162.2	9,219	11.0
1972	8.7	889.0	1,192.9	9,798	10.2
1973 est.	11.8	1,292.4	1,600.0	10,734**	12.1**

4. GULF					
1964	\$ 3.2	\$ 395.1	781.8	\$4,038	10.5%
1965	3.4	427.2	783.5	4,408	10.7
1966	3.8	504.8	1,035.2	4,923	11.5
1967	4.2	568.3	873.0	5,349	11.7
1968	4.6	626.3	1,182.9	6,305	11.3
1969	5.0	610.6	1,551.7	6,786	10.4
1970	5.4	550.0	989.8	7,325	8.9
1971	5.9	561.4	891.0	8,016	8.3
1972	6.2	447.0	959.9	7,738	6.6
1973 est.	NA	775.0	1,632.0	NA	NA

5. STANDARD OIL OF CALIFORNIA					
1964	\$ 2.3	\$ 345.3	570.0	\$3,299	11.1%
1965	2.4	391.2	654.0	3,513	11.8
1966	2.7	401.2	557.0	4,029	11.0
1967	3.3	421.7	643.0	4,477	10.4
1968	3.6	451.8	651.0	4,830	10.3
1969	3.8	453.8	775.0	5,143	9.7
1970	4.2	454.8	788.0	5,391	9.2
1971	5.1	511.1	857.0	5,974	9.7
1972	5.8	547.1	789.0	6,253	9.6
1973 est.	8.9*	843.8	1,200.0	6,986**	11.4**

NA, not available. NM, not meaningful.

*Includes excise taxes and other income.

**First nine months of 1973.

Data: Investors Management Sciences, BW est.

	Sales (billions of dollars)	Net income (millions of dollars)	Capital expenditures (millions of dollars)	Invested capital (millions of dollars)	Return on invested capital (percent)
6. STANDARD OIL (INDIANA)					
1964	\$ 2.3	\$ 194.8	487.8	\$2,978	7.3%
1965	2.5	219.3	475.5	3,087	7.9
1966	2.7	255.9	569.5	3,364	8.6
1967	2.9	282.3	638.7	3,513	9.0
1968	3.2	309.5	796.9	4,102	9.1
1969	3.5	321.0	857.2	4,334	9.0
1970	3.7	314.0	713.3	4,478	8.5
1971	4.1	341.7	720.4	4,838	8.6
1972	4.5	374.7	940.6	5,138	8.6
1973 est.	6.5*	511.2	1,000.0	5,826**	9.5**

7. SHELL					
1964	\$ 2.3	\$ 198.2	\$432.0	\$1,880	11.4%
1965	2.6	234.0	530.7	2,166	12.2
1966	2.8	255.2	564.0	2,451	11.9
1967	3.1	284.8	618.4	2,786	11.9
1968	3.3	312.1	554.1	3,473	10.9
1969	3.5	291.1	628.8	3,632	9.0
1970	3.6	237.2	634.8	3,854	7.2
1971	3.9	244.5	450.5	3,944	7.3
1972	4.1	260.5	590.9	4,243	7.5
1973 est.	5.8*	332.7	NA	4,342**	8.8**

8. CONTINENTAL					
1964	\$ 1.3	\$ 100.1	\$225.0	\$1,278	9.7%
1965	1.4	96.1	199.8	1,356	8.7
1966	1.7	115.6	282.4	1,561	9.2
1967	2.1	136.1	383.5	1,904	9.2
1968	2.3	150.0	389.0	2,025	9.2
1969	2.4	146.4	337.3	2,327	8.4
1970	2.7	160.5	366.2	2,377	8.4
1971	3.1	140.1	387.5	2,425	7.4
1972	3.4	170.2	458.1	2,534	8.4
1973 est.	NA	225.0	375.0	NA	NA

9. ATLANTIC RICHFIELD					
1964	\$ 0.6	\$ 47.1	NM	\$ 825	6.5%
1965	0.7	66.2	NM	866	8.4
1966	1.1	113.5	NM	1,370	10.8
1967	1.3	130.0	NM	1,541	10.0
1968	1.4	148.9	NM	1,999	9.6
1969	2.7	230.1	\$418.4	3,324	10.5
1970	2.7	205.6	466.6	3,699	7.0
1971	3.1	210.5	543.9	3,800	6.7
1972	3.3	192.5	363.5	3,777	6.1
1973 est.	4.5*	270.2	NA	NA	NA

10. PHILLIPS					
1964	\$ 1.3	\$ 115.0	\$195.0	\$1,607	7.9%
1965	1.5	127.7	232.4	1,740	8.3
1966	1.8	138.4	271.1	2,083	8.4
1967	2.0	164.0	279.8	2,269	9.0
1968	2.1	129.9	289.2	2,351	6.9
1969	2.2	127.8	316.6	2,526	6.8
1970	2.3	117.1	239.4	2,433	6.3
1971	2.4	132.3	225.0	2,610	7.0
1972	2.5	148.4	264.7	2,678	7.2
1973 est.	3.1	230.4	NA	NA	NA

Sales: Revenues minus other income and consumer excise taxes.

Net income: Income after taxes and before extraordinary items.

Invested capital: Sum of long-term debt, minority interest, preferred stock, deferred taxes and investment tax credit, and common equity.

Return on invested capital: Sum of net income, income of minority interest, and fixed charges (minus tax on fixed charges) divided by average invested capital.

Now the investment balance has shifted in favor of developing domestic oil

duction now free from controls, the average price of domestic oil has reached \$7, twice the average of a year ago. As a result, oilmen say, profits on domestic oil operations could rise by at least one-third. Declares James P. Murphy, president of Houston's Inexco Oil Co.: "The romance of finding great riches has returned to oil."

That is not exactly the way executives of the oil giants view it. They concede that U.S. profits could be up sharply this year. But they see many uncertainties abroad. They say foreign earnings could drop partly because of the strengthening of the dollar. Their margins in Europe may also fall, they say, as governments use price controls to ease the blow of high-priced Middle East crude. "The industry might be doing very well this year to equal its performance of last year," says Harold H. Hammer, senior vice-president of Gulf Oil Corp.

Plenty of money to spend

The oilmen staunchly insist on their need for higher profits. The far higher profits that the industry earned last year provided a higher rate of return for most companies than any year since 1968. As a result, the industry's biggest problem of a year ago—raising enough capital to find new supplies of oil and gas—may well have been solved. Oil executives say that until last year the industry's poor performance was leading it into a period of no growth. From 1968 through 1972, its return on investment dropped steadily from 12.4% to 8.7%, putting it 2.4 percentage points below other manufacturing.

Meanwhile, capital requirements of the business were growing rapidly as oilmen sought to replace dwindling reserves with vastly more expensive oil from the North Sea, the Gulf of Mexico, and Alaska. As a result, the industry's ratio of debt to capital climbed in the last decade from 16% to 24%—close to what many believe is the practical limit for a high-risk industry.

Now that picture has changed, too. Oil returns last year equaled those of other industries. "A year ago we were cutting each other's throats in price wars while crude prices were being held down by cheap foreign oil," says Harry Bridges, president of Shell Oil Co. "It's incredible that in one year those pressures are turned all the way around. Our financial concerns have evaporated."

Capital problems also may be eased because less capital may be needed. Says oil consultant Richard J. Gonzalez: "All the forecasts about the huge capital needs of the oil industry are

worthless now because, at these high prices, we are going to consume a lot less energy, so the financial requirements will not be nearly as great." Gonzalez believes that the growth rate in energy consumption may be cut in half, to 3% a year.

Still, not all oilmen agree that their financial troubles are over. They insist that in the years ahead oil will require much more capital than other industries, so its return must also be better than average—perhaps around 16% instead of 12%. Mobil's Warner argues: "If we're going to do the job, even these [1973's] prices and profits fall short." This kind of talk infuriates the industry's many critics. "Those guys are like horses that don't know how to stop when the race is over," declares Lee C. White, former chairman of the Federal Power Commission.

While oil executives may disagree on the adequacy of returns, they are not hesitating to apply their higher profits to huge increases in their capital budgets. Capital spending by the nation's oil companies is likely to jump 20% this year, and many companies' capital budgets, which include projects that extend over more than one year, are up an estimated 50% from a year ago.

Even more important is the direction that the spending is taking. For years, investment in foreign operations boomed while that in domestic operations stagnated. In the last 10 years, corporate investment in oil abroad rose from \$6-billion to \$16-billion while oil investment in the U.S. edged up only from \$6-billion to \$10-billion. Now the balance has shifted in favor of U.S. projects. "There now is improved financial attraction for us in this country and greater risk outside," says Mobil's Warner. "So the money will begin to flow back here." That is precisely where the Nixon Administration wants it to flow, as a step toward energy self-sufficiency. "The tilt has definitely come back to this side of the Atlantic," says federal energy chief William E. Simon.

Richer prospects at home

The shift in spending is encouraged, too, by the domestic oil prospects that higher prices have opened up. There were poor oil prospects at \$3.50 a bbl., but there should be hordes of them at \$10. Says Edward B. Walker, executive vice-president of Gulf: "This could be the biggest boom in oil exploration that this country has seen."

Drilling has already been stepped up. Late last year, the number of rigs in operation in the U.S. rose to more than 1,400—the highest since the mid-1960s.

There could be another 25% increase in domestic drilling this year, reversing a 15-year decline that cut by half the number of wells drilled each year. "With these prices," says Shell's Bridges, "everyone is taking risks that three years ago they never would have



'We are embarking on the oil industry's version of Project Candor'

—J. Kenneth Jamieson, chairman, Exxon.

taken." The revival of drilling also gives new life to domestic independent oil producers, whose numbers have dropped in 20 years from 20,000 to fewer than 8,000. "The Arabs gave us an oil price that our own Congress would never have given, and we're no longer dying on the vine," beams Joseph C. Walter, Jr., president of Houston Oil & Minerals Corp.

Oilmen are also trying to revitalize old wells because increased production from them can be sold at the \$10 price. By water flooding as a secondary recovery technique, oilmen ordinarily can recover about 34% of the oil in the ground. With chemical treatment, they can boost recovery to 40%, but this expensive tertiary production technique is not economical for \$3.50 oil. With \$10 oil, it is. Shell, Gulf, and many others are rapidly stepping up tertiary recovery. The potential gain is enormous because an increase of six percentage points in oil recovery would produce an additional 25-billion bbl., roughly 70% of the nation's current reserves.

Still, most oilmen insist that President Nixon's 1980 target for U.S. self-sufficiency in fuel is completely unrealistic. They say 1985 is more likely, and some question even that. "I don't think we'll ever be independent in oil supplies," says Exxon's Jamieson. "And the time lag in shifting to new oil sources, such as shale, is inherently there. Even at these prices there isn't much you can do to speed it up." Jamieson says that the first oil from shale plants will not flow until around 1980 and that to rely on them for a significant part of the nation's energy needs would require massive investments in time and money. Just to make up 10% of the nation's oil production by utiliz-

ing shale, he says, would require setting up a mining operation as large as that of the present U.S. coal industry.

Even more uncertain is how Europe and Japan are going to pay for their oil. Total payments to OPEC countries for oil could hit \$90-billion a year, compared with the \$25-billion projected before the two latest price increases.

This quick turn of events puts the majors' foreign earnings in serious jeopardy. Last year, the companies' profits on Eastern Hemisphere operations were roughly double the depressed 27¢ per bbl. they got in 1972. But these profits could drop this year. The majors will not find it easy to pass along the \$3.95 cost increase when they sell the refined products from Middle East crude to European countries, many of which have price controls. "There's a serious question whether we'll be able to maintain our margins on that oil and also whether Europe will continue to buy as much," says Bob R. Dorsey, Gulf's chairman. "These prices could put Japan and Europe into a tailspin, so how can we say we're go-

will levy high taxes on the oil; just as the Arabs do. Dorsey expects that oil from the North Sea and other non-OPEC areas soon will be hit by such high local taxes that profits will be cut to the same low levels as those on Middle East crude. "That's why the only safe and profitable place to invest in oil is in the U.S.," he says.

An even greater threat to the U.S. international oil giants is the possible loss of their dominant role as suppliers of oil to Europe and Japan. To begin with, they face the prospect that OPEC will claim a bigger share of the oil production for itself. More than a year ago, some OPEC countries negotiated a minimum of 25% participation with the oil companies, to rise to 51% by 1982. But already a few have nationalized a bigger portion; the largest oil producer, Saudi Arabia, is demanding equity control of more than 50%.

While the oil companies have arrangements to buy back the equity oil from the Arabs, OPEC increasingly is selling directly to the consuming nations, cutting the majors out of the deal. By selling directly, the Arabs can claim the oil companies' brokerage profits. And the consuming countries can buy oil in exchange for goods and



Richard A. Walters

'There is more financial attraction in this country and greater risk outside'

—Rawleigh Warner, Jr., chairman, Mobil.

ing shale, he says, would require setting up a mining operation as large as that of the present U.S. coal industry.

Troubles multiply abroad

While the prospects for domestic oil brighten, it is hard to imagine how the outlook for the majors' foreign operations could be more threatening. Last month, the Organization of Petroleum Exporting Countries raised the f.o.b. cost of oil to \$7 a bbl. That is more than twice the \$3.05 price in October, and more than four times the price of a year ago. Moreover, OPEC is giving clear signs that it will not increase oil shipments as fast as the concession-holders would like. The majors had



Clyde Hare

'The only safe and profitable place to invest in oil is the U.S.'

—Bob R. Dorsey, chairman, Gulf.

ing to invest more money over there under these conditions?"

Dorsey believes that the new Arab prices also threaten the profits that the majors had expected to get from foreign oil production outside the OPEC countries. Oil-importing nations are making such big payments for Arab oil that they are not likely to permit companies to make big profits on oil discovered in areas that they control. They



Lee Baker Johnson-BW

'It's incredible that in one year, the pressures turned all the way around'

—Harry Bridges, president, Shell.

services to the Arabs, reducing the drain on their treasuries.

The deals already made are only the beginning. Britain, for example, hopes to obtain 1-million bbl. of oil a day, half

The Arab countries are selling directly to consuming countries, cutting out the majors

its consumption, through deals with Iran, Saudi Arabia, Kuwait, and others. Last week it signed the first of these deals, a \$242-million barter with Iran under which it will get 100,000 bbl. of oil a day in exchange for British products.

This pattern, Jamieson warns, "could create chaos because the Arabs can play one country against another and drive the price up even more." But despite such warnings and despite a meeting of oil-consuming nations planned in Washington next week, most European oil experts expect the deals to continue. In fact, they say that the consuming countries will ultimately take over from the oil companies as the direct contact with OPEC,

other 80% into their own refineries abroad. "Wholesaling of Middle East oil is a role we'll no longer play," Mobil's Warner admits. "The producing countries will move into that market."

Still, the majors control about half the refineries in Europe, and they hope to use this trump card to retain their strong marketing position there even if direct deals between governments grow. "The majors still have big transportation and refining systems in Europe," says Jamieson. "For the consuming countries to shut them down and replace them with higher-cost facilities wouldn't make economic sense." Now that the Arabs are grabbing more of the oil companies' profits on crude, the companies will be looking to those big refineries for more of their foreign profits.

"For a long time," says Warner, "our foreign profits were on crude oil because our taxes in the Middle East were so low. Now those profits are going to have to shift downstream for the simple reason that the Middle East governments now control prices and our profits on crude."

An excess profits tax?

Just as foreign governments may put a rein on U.S. oil companies' profits abroad, so may Congress stand in the way of the majors' attempts to capitalize on their new domestic opportunities. Congress has become a hotbed of oil critics, each of them with a proposal to curb the power and profits of the oil companies.

The mood plainly frightens oil executives. "No other industry has served this country better," argues C. Howard Hardesty, Jr., executive vice-president of Continental Oil Co., "but in the space of three months everyone has forgotten our record, and people are trying to discard the very foundation of the industry." John Winger, head of Chase Manhattan's energy economics division, says flatly: "There just has never been a greater chance than now of the oil industry in this country being nationalized."

The initial threat from Congress is an added tax on oil company profits. "I'm for reasonable increases in profits for the

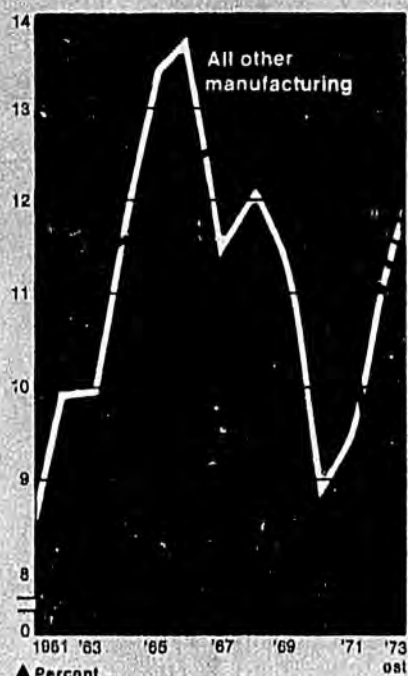
oil companies," says Senator Walter F. Mondale (D-Minn.), "but they are taking advantage of this shortage, and their profits have gone beyond reasonable incentive." There is now little doubt that an excess profits tax will be passed; the only question is what form it will take.

Oil executives fear most the windfall profits provision included in the Energy Emergency bill that was re-committed to a conference committee by the Senate this week. That provision would hold oil company profits to the average level from 1967 through 1971. Oilmen insist that such a base period is unfair because it includes years in which the industry had some of the lowest returns in its history. "That bill would have clobbered us," says Jamieson.

Oil executives maintain that any excess profits tax that reduces oil company returns below last year's levels will prompt the companies to cut the big capital spending budgets that they have just approved. "If they are going to put the screws to us, the development work we are planning won't be done," fumes Continental's Hardesty. "That's not a threat—it's economic realism."

This furor has helped to produce several alternative proposals that would exempt from an excess profits tax any earnings that a company reinvests in producing domestic energy. "I want to be sure that the tax will not limit investment in developing reserves," says

Oil's rate of return makes a sudden leap



Data: Federal Trade Commission

leaving the oil giants in the role of hired agents to produce oil for OPEC and to ship and refine the oil for the consuming countries.

Cut out of a business

Initially, the trend threatens to push the oil companies out of wholesaling crude between the Middle East and the state-owned oil companies, independent refiners, and other bulk purchasers. This business accounts for about 20% of the oil that the companies take out of the Middle East; they feed the

The dramatic jump in Middle East crude prices

Period	Posted price*	Arab tax	Total cost (production cost plus tax)
1960-65	\$1.80	\$0.82	\$0.92
1966-67	1.80	0.85	0.95
1968-69	1.80	0.88	0.98
Jan. 1—Nov. 14, 1970	1.80	0.91	1.01
Nov. 15, 1970—Feb. 4, 1971	1.80	0.99	1.10
Feb. 15—May 31, 1971	2.18	1.26	1.37
June 1, 1971—Jan. 19, 1972	2.28	1.32	1.43
Jan. 20, 1972—Jan. 1, 1973	2.48	1.44	1.55
Jan. 1—Mar. 31, 1973	2.59	1.51	1.62
Apr. 1—May 31, 1973	2.75	1.61	1.71
June, 1973	2.90	1.70	1.80
July, 1973	2.95	1.74	1.84
Aug., 1973	3.07	1.80	1.90
Oct. 1—Oct. 15, 1973	3.01	1.77	1.87
Oct. 16—Dec. 31, 1973	5.12	3.05	3.15
Jan. 1, 1974	11.56	7.00	7.10

*Posted price is the base on which OPEC countries figure their tax; it bears little relationship to the producers' selling price.

Data: International Crude Oil & Product Review

AGO 530068

• **Representative Wilbur Mills (D-Ark.)**, chairman of the House Ways & Means Committee. "If they increase spending, they should avoid the tax." But some critics see a major flaw in this so-called plowback provision. A Congressional aide observes: "It virtually mandates that they spend their profits to avoid the tax, and it could mean plowing money into more corporate jets and other wasteful things."

While many oilmen say they could live with a tax that included a plowback provision, some are still leery of it. Says Maurice F. Granville, chairman of Texaco, Inc.: "We're not naive enough to think that a plowback provision would be flexible enough to allow us to counter the excess profits tax with a reasonable capital investment program." The plowback provision, he says, is sure to be restricted to certain types of investment.

Many oil executives protest that there is no reason for an excess profits tax at all. "Our returns are just pulling even with the rest of American industry," Gulf's Dorsey argues. "If that's an excess profit, I'll eat my hat."

Rougher tax treatment?

There is also mounting pressure in Congress to grasp this moment to make broad-based reforms in the tax treatment of oil, the least taxed of all industries. Senator Henry Jackson (D-Wash.) has in mind a major reform package that would deal with oil's three major tax breaks: deduction of drilling costs, the foreign tax credit, and the 22% depletion allowance. Some argue that, rather than imposing an excess profits tax, depletion and drilling deductions should be dropped entirely. These tax breaks, they say, are no longer needed as an incentive for drilling.

Indeed, the industry's own attachment to the depletion allowance may be weakening. Last December, Thornton F. Bradshaw, president of Atlantic Richfield Co., recommended that the allowance be scrapped in exchange for free-market pricing. "It's an albatross around our neck, and far more trouble than it's worth," Bradshaw said. Critics retort that this is hardly a concession, because free-market oil prices would be high enough to more than compensate oilmen for the 50¢ a bbl. that the depletion allowance is worth to them.

Some independent oilmen, however, were furious at Bradshaw for making the proposal. Unlike major oil companies, the independents attract much of their drilling capital from wealthy outside investors. Without the quick depletion write-off, they say, much of that money would dry up. "A higher price for crude oil doesn't shelter an outside investor who is taking a flier in

oil to get a tax write-off," declares Houston independent George Mitchell. And elimination of the drilling deduction, he claims, would lead independents to cancel at least half of their drilling plans for this year.

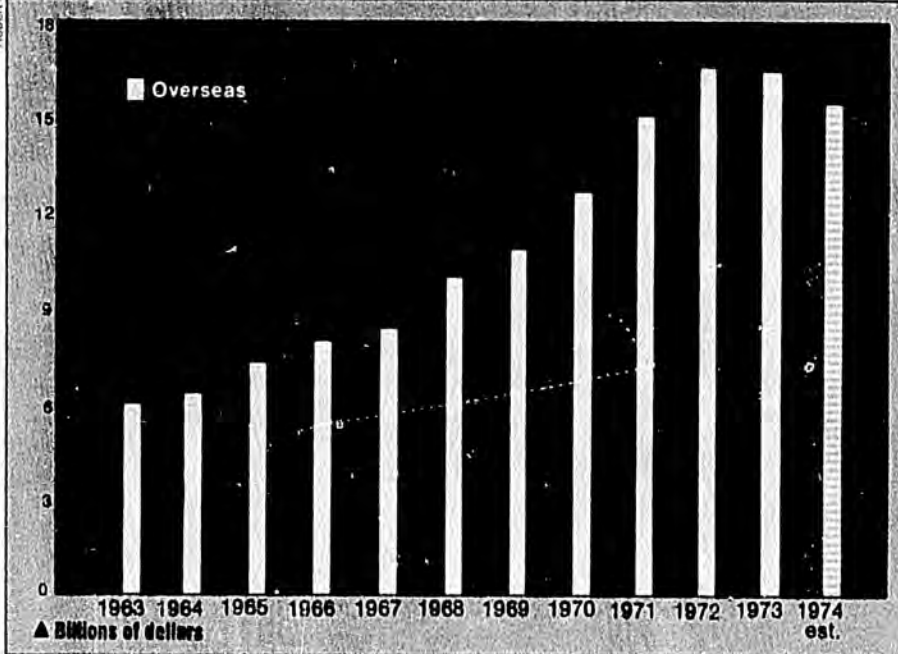
Also under attack is the foreign tax credit under which U.S. taxes due on foreign earnings can be offset by tax payments to OPEC countries for crude oil. All industries receive credits for taxes paid abroad, but critics argue that, with tax payments to OPEC running four times what they were last year, the tax credit will more than wipe out oil's U.S. tax liability on foreign income.

The industry's response to such reform proposals has a common theme. "If they take away a tax benefit and decrease our profits, then we can't raise enough capital," declares Exxon's

box and talk about going back to a free market," Shell's Bridges concedes, "would be political suicide—the surest way to be nationalized."

Increased regulation will probably also force oil companies to provide the government with much more information about their operations. That process has already begun. A dozen Congressional committees are investigating the industry, including Jackson's permanent investigations subcommittee. Last week's fiery session was only the beginning of a much deeper probe that committee staffers hope will rival some of the committee's hearings on labor racketeering. To some oilmen, the accusatory manner of questioning last week bore a resemblance to the rackets hearings. "For God's sake," cries Mobil's Warner, "we're being treated like criminals."

Oil's capital spending: First signs of a shift to the U.S.



Data: Chase Manhattan Bank; BW est.

Jamieson. "Do they want an oil industry that is profitable enough to do the job, or not?"

Surely more regulation

Already, in the present oil shortage, the federal government is advising refineries what products to make. And it is possible that when the shortage eases, the oil companies will face even more government regulation.

For openers, Jackson last week proposed a rollback in the soaring prices of domestic crude oil. Surprisingly, some oilmen are talking about the need for controls to keep oil prices from going too high. "For us to stand on our soap-

The committee investigations will probably lead to more formal reporting systems. Jackson and Senator Gaylord Nelson (D-Wis.) are co-authors of a bill calling for creation of a Bureau of Energy Information, which would collect and verify the profits, costs, reserves, production figures, and inventories of energy companies.

Some congressmen are even demanding that oil be regulated much like a utility. Under a major bill to be introduced by Jackson soon, all large oil companies would be chartered by a federal agency. This body would not regulate prices but would prescribe certain principles of operation, put one public member on the board of each



Congress has become a hotbed of critics seeking to curb the oil giants' power and profits

company, and possibly require prior clearance of major oil company actions, such as acquisitions and any withdrawal from markets. Jamieson says of the bill: "It would produce a rigid system of operation in our business and eliminate the benefit of individual companies testing different ideas."

The most extreme Congressional threats to oil are the measures designed to make the industry more competitive by changing its structure. Only a few months ago, oil executives believed such action was very remote, but the anti-oil mood in Congress has them taking the proposals seriously now. According to the critics, total integration of the major oil companies—their involvement in crude oil production, pipelines, refining, and marketing—has produced an anti-competitive structure. Critics point to product exchange agreements and joint exploration efforts as anti-competitive practices, and they charge that the majors have the power to set artificially high prices on crude oil, where their control is greatest. That allows them, the argument goes, to take most of their profits in that segment of the business while maintaining very low margins in refining and marketing to restrain competition there.

Some members of Congress put enough stock in such charges to push harder for bills that would promote competition in the oil industry. One such bill, sponsored by Senator Adlai E. Stevenson III (D-Ill.), would set up a federal oil and gas corporation that would get free leases to explore federal acreage that had the best prospects. The oil that it produced would go to independent refiners, few of which have their own sources of crude. Says Stevenson: "Most of our oil—about 70%—is located under public lands, and I want to see it developed to benefit the public, not just the oil industry."

Stevenson believes that in the angry mood of Congress his bill's chances have gone from zero to very good in the last few months. Says he: "If the oil industry had any sense, it would support the bill—and head off utility regulation." But the industry is not about to take that kind of advice. Oilmen argue that a federal oil company would be inefficient and would be guided by political consideration. Says Continental's Hardesty: "Unmask the idea for what it is—the first step toward nationalization of oil."

Breaking up the majors

Meanwhile, a far more serious threat is taking shape: a plan to break the majors up into separate producing, refin-

ing, transporting, and marketing companies. Already the states of Florida and Connecticut have filed antitrust suits against the majors, charging that they used their control over all segments of the business to squeeze out the independents. The two states seek court orders breaking up the giants. Colorado, Minnesota, and several others are considering similar suits. And last summer the Federal Trade Commission brought suit against eight majors, making much the same charges; FTC staffers suggest one objective is to seek some form of divestiture.

Antitrust law holds a precedent for such a move: the antitrust cases of 1948 that split apart the production and distribution segments of the movie industry. But litigation of this issue could take upward of seven years, and many in Congress are seeking faster action against the oil majors. Four different bills have been introduced that call for the oil giants to divest themselves of one or more parts of their business in order to stimulate more competition in the oil industry.

"If you broke the majors into separate segments, it would introduce an arm's-length bargaining between different levels that does not exist at the present time," says Charles Bangert, general counsel of the Senate antitrust and monopoly subcommittee. "There would be competitive bidding for crude oil by refiners, and for refined products by marketers."

"Right now," he adds, "people are so mad at the oil companies that the chances of such divorce legislation are pretty good."

To fend off such legislative challenges, the oil companies are working fast to improve what has overnight become the worst image in American business. A Gallup poll taken last month indicated that more Americans (25% of the sample) blame the oil companies for the shortages than any other possible cause, including the Arabs.

In dealing with their image problem, the companies are having second thoughts about the industry's deep-rooted secrecy. Oilmen in the past may have talked freely to an uncritical trade press, but they seldom were willing to discuss their business with the general press and the public.

"We became members of an introspective group and talked only to each other," confesses Murphy of Inxco Oil. "We made the serious mistake of agreeing that the real villains had to be guys like Senator Proxmire and that if he and others would not appreciate the great job we were doing, then to hell with them."

A public-be-damned attitude was

fostered by the industry's close ties with such one-time powers in Congress as Sam Rayburn, Lyndon Johnson, and Robert Kerr, all from oil-producing states. "We were lulled into a false security in those days," Continental's Hardesty explains, "because we knew that the leaders in Congress understood our business. We reacted far too slowly when Congress changed and all of a sudden we had to deal with people who didn't understand us." The chairman of another major adds: "Whenever we got into trouble, we always went to Sam and Lyndon to get us out. We never prepared for the day when the liberals would be in charge in Congress. That day has come."

Wooling public opinion

Ironically, despite the charge of conspiratorial togetherness, one of the industry's big public-image problems has been its internal divisiveness. Oilmen lately have not only debated such things as Arco's stand on depletion allowances but have also sharply disagreed on the wisdom of making unleaded gasoline and the merits of trying to make the U.S. self-sufficient in energy. And because their companies have different status in oil reserves, they have argued the relative merits of coal gasification, importing LNG, and developing oil shale. "We have a wide divergence of views and lack a common voice," says Jamieson. "It confuses Congress and the public about what we want."

Today, the industry can no longer be accused of being secretive. For the first time ever, the majors are revealing inventory statistics that once were guarded as competitive secrets. Last week they held press conferences for the first time to explain their earnings. In fact, much of an oil executive's time these days is spent in interviews with the media.

Oilmen are now convinced that, more than ever, they must win the public's favor. Energy shortages have a major impact on the lives of people, and it is already clear that how Congress handles the industry depends on the views of the constituents back home. If oil is to retain its big profits and avert government interference with its effort to cash in on new opportunities, it must first convince people that today's shortages are real and not contrived. Then it must show that the way to solve the shortages is to protect the incentives that have now developed. Even this year's profit increase, they must show, is a better price to pay than the alternative cost of a long-range energy drought.

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The new shape of the U.S. oil industry

The good profit news coming out of the headquarters of U.S. oil companies this week is turning into a monumental problem for oil executives almost as fast as they issue it. Last year's profits for the top 10 companies in the industry were the best in half a decade—up 51.2% over 1972 to a total of \$7.8-billion. But the good performance has triggered a massive storm of criticism from consumers and Congress, and the storm is generating demands for stringent legislation to curb the oil companies' operations.

The exhortations for regulation, for tax reform, for splitting up of the companies, and even for establishment of a national oil company could not come at a worse time for the oil industry. For oil is already caught up in a violent revolution that is changing not only the way that the companies do business but also the structure of the industry and its economics.

"The Arab oil embargo has produced a revolutionary change," declares Rawleigh Warner, Jr., chairman of Mobil Oil Co. "It is questionable whether we'll get the ever-increasing volume of oil out of the Middle East that we were counting on. And suddenly we're having to pay prices we didn't think we would have to pay until the 1980s."

One conclusion that the public jumped to was that oil's sudden wealth resulted from the Nixon Administration's decision to permit big oil price rises as a way to alleviate fuel shortages. But that accounts for only a small part of oil's huge profits jump in 1973. In fact, the bulk of the rise stemmed from strengthening prices in Europe, where U.S.-based international oil companies have a big share of the market. This was a sudden turn. As recently as 1971 there was an oil glut on the Continent, and over-supply drove prices to profitless levels.

A far smaller part of the profit increase can be traced to the gains that U.S.-based oil companies were able to make, on an accounting basis, for the

devaluation of the dollar. Increased profits made in marks in West Germany, for example, were further fattened when they were transferred into dollars, because the value of the mark rose from 31¢ in 1972 to as much as 42¢ last summer. Exxon Corp., for one, estimates that \$120-million of its \$2.4-billion profit came from this source.

The critical problems

The swing that took place in Europe last year and helped produce the big jump in profits is only the start of the radical changes in store for U.S. oil producers. These changes look different to different companies, because each company has its own strengths and weaknesses and its own strategy. The major internationals have one set of problems, the domestics have another. Those internationals that have a high percentage of their crude oil coming from the Middle East, such as Gulf Oil Corp. and Standard Oil Co. of California, have a different set of problems from those of Exxon, which gets a far lower percentage of its oil from that area. But there are some critical problems that everyone in the U.S. oil business has to cope with:

- Finding huge sums of money needed to explore for new sources of oil, build synthetic oil plants that process shale or tar sands, construct coal gasification and liquefaction plants, build new pipelines, and expand refining capacity. The industry figures it needs to raise \$800-billion for capital spending from 1970 through 1985, four times its capital outlay during the previous 15 years.

- Responding to a dual threat that promises to end the dominance of the U.S.-based majors in the overseas oil business. The oil-producing countries are accelerating the pace at which they are determined to become majority owners of their resources. And the oil-consuming countries, frantic to secure their supplies, are making govern-

ment-to-government deals with the Arab states, which may undercut the U.S. oil giants' role as suppliers to Europe and Japan.

- Warding off punitive legislation in the U.S. that would cut profits, end the depletion allowance, bring oil companies under regulation, split up the major companies, establish a national oil company. Today, the oil industry is facing the greatest threat from Washington since the breakup of the Standard Oil monopoly 63 years ago.

Polishing a public image

To counter the legislative threats, the oil companies are making adjustments on still another front: their approach to the public and the press. To improve their battered public image they are mounting a massive public relations effort that promises to open up what has been one of the most secretive of all industries. Says J. Kenneth Jamieson, chairman of Exxon: "We are embarking on the oil industry's version of Project Candor."

The first order of business will be to justify the huge increase in 1973 earnings. For 30 oil companies whose performance is charted by the Chase Manhattan Bank, earnings on foreign operations nearly doubled from \$3.2-billion in 1972 to an estimated \$6.1-billion last year, while domestic oil earnings merely crept up from \$3.6-billion to about \$4.4-billion.

By contrast, this year the companies will get their big profits from the U.S., and this will add to the furor in Congress. The price of domestic oil from established wells has risen in the last year from \$3.50 to \$5.25 a bbl., and the profit on it has jumped from around 75¢ to \$2.25. Oil from newly discovered wells was freed from controls last August, and oil from marginal stripper wells was decontrolled last December. Last month, the price of this oil soared to \$10 a bbl., producing profits as high as \$6.50. With about 30% of U.S. pro-

The ideo of January

The premise of the January indicator is simple: If the stock market rises in January, it will be up for the year; if it goes down in January, it will be down for the year. Unfortunately, January's trend at mid-week was still unclear. So here is a handy do-it-yourself kit for forecasting the 1974 stock market:

The Dow finished 1973 at 850.86. The S&P 500 closed at 97.35. This year will be an up year (according to the theory) if the averages finish the month higher. It will be a down year if they close lower. If one ends up lower and the other ends up higher—well, you can flip a coin.

On target. The January indicator has had an extraordinary record of accuracy. Last year, the Dow dropped 2.1% in January—and the market finished 1973 down 16.6%. Since 1950, in fact, the indicator has missed only four times. The Dow was down 3.6% in January, 1956, but finished up 2.6% after a seesaw year. It was up 0.5% in the first month of 1966 but then plunged and closed off 13.1%. January, 1968, was down more than 4%, but the market later boomed. The year 1970 was an ambiguous case: The Dow fell 7.6% in January, and the market collapsed through May. But by yearend it had recovered and closed virtually even.

The 'lame duck' theory. No one has any clear explanation why the indicator works. But Yale Hirsch, who publishes both the *Stock Trader's Almanac* and an investment letter called *Smart Money*, offers an interesting notion. Hirsch studied the S&P 500 going back to 1901 and found that during the first third of the century, January prefigured the rest of the year 16 times, but failed 17 times, a random pattern. Since 1934, though, the January indicator has been right 32 out of 40 years—or 80% of the time, a record that other indicators would be hard pressed to beat.

The difference, Hirsch suggests, was the 20th Amendment—the so-called "Lame Duck" Amendment—ratified in 1933. Before then, new members of the Senate and House, elected in November, did not take office until December of the following year, which meant that "lame duck" congressmen re-

mained in office another 13 months. In 1934, Congress—and its new members—began convening, and setting goals and priorities, early in January. Then, too, Hirsch points out, "the President gives his State of the Union message and presents the budget in January." And since the 1930s, of course, federal spending has had an enormous influence over the U. S. economy.

"It seems likely," Hirsch judges, "that if these events were switched to another month or occurred at different times each year, the January indicator would lose its effectiveness." This year, the State of the Union address was scheduled for Jan. 30—which may be one reason why the stock market has been so trendless the past month. Indeed, 1974 may see the advent of the February indicator.

The energy in Dynalelectron

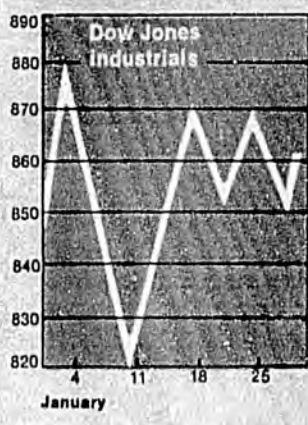
Dynalelectron was once dynamite. Speculators in 1967 hypoed the stock nearly 1,000% on the Amex, from 3½ to 34½. The shares have languished since. In December they traded as low as 2½. But last week the stock popped up on the Amex's most-active list and leaped to 6½—a sign that money is moving into Dynalelectron again.

Investors are discovering that the company is no longer largely a military aircraft and missile maintenance operation. Rather, they see it as a capital-spending play, with an energy angle thrown in. Says Ivy Fund's Paul Fenton, who bought 240,000 shares for the fund last year: "That makes an interesting package in today's market environment."

Dynalelectron's sales of some \$100-million are double what they were in 1967, and defense contracts now contribute only a third. The company has been buying up electrical contractors for civilian projects from office buildings to power plants, and this is now half of Dynalelectron's business. Further, its Hydrocarbon Research subsidiary holds slews of patents on hydrocarbon processes. Two are of special interest. A desulphurization process called H-Oil, jointly owned with Cities Service, is now used in three refineries (a fourth, run by Exxon, blew up in 1970; Exxon is now suing Dynalelectron). Another is a coal liquefaction process called H-Coal. The company is asking the Office of Coal Research for money to start a pilot plant.

Still, the stock isn't likely to repeat its 1967 performance. The hydrocarbon processes, less than 5% of revenues, have yet to show a profit, and other profit margins, though rising, are none too hot: Return on sales last year was running 1.7%, up from 1% the year before. But backlog was a healthy \$71-million. Fenton expects the company to report earnings of 25¢ to 30¢ a share for 1973, up from 12¢ in 1972, and to earn 40¢ a share this year.

The January indicator hangs in the balance



Data: Dow Jones & Co.

Citibank sees money, supply problems for oil

THE WORLD'S major oil companies are improving their earnings position and their degree of self-sufficiency in crude supply, but still face some stiff financial and supply problems, according to New York's First National City Bank.

Citibank says oil-company earnings in the U.S. rose sharply in 1972 (see table), but says an analysis of the 10 years ending in 1972 shows domestic oil companies earned a return of only 11.8% based on after-tax net worth compared to 12.3% for other manufacturing industries.

"Any attempt to anchor profitability to that level during a period when the need for increased investment is paramount should be unthinkable," the bank says in its latest quarterly energy memo.

Long-term problems. The bank

points out industry must look beyond the current earning picture to the years ahead when the amount of money oil companies must spend will be "drastically increased."

A study completed just before the 1973 oil embargo showed petroleum companies in the non-Communist world will have to invest annually \$125 billion by the end of the 70's to meet supply requirements. But this figure is outdated "both because of the accelerating pace of inflation and because of the urgent need to develop new sources of energy at much higher costs," Citibank says.

Supply shaky. Citibank warns against complacency in supply even though the embargo has ended. The bank says gasoline shortages this summer are "inevitable," adding that "winters may not be so kind as they

were this year in both Europe and North America."

Government support will be needed in the years ahead if importing countries are to reduce "the perils of energy starvation."

The bank says a new yardstick for measuring self-sufficiency will have to be developed due to the participation agreements being hammered out in the Middle East.

"The progressive breakdown of the former worldwide patterns of integrated production and refining will make it more necessary than ever to establish new hydrocarbon sources in each major consuming region and to resist the temptation to assume that the recent easing of supplies will allow consuming countries to return to the earlier era of plentiful, low-cost petroleum imports," the bank says.

Income and crude sufficiency figures for 30 integrated firms

Companies	Net income				Production as percent of runs							
	\$ Million		% change 1972/1973	U.S.		Other West.		East.		Total		
	1962	1972		1962	1972	1962	1972	1962	1972	1962	1972	
FIVE LARGEST INTERNATIONAL COMPANIES												
Exxon	822	1,532	2,440	59.3	65.2	94.3	97.7	106.4	73.2	93.8	81.1	97.3
Texaco	472	889	1,292	45.3	77.8	78.3	60.6	57.0	177.3	199.8	100.5	127.9
Gulf	340	447	800	79.0	70.7	73.1	108.9	69.5	510.7	327.1	175.5	165.2
California Standard	291	547	844	54.3	73.3	56.7	204.5	68.3	176.1	249.5	121.2	154.3
Mobil	242	574	843	46.9	36.8	46.0	225.0	197.4	90.0	102.0	67.9	85.5
Subtotal	2,167	3,989	6,219	55.9	64.4	71.0	98.0	90.4	142.9	161.4	99.2	119.2
FIVE OTHER LARGE INTERNATIONAL COMPANIES												
British Petroleum	194	176	760	331.8			215.0	36.3	145.2	196.6	146.6	191.3
Royal Dutch/Shell (excl. U.S.A.)	470	525	1,550	195.2			112.5	86.4	47.7	82.1	69.9	83.1
Cie. Francaise des Pétroles	45	113	155	37.2				200.0	144.2	133.8	144.8	132.4
Ente Nazionale Idrocarburi	5	39	64	64.1					55.3	53.9	55.3	53.9
Petrolina (excl. U.S.A.)	17	58	71	22.4			34.5	32.8	5.3	8.5	9.1	12.6
Subtotal	731	911	2,600	185.4			112.5	80.5	89.0	120.7	93.8	115.0
TWENTY OTHER INTEGRATED U.S. COMPANIES												
Indiana Standard	162	375	511	36.3	45.8	50.9				164.2	54.9	78.6
Atlantic Richfield	113	193	270	39.9	63.7	56.2	661.9	435.5	150.0	1,450.0	89.8	86.6
Shell	158	260	333	28.1	65.0	63.7					65.0	63.7
Continental	73	170	243	42.9	85.5	64.9			575.0	171.2	113.7	115.5
Sun	89	155	230	48.4	51.7	69.0		123.6	250.0	300.0	74.2	85.4
Occidental	26	20	80	300.0						400.0		407.5
Marathon	38	80	129	61.3	86.5	78.4				280.7	107.5	135.0
Union	77	122	180	47.5	49.6	72.4		716.7			56.5	86.5
Phillips	107	148	230	55.4	58.2	49.2	1,050.0	480.0	163.6	87.0	73.6	59.6
Getty (excl. Skelly)	29	39	91	133.3	56.7	258.9			174.6	313.9	83.7	280.7
Amerada Hess	39	46	246	434.8	120.6	131.9		5.4			160.3	52.0
Cities Service	65	99	136	37.4	49.0	83.4	64.7				50.0	87.6
Tenneco	56	203	230	13.3	117.2	95.6					151.7	110.0
Skelly	22	38	44	15.8	122.8	110.0					124.6	111.3
Ohio Standard	24	60	74	23.3	19.1	7.5			600.0	900.0	28.2	12.4
Murphy	3	14	49	250.0	26.5	23.6		45.0		69.7	42.1	39.2
Ashland	17	68	85	25.0	10.9	7.3			250.0		22.8	12.8
Pennzoil	34	59	84	42.4	380.0	127.3					380.0	127.3
Kerr-McGee	22	51	63	23.5	31.3	105.0					40.6	110.8
American Petrofina	1	18	37	105.6	20.5	20.6					20.5	20.6
Subtotal	1,155	2,218	3,345	50.8	57.5	59.1	1,119.0	131.6	205.1	268.4	71.6	81.4
GRAND TOTAL	4,053	7,118	12,164	70.9	60.5	64.0	117.2	93.0	114.6	145.8	90.4	108.8

769 bbl from Tunisia, and 1,227,058 bbl from Libya.

Imports from Saudi Arabia peaked in October at 23 million bbl, and started downward immediately after the embargo was announced.

Other shipments. During the same period, Iran shipped greater volumes, ranging from 11 million bbl in November to 9.8 million in December, 13.5 million in January, and 11.8 million in February. During October, Iran supplied only 7.5 million bbl to the U.S.

Venezuela also helped to take up the slack, supplying 15.5 million bbl in November, 19 million in December, 17 million in January, and 11.8 million in February. This didn't count Venezuelan-source crude refined in the Caribbean and shipped as products to the U.S.

During the embargo Indonesia also stepped up shipments to the U.S., as exports from that country rose from 4.8 million bbl in October to a peak of 9.9 million bbl in February.

Venezuela cuts crude production by 160,000 b/d

THE Venezuelan Government last week imposed a 5% cutback on crude-oil production, due, it said, to lack of facilities to process associated-gas production.

The cutback amounts to about 160,000 b/d.

Creole Petroleum Corp., affiliate of Exxon Corp., which produces about 1.6 million b/d, says its foreign oil sales will be cut by about 100,000 b/d.

Royal Dutch/Shell's Shell de Venezuela produces about 800,000 b/d of Venezuela's total output of about 3.3 million b/d.

In addition, the government's state-owned CVP was slated Apr. 8 to begin taking about 100,000 b/d of royalty crude in kind.

Of this amount, Creole and Shell will be turning over an aggregate of about 70,000 b/d to CVP, which intends to market the crude to its own customers.

CVP has not disclosed its potential customers but has previously said it would sell oil to other Latin American countries. Mexico and Peru are believed to be among potential customers.

Qaddafi's status change seen improving Libyan oil situation

THE changes in the Libyan Revolutionary Council had oil observers puzzled last week, but overall it was felt that the relieving of Col. Qaddafi of his policy-making role will prove a step toward improved Libyan foreign relations and economic policy.

Qaddafi remains as head of state and commander-in-chief of the armed forces, but reports from Tripoli say he will devote his time to matters of "ideology and organization."

The command council is reportedly unhappy over the way Qaddafi has isolated Libya from the rest of the Arab world by his actions and threats to more conservative Arab regimes.

His abortive wooing of Egypt and Tunisia to merge with Libya did not help his public image.

Prime Minister Major Abdesalam Jallud now assumes all responsibilities for policy making. Jallud is known as a much more practical and liberal politician than his chief of state. He

has played a major role in Libyan oil negotiations over the past few years.

Beirut newspaper An Nahar disclosed that Qaddafi's colleagues on the command council had been openly critical of his policies, calling them "moody" and dictated by emotion. They are concerned over his estrangement of Libya on both Arab and international levels, the paper said.

That estrangement worsened last February, when Qaddafi called on the Arab "masses" of every African and Middle Eastern state to declare a "bloody revolution."

Libyan Minister of Information Abu Zeid Dordeh said the changes are "mere formalities."

"The appointment of Jallud to undertake administrative and political functions was the result of a decision taken by Qaddafi himself," Dordeh said, "Because he wanted to devote himself to the armed forces and matters of ideology."

Simon opposes rollback of stripper-well crude prices

FREE-MARKET prices for stripper-well production shouldn't be rolled back or otherwise controlled, Energy Czar William E. Simon says.

His support should go a long way in preserving existing price treatment for leases whose average daily production for the preceding calendar year doesn't exceed 10 b/d per well. In a letter to Sen. Paul J. Fannin (R-Ariz.), ranking Republican on the Senate interior committee, Simon noted that Congress has twice voted legislation exempting stripper wells from price controls.

Simon says market prices for stripper oil are preventing premature abandonment among the 360,000 stripper wells producing an average of 3.5 b/d and are "paying additional dividends." Remedial work could add another 200,000 b/d or more to U.S. crude supplies, he said.

His strong support for the stripper exemption was in contrast to congressional testimony by Charles Owens,

deputy FEO administrator who has had a key role in oil-pricing policy—first at CLC and now FEO. Owens referred to "the supply depressing potential of the stripper-well exemption."

The gap between the price of old and new oil is "an inducement to non-stripper well operators to reduce their production of 'old' crude from wells that are only marginally above the stripper level of production," Owens said. He suggested there is a large potential for this kind of "gamesmanship," in order to get leases down into the stripper category to qualify for higher prices.

But that's impossible under current FEO regulations, Sen. Dewey F. Bartlett (R-Okla.) declared in a stiff letter to Owens. In order to do what Owens suggested, Bartlett said, an operator would have to reduce his lease output for the entire year of 1974 in hopes that in 1975 the current rules would still apply.

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AS A UNIT IN THE ORIGINAL DOCUMENT.

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Top oil firms' 1973 profits jump 52.7%

Leading 25 companies report earnings of more than \$9.4 billion. Big percentage gains follow a year when profitability hit a 10-year low. Profits from abroad are a major contributor to the companies' coffers.

TO THE SURPRISE of no one, the larger American oil companies dramatically turned around their profit performance in 1973 following a lackluster showing the year before.

When Gulf Oil Corp. finally came in with its report last week, the completed Oil and Gas Journal survey showed that the leading companies earned more than \$9.4 billion in 1973, an increase of 52.7% over 1972 when profits of the same companies had dropped.

The final showing for the year had been signaled earlier by excellent first half and third-quarter earnings. The fourth-quarter performance was even better with an increase of nearly 70%.

Politicians and consumer advocates had anticipated the big jump in earnings and early greeted scattered announcements of individual companies with an outburst of demands before Congress for new tough regulations on industry operations.

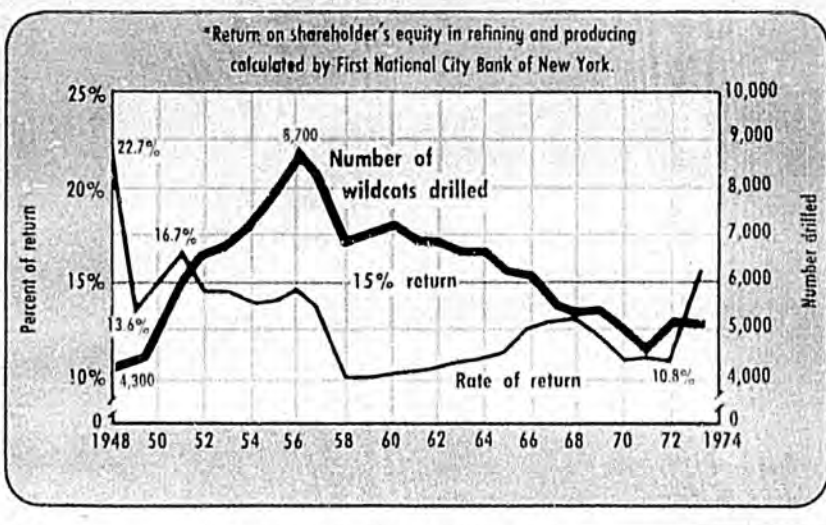
As the accompanying table clearly shows, the profits gains were spread throughout the list. The so-called five international giants performed slightly better than the predominantly domestic firms.

Led by Exxon with earnings of \$2.4 billion and Texaco at \$1.29 billion, the five pushed profits up 55% to a total of \$6.21 billion. The other three were closely grouped with California Standard at \$843 million, Mobil \$842 million, and Gulf \$800 million. The domestic-oriented companies, many of whom also have foreign holdings, averaged increasing earnings by 47.9% for a total of \$3.26 billion.

Behind the earnings. The charges of price gouging and excess profits directed at oil companies, however, ignore the many factors that contributed to improved earnings, the past years of relatively low earnings, and the relation of oil profits to those of other industries.

Large percentage gains for oil company 1973 profits are due to comparison with depressed earnings the year before when profitability of U.S. oil firms hit a 10-year low. Federal Trade Commission statistics show that earn-

How wildcatting follows profits*



ings of all oil companies in 1972 were down 10% following a profits dip of 2% in 1971 and practically no change in 1970. This 4-year performance is the basis of claims by oil executives that 1973 earnings represent "catch up."

The First National City Bank of New York reports that the profits of oil corporations showed an average annual gain of 10.5% during the period 1968-72 while those of all manufacturing companies averaged 10.7%. The gains of both have been about 50% over the 1971-73 period.

The return on net assets also has been relatively close. In 1972, oil companies earned 10.8% on net assets while other manufacturing earned 12.5%. In 1973, the return for oil companies is expected slightly to exceed 15%, while those of other manufacturers will top 14%. (For details on Treasury Department study of returns on equity in oil, see p. 38.)

A major feature of 1973 earnings for the larger companies was the heavy contribution of profits from abroad while domestic profits failed to keep pace. Exxon reported U.S. earnings rose 16% last year while those in the Eastern Hemisphere were up 86%. Texaco showed an increase of 86% abroad and 3.6% in this country, and

Mobil a 70% increase abroad and 15% in the U.S. In at least one instance—Marathon—domestic earnings dipped slightly with all the increase attributable to foreign operations. And Sun's domestic marketing and refinery profits declined. Preliminary reports indicate that foreign earnings of the major internationals will be up 75% with domestic earnings up only 12%.

Dollar devaluation figures in. The foreign earnings may be deceiving, however. An important factor in the increase was devaluation of the dollar in 1973. Since U.S. companies keep their books in dollars, high earnings in foreign currency translate into more dollars.

The chief reason for the jump in foreign profits was stepped up production worldwide, near-capacity refinery operations, and product sales at better margins. This was a sharp switch from the last few years which have been characterized by depressed markets and low profitability, especially in Western Europe. The Arab embargo came too late in the year and was not immediately effective enough to change the profits trends.

Companies with predominately domestic operations also shared in the upswing of industry profits, although perhaps not as much as those with

which jumped from \$2.12/bbl for a sale of Arabian light crude cargo last September to more than \$15 last November, only to slip to \$10-11 by the end of January. A continuation of prices at these levels is unlikely, in Simon's view. Considering efforts to reduce consumption around the world, "the potential clearly exists for spot market prices to continue to decline."

Simon's advisers expect 1974 non-Communist consumption to be around 46.4 million b/d, if world prices are consistent with \$8.50/bbl for Arabian light, rather than the 51.4 million b/d forecast before the October 1973 Arab-Israeli war. If prices fall to \$4.50, the forecast consumption rises to 50.3 million b/d, plus 200 million bbl in inventory buildup.

At either of these illustrative prices, U.S. energy experts believe productive capacity will not be fully employed. Whether some producing countries will choose to keep capacity idle, losing revenue, is an open question.

The message Simon is trying to sell to producing nations is this: produce more now, at lower prices, invest the surplus revenues, and reap the dividends.

Project Independence. Simon lifted the veil from still more of the goals of domestic energy development.

Conservation has a high priority, with projected savings of up to 7 million b/d by cutting demand growth in half.

Expansion of oil and gas production, with emphasis on the Outer Continental Shelf and the North Slope of Alaska, is another major thrust. The trebling of OCS leasing has the potential for boosting offshore production to 10 billion bbl of oil and 28 trillion cu ft of natural gas by 1986, the Interior Department estimates. The OCS is assigned 42%—160 billion bbl of oil equivalent—of the remaining discoverable oil and gas in the U.S.

The North Slope will be producing 2 million b/d by 1980, with the trans-Alaska pipeline operating at capacity. Simon places the North Slope potential at 80 billion bbl, capable of producing 5-6 million b/d.

Coal production may be trebled to 1,500-1,800 million tons annually by 1985, "emerging as a very central element in our energy picture." Simon sees savings of 6 million b/d of oil equivalent by 1985 through direct substitution of coal for oil and gas—2 million b/d by replacement of oil under utility boilers, 1 million b/d in



FEO's Simon
U.S. won't need the 10-12 million b/d
of imports projected for 1980.

residential and commercial space heating (primarily through heat pumps), and 3 million b/d in industry. Also, 3 million b/d of oil may be replaced by synthetic fuels—liquid and gaseous—from coal. Production of low-BTU gas from coal, rated marginal in the short range, is given a larger role in the longer-range future.

Simon is "especially encouraged by recent progress in the in situ processes for extracting shale oil at much less than the current cost of Persian Gulf crude." But no projections are given for this vast resource, which has not yet become commercial.

Nuclear power "could easily provide 10%" of U.S. energy needs by 1985.

Seven-point program. Access to nuclear and other U.S. energy technologies features the program offered by Kissinger to the major oil-consuming nations.

Kissinger advanced these seven points for coordination of energy policies among consumers:

Consumer-producer relations. "We must work toward the objective of preventing coercion of the weak by the strong—or of the strong by the weak; the producing nations must be given a secure stake in an expanding world economy, and the consuming nations a secure source of supply."

International financial cooperation. Producing nations will be called upon to help finance the higher oil-import bills of the developing consumer nations. There must also be new mechanisms to distribute international capital flows from oil-revenue surpluses, plus means for producers and

consumers to cooperate in building confidence in investment policies and the integrity of investments.

Less-developed countries. "The wealth of the producer nations opens up a potential new source of large-scale capital assistance for development." Also, urgent measures must be taken to assure adequate fertilizer supplies for the coming year, requiring "oil at a price that will allow existing fertilizer production capacity to be fully utilized."

Emergency sharing. "The United States declares its willingness to share available energy in times of emergency or prolonged shortages."

"We would be prepared to allocate an agreed portion of our total petroleum supply provided other consuming countries with indigenous production do likewise. As we move toward self-sufficiency, our ability for sharing would of course increase."

The formula should include criteria to determine when a shortage exists, a mechanism to implement and terminate sharing, and complementary programs such as stockpiling and standby rationing schemes.

Research and development. The U.S. plans to spend more than \$11 billion in federal funds in the next 5 years, with \$12.5 billion more in private funds to be invested in the same period. The U.S. is prepared to make a major contribution of its most advanced energy R&D to a broad program of international cooperation.

Alternate sources. The U.S. favors consumer cooperation in international programs to reduce vulnerability of major industrial nations to interruption and manipulation of supply—such as the orderly conversion of key sectors away from petroleum; collective commitment to develop fossil-fuel resources within our respective borders; coordinated policies to encourage the flow of private capital into new higher-cost energy industries such as synthetic oils and gas from coal and shale; and governmental arrangements to accelerate the global search for new sources such as offshore oil.

Conservation. The U.S. recognizes that it is "the world's most profligate energy consumer" and pledges a sustained effort to cut waste.

At the moment, the Kissinger program of cooperation, like Project Independence, is more rhetoric than action. But if both are pursued, they will mark turning points in U.S. and world energy policies.

interests abroad. Profit contributions were made by price increases in natural gas, crude oil, and products. Markets enjoyed stability as price wars faded and marketing costs dropped. Companies also benefitted from heavy production in both the field and plants until the effects of mid-October Arab embargo was felt late in the year.

Oil company executives in announcing 1973 earnings gave a more careful analysis of their operations than usual, and their comments are revealing. For example:

Texaco's Maurice F. Granville: "This strong upswing, especially in the latter part of 1973, followed a period of 4 years in which the company's returns on both gross income and total assets had been lagging behind the average returns of the past 10 years."

Mobil's Rawleigh Warner, Jr.: "The improvement . . . reflected recovery from the relatively low earnings from U.S. operations that characterized 1972 . . . reflected higher U.S. crude oil and natural-gas prices as well as a significant reduction in U.S. marketing expenses."

Union Oil's Fred L. Hartley: "Earnings increases were largely the result of increased foreign crude oil production, essentially 100% refinery throughput, increased sales of petroleum products, and stable prices—as compared to extensive price wars in prior years."

Atlantic Richfield's Robert O. Anderson: "Despite the improvement in 1973, after 3 years of depressed results, return on capital remained below the 8.6% earned in 1969."

Pennzoil's William C. Liedtke, Jr.: "The 1973 return on investment did not even equal the amount paid on insured savings and was less than half the prime lending rate."

Several executives equated their earnings on crude and products sales to a gallon, revealing that Exxon's earnings equalled 1.9¢/gal, Indiana Standard 2.5¢, Texaco and Atlantic Richfield 1.7¢, Gulf 1.5¢ and Continental 0.13¢.

The outlook. Executives throughout the industry are counting on 1974 being another profitable year and on that basis have budgeted a record total of capital funds for new facilities to expand supply.

Political uncertainties, however, may change this picture drastically. The outlook will depend on what happens to proposals for price rollbacks,

How 25 U.S. oil firms fared in 1973

Company	Thousands of dollars					
	Net profit*	Annual % change from 1972	% change 1972 vs. 1971	Net profit*	4th quarter % change from 1972	% change 1972 vs. 1971
Exxon	2,440,000	+ 59.3	+ 0.9	784,000	+ 59.0	+ 13.2
Texaco	1,292,403	+ 45.4	- 1.6	453,486	+ 70.1	+ 8.7
California Standard	843,600	+ 54.2	+ 7.0	283,100	+ 94.2	+ 12.8
Mobil	842,800	+ 46.8	+ 6.2	271,600	+ 68.2	+ 7.9
Gulf	800,000	+ 79.1	- 15.9	230,000	+ 98.3	+ 8.4
Subtotal	6,218,803	+ 55.0	- 0.5	2,022,186	+ 71.3	+ 10.9
Indiana Standard	511,200	+ 36.4	+ 10.0	121,400	+ 52.7	+ 14.0
Shell	332,694	+ 27.7	+ 6.5	79,394	- 1.5	- 9.3
Atlantic Richfield	270,185	+ 40.3	- 8.6	91,697	+ 47.4	+ 11.2
Continental	242,700	+ 42.6	+ 21.5	89,300	+ 91.6	+ 63.5
Phillips	230,400	+ 55.3	+ 12.2	86,700	+ 127.6	+ 5.2
Tenneco	230,212	+ 13.4	+ 9.9	80,920	+ 14.4	0
Sun	230,000	+ 48.4	+ 2.0	75,000	+ 59.6	+ 14.6
Amerada Hess	218,364	+ 177.3	- 65.3	104,490	+ 471.9	- 19.4
Union	180,200	+ 47.8	+ 6.3	51,000	+ 55.5	+ 7.5
Cities Service	135,600	+ 36.8	- 5.2	42,100	+ 49.8	+ 23.2
Getty†	135,032	+ 77.4	- 36.6	52,612	+ 115.0	- 13.6
Marathon	129,405	+ 62.2	- 10.1	46,946	+ 92.8	+ 17.8
Ashland§	85,219	+ 25.7	+ 64.5	34,400	+ 52.2	+ 15.3
Pennzoil	80,412	+ 37.1	+ 24.3	24,103	+ 68.4	+ 20.6
Ohio Standard	74,100	+ 24.1	+ 1.4	11,600	- 39.9	+ 4.9
Murphy	48,533	+ 239.9	+ 28.9	13,935	+ 181.0	+ 48.3
Skelly	43,983	+ 17.0	- 1.8	16,812	+ 31.3	+ 18.5
American Petrofinat	36,951	+ 104.6	+ 38.0	16,729	+ 218.2	+ 44.1
Clark	30,500	+ 265.6	+ 132.6	8,087	+ 140.8	+ 183.6
Tesoro§	19,874	+ 52.3	+ 70.1	12,580	+ 183.5	+ 37.3
Subtotal	3,265,564	+ 47.9	+ 0.4	1,059,805	+ 65.1	+ 12.9
TOTAL	9,484,367	+ 52.7	- 0.2	3,081,991	+ 69.9	+ 11.5

*Excludes nonrecurring gains and losses. †Includes Getty's share of Mission Corp. and Skelly Oil Co. §Includes revenue of Standard (Ohio) assets acquired July 1, 1973. §Fiscal year and first quarter.

excess profits taxes, ending percentage depletion, wiping out foreign-tax credits, and the workings of the allocation program.

Many analysts expect domestic operations to contribute more to company earnings this year. The full impact of higher crude-oil prices should be felt, especially for the independents and the larger companies with a good domestic production position. Foreign earnings should contribute relatively less, because of the rising strength of the dollar abroad. This will reverse the dollar-transfer gains enjoyed last year. If the Arab embargo continues for much of the year, this will limit production abroad and affect the downstream profits from refining and marketing. World production also could be depressed by skyrocketing oil prices which eventually are bound to curtail increases in demand.

A continued Arab embargo also will affect domestic operations. With refineries operating at only three-fourths capacity under crude allocations, unit costs will be much higher than at full

capacity. The same trend will be felt on distribution costs with products allocated or rationed.

The industry's 1974 preliminary capital-spending budget of more than \$19.5 billion for domestic projects (OGJ, Feb. 4, p. 29) was based on the high earnings of 1973 and cannot be sustained if earnings are restricted. Even though capital spending routinely exceeds earnings, the reinvested profits represent a sizable part of greater available capital funds. Indiana Standard and Sun, for example, reported 1974 capital-spending plans call for investing \$3 for every \$1 earned in 1973. Atlantic Richfield will invest \$1.78 for each \$1 of profit.

Exxon plans to spend \$16 billion on capital items over the next 4 years with about \$6 billion ticketed for 1974 alone. Texaco and Gulf have jumped their spending to \$2 billion, California Standard \$1.6 billion, Indiana Standard \$1.4 billion, Continental \$700 million, Union \$490 million, Phillips \$650 million, and Cities Service \$466 million. All represent substantial increases.

Bulk of the funds will be channeled into increasing exploration and production in this country or into projects seeking alternate energy sources.

Union President Hartley expressed the feelings of most company executives when he said "these earnings are not being salted away nor can they be considered a windfall for anyone. They—and more—are being plowed back into the business of exploring for and developing more and new energy sources . . . We are making this commitment in spite of the uncertainties of today's economic and political climate."

And Pennzoil President Liedtke observed that "actual results of 1974, as well as those for future years, will depend significantly upon the resolution of various governmental policy issues now being considered by the adminis-

tration and the Congress."

H. A. True, Jr., Wyoming independent operator and chairman of the National Petroleum Council, recently told the House ways and means committee that "the economic stage is set for successful expansion of the conventional and nonconventional domestic oil and gas industries."

Crude-oil and gas prices, he pointed out, have broken out of their postwar stagnation. Profitability is increasing to attractive levels. First generation synthetics plans are announced.

True declared he could not overestimate the significance of the industry's rate of return reaching the 15% level. It should be higher, he said. "The domestic oil industry's expansion after World War II began in earnest in 1948 when the rate of return was 22.7%. Thereafter, during the ex-

pansion years through 1956, rates of return ranged from 13.6% to 16.7% with an average of 14.6% (see chart).

"It was no coincidence that those years were a time of expansion. The number of new-field wildcats drilled rose from 4,300 in 1948 to 8,700 in 1956. Then, the rate of return fell off; and the number of wildcats drilled declined to a low of 4,500 in 1971. Hopefully, that decline has been arrested.

"We should be optimistic over the prospects of achieving ultimate energy independence. Yet the U.S. petroleum industry is being accused of profiteering and is being subjected to threats of price rollbacks and higher taxes—especially taxation of so-called 'excess' profits.

"Nothing could be better calculated to destroy the new economic environment."

U.S. drilling funds raise 10% less money in 1973

MONEY raised by U.S. public drilling funds dropped by a little more than 10% last year.

Resource Programs Inc. (RPI), New York research and advisory firm, reports that 70 funds raised \$346 million in 1973, off \$39 million from the previous year.

The 1973 total includes \$38 million raised under income programs that purchase producing properties rather than drill.

RPI attributes the decrease in 1973 funds to a growing trend toward privately sold programs. A number of firms responding to PRI's annual survey said they raised considerably more money privately than publicly last year.

In addition, fund raising was hurt by the absence of 200% write-off offerings.

Funds in 1973 were far short of the record \$419 million public offerings accounted for in 1969.

PRI's survey shows a considerable decline over the past few years in the number of firms which sold public programs. And fund raising by new sponsors has fallen sharply both in amount and as a percent of total sales.

Four companies sold \$20 million or more in public offerings last year.

Canadian-American Resources Fund Inc. took the top spot with sales of \$47.5 million, more than double its

Breakout of fund raisings by size in 1973

Size of fund raising†	Amount*				Percent			
	1970	1971	1972	1973	1970	1971	1972	1973
Up to \$1 million	27	23	23	14	9	7	6	4
\$1-3 million	76	64	66	76	26	19	17	22
\$3-5 million	41	62	50	64	14	18	13	18
\$5-10 million	40	101	106	65	14	29	28	19
\$10-25 million	107	64	140	79	37	19	36	23
Over \$25 million	—	29	—	48	—	8	—	14
Total	\$291	\$343	\$385	\$346	100	100	100	100
	1970	1971	1972	1973				
Number of firms raising totals shown	89	87	80	70				
Amount raised by new sponsors (millions)	\$52	\$49	\$46	\$17				
Percent of total	19	14	12	5				
Number of programs unsubscribed‡	36	22	16	7				
Number of programs filed	162	93	131	106				
Number of firms filing programs	126	73	88	76				

*Figures are original subscriptions and exclude assessments. Covers all programs registered with the SEC during the 1970-73 period. †Funds raised under multiple partnerships or ventures in one calendar year are considered a single fund raising. ‡Excludes programs withdrawn before becoming effective.

Source: Resource Programs Inc.

1972 sales of \$22.7 million. Conoco Management Co. sold \$25 million, the same as in 1972, and Sunoco Operations Inc. sold \$20 million, off \$5 million from 1972.

Petro-Lewis Funds Inc. sold \$18.2 million in oil-income programs and \$1.8 million in drilling programs, compared with \$17.6 million and \$6.2 million, respectively, in 1972.

McCulloch Oil Corp. - IDS Oil Programs Inc., which topped the \$20-million mark by \$4.4 million in 1972, fell to \$17.9 million in 1973.

All sales figures include company subscriptions to their own programs.

Total programs filed with the Securities & Exchange Commission amounted to \$896.7 million in 1973, off \$173.2 million from 1972.