MASTER

**An Analysis of Petroleum Company
Investments in Non-Petroleum Energy
Sources**

Book II
Appendices

May 1978

Prepared by:

Paul Ryan, Jr., Thomas C. Ryan
Under Contract No. CR-03-70041-00
(Mod. No. EC-77-C-01-8556)

Prepared for:

U.S. Department of Energy
Energy Information Administration
Assistant Administrator for Applied Analysis
Office of Economic Analysis
Washington, D.C. 20461

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency Thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

Available from:

National Technical Information Service (NTIS)
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161

Price:

Printed Copy: \$8.00

Microfiche: \$3.00

MASTER

An Analysis of Petroleum Company Investments in Non-Petroleum Energy Sources

**Book II
Appendices**

May 1978

DISCLAIMER

This book was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

**Prepared for:
U.S. Department of Energy
Energy Information Administration
Assistant Administrator for Applied Analysis**

**Under Contract No. CR-03-70041-00
(Mod. No. EC-77-C-01-8556)**

g b
DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

172000

This report was prepared under Department of Energy (DOE) Contract Number CR-03-70041-00 and does not necessarily state or reflect the views, opinions, or policies of the DOE or the Federal Government. References to trade names or specific commercial products, commodities, or services in this report do not represent or constitute an endorsement, recommendation, or favoring by DOE of the specific commercial product, commodity, or service.

Released for printing: December 12, 1979 ✓

TABLE OF CONTENTS

<u>Appendices</u>	<u>Title</u>	<u>Page</u>
Appendix A	Funds from Operations, Capital Expenditures, Net Income, and Gross Revenue - Various Capital Intensive U.S. Industries and Companies - 1976	1-6
Appendix B	Projected Yearly Expenditures and Finances - Various U.S. Electric Utilities	7
Appendix C	Utilities (Electric and Gas) Vertical Integration	8-9
Appendix D	Companies Probably Affected by Legislature Proposals of Senator Kennedy on Horizontal Divestiture	10
Appendix E	Financial and Operating Summaries	
	1. <u>Oil Companies</u>	
	Amerada Hess	11
	American Petrofina	12
	Ashland Oil	13-15
	Atlantic Richfield	16-17
	Cities Service	18-20
	Clark Oil and Refining	21
	Continental Oil	22-24
	Exxon Corp.	25-28
	Getty Oil	29-30
	Gulf Oil	31-34
	Kerr-McGee	35-37
	Marathon Oil	38-39
	Mobil Corp.	40-42
	Murphy Oil	43-44
	Occidental Petroleum	45-47
	Pennzoil Co.	48-49
	Phillips Petroleum	50-52
	Shell Oil	53-55
	Standard of California	56-57
	Standard of Indiana	58-59
	Standard of Ohio	60-62
	Sun Co.	63-65
	Superior Oil	66-67
	Tenneco Inc.	68-69
	Tesoro Petroleum	70-72
	Texaco	73-74
	Tosco Corp	75-76
	Union Oil	77-79

	<u>Page</u>
2. <u>Coal Companies</u>	
North American Coal Corp.	30
Peabody Coal Co.	31
Pittston Co.	32-33
Westmoreland Coal Co.	34
3. <u>Uranium Companies</u>	
American Nuclear	35
Atlas Corp	36
Ranchers Exploration	87
United Nuclear	38
4. <u>Railroad</u>	
Union Pacific Corp.	39-41
5. <u>Utilities</u>	
American Electric Power	92
Commonwealth Edison Co.	93
Pacific Gas and Electric	94
Philadelphia Electric Co.	95
Texas Utilities	96

Appendix F

Supplemental Data - Coal	
1. Federal Leases - Coal, 12/31/76	97-114
2. Producers of 3 Million Tons or More in 1985	
a. Oil and Gas Companies	115
b. Electric Utilities	116
c. Metal Mining	117
d. Independent Coal	118
e. Railroads	119
f. Construction	120
g. Steel	121
h. Industrial	122
3. Production Capacity for Selected years; Western States	123
4. Estimated Development Costs, Steam Coal Capacity, Expansion 1977-1985	124
5. F-5 Map-Fort Union Formation-Western Coal Fields	125
6. Concentration of Federal Coal Leaseholds. Top 20 Lessee, U.S. Totals	126
7. Concentration of Federal Coal Leaseholds. Top 5 and 10 Lessees, By State	127
8. Preference Right Lease Applications.	132
9. Prospecting Permits	133
10. Concentration of Preference Right Lease Applications in the Order of Their Estimated Coal Reserves.	134
11. Bituminous Coal Mining in the United States.	135

Appendix G

Supplemental Data - Nuclear & Uranium	
1. Commercial Nuclear Fuel Cycle	136
2. Production Centers in the U.S.	137
3. Significant Uranium Areas in the U.S.	138
4. Domestic Uranium Commitment to Domestic Buyers	139
5. Uranium Requirements and Delivery Commitments.	140
6. Uranium Ore Processing Rates and Concentrate Production	141
7. Land Acquired for Uranium Exploration	142
8. U.S. Uranium Reserves	143
9. Annual Ordering of Nuclear Power Capacity & Uranium	144
10. Price Ranges and Average Prices of U_3O_8 for 1976 Delivery.	145
11. Distribution of Reported U_3O_8 , Prices 7/77	146

Appendix H

Selecting Investments

147 - 155

APPENDIX A
FUNDS FROM OPERATIONS, CAPITAL EXPENDITURES, NET INCOME,
AND GROSS REVENUES
VARIOUS CAPITAL INTENSIVE U.S. INDUSTRIES
1976

<u>Industry & Company</u>	<u>Energy (1) Participation</u>	<u>Funds From Operations (Less Dividends) (\$ Millions)</u>	<u>Capital Expenditures (\$ Millions)</u>	<u>Net Income \$ Millions)</u>	<u>Gross Revenue (\$ Millions)</u>	<u>Industry Source & Date(2)</u>
<u>Oil Companies(3)</u>		17,938(4)	26,709(4)		350,000	V.L.1977
Exxon	O,C,U,N,S,SL	3,459	5,070	2,641	52,585	(Est.)
Mobil	O,C,U,S,SL	1,218	1,286	943	28,047	
Texaco	O,C,S	977	1,505	870	26,932	
Standard of California	O,U,S,G	1,100	1,633	880	20,565	
Gulf Oil	O,C,U,N,S,G,SL	1,226	1,742	816	18,403	
Standard of Indiana	O,S,	1,355	1,728	893	12,668	
Shell	O,C,SL	1,244	1,384	706	9,309	
Atlantic Richfield	O,C,U,S	1,029	1,827	575	9,256	
Continental	O,C,U,S	722	878	460	8,353	
Phillips	O,C,U,S,G	681	728	412	5,837	
Occidental	O,C,S	283	554	185	5,610	
Sun	O,C,U,S	680	617	356	5,451	
Union	O,U,S,G	672	814	269	5,781	
Ashland	O,C,S	226	294	136	4,400	
Cities Service	O,S	458	651	217	4,006	
Amerada Hess	O	298	313	153	3,949	
Marathon	O,S	295	1,153	196	3,856	
Getty	O,U	566	792	258	3,279	
Sohio	O,C,U,S	215	1,705	137	2,916	
Kerr-McGee	O,C,U,N,S	206	367	134	1,955	
Diamond Shamrock	O	201	344	135	1,375	
American Petrofina	O	52	171	46	1,075	
Tesoro	O,C	56	68	29	1,088	
Pennzoil	O	163	181	163	1,047	
Murphy	O,S	144	209	49	1,019	
Williams	O,C	122	200	61	1,003	
Tosco	O,C,S	24	119	8	849	
Clark	O	22	15	9	724	
Superior	O,S	109	230	50	441	
Louisiana Land	O,C	135	131	97	358	

<u>Industry & Company</u>	<u>Energy (1) Participation</u>	<u>Funds From Operations (Less Dividends)</u>	<u>Capital Expenditures</u>	<u>Net Income (\$ Millions)</u>	<u>Gross Revenue (\$ Millions)</u>	<u>Industry Source & Date (2)</u>
<u>Independent Coal</u>						
Pittston (Met)	C	173	110	146	1,415	
Westmoreland	C	55	52	48	414	
North American	C	25	27	7	269	
Rochester & Pittsburgh	C	20	26	10	124	
Baukol Noonan	C			1	4	(1975)
Kemmerer	C					
<u>Gas Companies</u>		2,301 (4)	2,165 (4)			
Tenneco	O,C,U,S	603	305	360	6,423	
Coastal States	O,C,	172	215	58	2,317	
Columbia Gas	O,C	225	262	120	1,795	
Texas Eastern	O,C	232	185	107	1,547	
Northern National	O,C,S	240	197	143	1,403	
El Paso National Gas	O,C	189	331	73	1,351	
American National	O,C,S	254	244	107	1,264	
Consol National Gas	O,C	123	172	93	1,212	
Houston Natural Gas	O,C,U	108	111	95	1,121	
Panhandle Eastern	O,C,S	155	143	88	825	
<u>Utilities (Electric)</u>		6,560		7,440	47,000	S&P 1976
Consolidated Edison		422	300	257	2,880	
Pacific Gas & Electric	O,C,U,G	199	520	302	2,647	
Southern Company	C	262	995	198	2,206	
Commonwealth Edison	C,U	368	911	193	1,908	
Public Svc. Elec. & Gas	O,U	254	307	163	1,870	
<u>Multi-Industries</u>						
General Electric	C,U,SL	1,051	740	931	15,697	
ITT	O,C	669	541	489	11,764	
Westinghouse	N	273	163	223	6,254	
United Technologies		248	131	157	5,193	
W. R. Grace	O,C	206	212	132	3,615	
Gulf & Western	O,C,S	258	194	200	3,438	

<u>Industry & Company</u>	<u>Energy (1) Participation</u>	<u>Funds From Operations (Less Dividends)</u>	<u>Capital Expenditures</u>	<u>Net Income (\$ Millions)</u>	<u>Gross Revenue (\$ Millions)</u>	<u>Industry Source & Date(2)</u>
<u>Aerospace Industry</u>			1,104	925	31,375	S&P 1975
Rockwell International		180	144	121	5,232	
Boeing	C			103	3,919	S&P
TRW	C,G,SL	161	92	133	2,960	
General Dynamics	C	226	146	100	2,553	
Raytheon	C	133	86	85	2,463	
<u>Mining and Metals</u>						
Englehard	U	123	48	125	6,469	
Inco	O	212	459	197	2,075	
AMAX	O,C	112	468	150	1,170	
ASARCO	C	55	23	42	1,104	
Kennecott	C (1976)	(9)	135	9	966	
Phelps Dodge	O,C,U	62	111	43	948	
St. Joe	O,C	89	96	69	778	
Newmont (Peabody)	C	61	54	49	642	
Revere Copper	SL	15	9	2	498	
General Cable		13	5	17	349	
<u>Railroads (West)</u>						
Union Pacific	O,C,U,	275	378	195	2,024	
Burlington Northern	C	140	179	73	1,896	
Southern Pacific	O,C	198	155	110	1,883	
Santa Fe	O,C,U	304	197	120	1,594	
Missouri Pacific	O	153	154	80	1,288	
<u>Railroads (East)</u>						
Norfolk & Western	C	157	119	132	1,216	
Southern	C	152	142	89	1,028	
IC Industries		118	109	61	1,689	
Chessie System		135	233	102	1,454	
<u>Chemicals</u>		5,257		3,700	60,800	V.L. 1977
DuPont		939	876	459	8,412	(Est.)
Union Carbide	U	751	965	441	6,346	
Dow Chemical	O	879	1,186	613	5,652	
Monsanto	O	567	647	366	4,270	
W. R. Grace	O,C	206	212	132	3,615	

<u>Industry & Company</u>	<u>Energy (1) Participation</u>	<u>Funds From Operations (Less Dividends)</u>	<u>Capital Expenditures</u>	<u>Net Income (\$ Millions)</u>	<u>Gross Revenue (\$ Millions)</u>	<u>Industry Source & Date (2)</u>
<u>Integrated Steel</u>		2,043		1,170	35,000	V.L. 1977
U.S. Steel	C,U	663	957	410	8,725	(Est.)
Bethlehem	C	391	407	168	5,305	
LTV	C	88	147	31	4,518	
Armco	O,C	140	272	124	3,165	
National	C	208	271	86	2,841	
<u>Aluminum</u>						
Alcoa	O,C,SL	291	244	144	2,944	
Reynolds	C	119	78	75	2,132	
Kaiser	O	114	118	63	1,860	
<u>Paper & Allied Products</u>		2,756		2,120	33,000	V.L. 1977
International Paper	O,C	418	436	254	3,581	(Est.)
Georgia Pacific	O	298	287	215	3,038	
Champion International		191	147	103	2,911	
Weyerhaeuser		374	416	306	2,868	
Crown Zellerbach		157	107	98	2,126	
<u>Construction & Engineering</u>						
Pullman		22	27	30	2,085	
Combustion Engineering		76	81	54	1,831	
Fluor (Peabody)	O,C	92	117	65	1,902	
Babcock & Wilcox		66	62	53	1,692	
Morrison-Knudson	C	24	14	13	975	
Ralph M. Parsons		16	2	15	862	
Arthur G. McKee	S	6	1	8	775	
Dravo	C	30	39	15	735	
Raymond International		18	25	12	254	
Dillingham		9	41	8	21	
Bechtel (Peabody)	C	N/A	N/A	N/A	N/A	
<u>Oil Field Services</u>		1,801		1,395	16,400	V.L. 1977
Halliburton		491	315	305	4,866	(Est.)
Dresser	C,U	204	128	157	2,232	
Schlumberger		354	187	293	1,840	
McDermott		216	132	153	1,102	
Baker		71	56	49	553	

<u>Industry & Company</u>	<u>Energy (1) Participation</u>	<u>Funds From Operations (Less Dividends)</u>	<u>Capital Expenditures</u>	<u>Net Income (\$ Millions)</u>	<u>Gross Revenue (\$ Millions)</u>	<u>Industry Source & Date (2)</u>
<u>Automotive</u>						
General Motors		3,592	2,307	2,903	47,638	
Ford		1,766	1,024	983	28,840	
Chrysler		796	424	328	15,559	
American Motors		16	52	(46)	2,315	
<u>Office Equipment</u>		6,304		3,990	46,400	V.L. 1977
IBM		3,432	2,518	2,398	16,304	(Est.)
Xerox		978	596	359	4,404	
<u>Machinery</u>		1,383	N/A	1,190	25,580	S&P 1975
<u>Containers</u>			906	546	14,293	S&P 1975
<u>Communications</u>		431	N/A	405	5,190	V.L. 1977 (Est.)
<u>Building-Cement</u>		237	222	150	3,270	V.L. 1977 (Est.)
<u>Air Transport</u>		739	1,346		10,311	S&P 1975
<u>Rubber Fabrication</u>			782	770	25,380	S&P 1975
<u>Retailing</u>				2,300	70,400	V.L. 1977 (Est.)

NOTES

(1) Energy Participation

O = oil and/or gas exploration or production

C = coal reserves or production

U = uranium exploration or production

N = nuclear operations

S = synthetic fuels activity

G = geothermal operations

SL = solar efforts

(2) Industry Source and Data

V.L. = Value Line, 1977

S&P = Standard and Poor's

Unless otherwise noted, all company data originates with annual reports.

(3) Oil Companies, Capital Expenditures, includes expensed funds for exploration and dry hole costs.

(4) Total of these listed companies only.

APPENDIX B

Projected Yearly Expenditures and Financing (\$ Millions)

	1976 Actual Construction	1977 Con- struction	1977 Total External Financing	1978 Con- struction	1978 Total External Financing	1979 Con- struction	1979 Total External Financing	1980 Con- struction	1980 Total External Financing	1981 Con- struction	1981 Total External Financing
Allegheny Power System	\$ 212	\$ 310	\$ 190	\$ 320	\$ 170	\$ 290	\$ 135	\$ 250	\$ 95	\$ 425	\$ 250
American Electric Power	686	795	515	866	566	875	555	875	525	875	485
Arizona Public Service	215	303	195	385	270	400	285	375	245	390	245
Atlantic City Electric	42	58	27	105	72	83	44	110	60	139	95
Baltimore Gas & Electric	184	237	112	240	100	314	144	303	113	370	152
Boston Edison	112	134	34	231	101	226	120	237	112	252	96
Carolina Power & Light	219	328	106	412	182	546	292	600	325	650	365
Central Hudson Gas & Electric	26	32	11	65	42	45	18	65	37	75	49
Central Illinois Light	84	48	(3)	84	21	98	41	119	54	119	50
Central Illinois Public Service	107	176	113	172	107	191	123	167	99	167	97
Central & South West	294	519	285	632	390	578	315	591	306	635	329
Cincinnati Gas & Electric	134	150	26	169	73	177	54	171	47	226	112
Cleveland Electric Illuminating	276	340	200	350	190	340	160	350	160	320	140
Columbus & Southern Ohio Electric	182	163	109	108	43	91	23	159	74	243	153
Commonwealth Edison	978	1100	660	1200	660	900	370	700	170	700	120
Consolidated Edison	308	367	(3)	397	22	375	(9)	428	36	465	80
Consumers Power	353	540	340	574	359	626	391	494	269	454	174
Dayton Power & Light	100	125	60	168	84	162	55	156	56	202	98
Delmarva Power & Light	76	190	152	157	127	98	27	83	25	147	88
Detroit Edison	339	523	328	605	379	909	680	1048	737	1107	769
Duke Power	475	679	379	725	405	790	440	800	425	850	450
Duquesne Light	165	233	151	249	159	250	150	245	143	219	109
Florida Power	138	115	0	123	64	166	50	258	100	310	147
Florida Power & Light	469	411	86	482	142	600	250	725	350	850	440
General Public Utilities	366	373	212	428	122	516	236	650	340	650	320
Gulf States Utilities	211	250	150	250	140	250	125	275	150	300	165
Hawaiian Electric	42	42	12	56	24	63	29	83	47	50	11
Houston Industries	342	408	228	369	179	552	322	550	310	650	375
Idaho Power	57	127	106	155	117	170	128	260	190	305	225
Illinois Power	250	255	185	280	194	220	143	190	124	135	71
Illinois Power & Light	123	74	43	50	(4)	122	60	151	90	212	127
Interstate Power	85	50	34	40	24	24	9	23	4	67	49
Iowa-Illinois Gas & Electric	71	87	45	84	34	101	40	147	80	151	85
Iowa Power & Light	73	81	48	66	25	52	8	58	14	90	46
Iowa Public Service	83	102	64	102	61	66	15	49	(4)	38	(16)
Kansas City Power & Light	126	184	112	216	142	199	105	142	45	108	15
Kansas Gas & Electric	115	106	65	120	74	159	101	135	74	127	65
Kansas Power & Light	119	112	77	119	67	109	51	100	39	129	62
Kentucky Utilities	85	64	24	100	51	170	111	196	147	217	164
Long Island Lighting	328	375	251	369	250	326	189	264	115	311	185
Louisville Gas & Electric	90	119	74	64	17	132	74	108	50	142	73
Middle South Utilities	596	819	587	832	542	785	439	900	520	1000	600
Montana Power	80	64	36	119	42	154	50	123	58	145	67
New England Electric System	96	125	37	180	77	215	108	215	117	190	98
New England Gas & Electric	20	30	(15)	40	20	39	16	52	27	77	54
New York State Electric & Gas	207	220	162	202	133	311	234	244	154	244	139
Niagara Mohawk Power	270	298	91	335	153	347	170	323	115	334	119
Northeast Utilities	258	235	122	318	170	307	128	399	198	389	169
Northern Indiana Public Service	151	252	177	274	192	253	163	275	175	212	104
Northern States Power	178	174	(36)	229	65	444	235	520	340	513	304
Ohio Edison Company	325	425	291	475	370	490	370	510	340	500	316
Oklahoma Gas & Electric	197	190	132	184	120	177	105	190	110	190	100
Pacific Gas & Electric	599	761	305	1011	178	1251	843	1256	695	1569	991
Pacific Power & Light	221	282	131	328	296	314	277	318	262	370	320
Pennsylvania Power & Light	408	390	255	430	278	485	329	465	300	405	227
Philadelphia Electric	380	414	235	390	211	478	283	470	274	475	275
Potomac Electric	122	175	70	190	80	225	110	225	105	250	120
Public Service of Colorado	133	191	117	296	217	332	247	300	208	300	200
Public Service of Indiana	209	299	188	400	283	457	300	430	268	425	255
Public Service Electric & Gas	333	478	200	674	374	757	417	925	545	1102	683
Puget Sound Power & Light	107	139	99	255	221	304	266	326	297	387	351
San Diego Gas & Electric	182	217	187	282	237	213	160	300	237	330	255
South Carolina Electric & Gas	196	184	148	150	123	171	103	94	(7)	104	15
Southern California Edison	548	598	312	665	355	656	331	783	443	565	205
Southern Company	995	1130	817	1182	832	1571	1171	1500	1050	1500	1000
Southwestern Public Service	78	89	50	109	69	107	58	120	62	126	67
Tampa Electric	61	45	0	30	0	35	0	35	0	35	0
Texas Utilities	683	830	517	735	379	835	440	800	370	850	400
Toledo Edison	145	201	174	182	97	182	122	193	109	200	111
Tucson Gas & Electric	141	111	69	148	100	148	90	155	91	103	15
Union Electric	200	306	202	358	223	368	231	332	209	409	274
Utah Power & Light	248	337	281	238	126	338	209	295	162	375	226
Virginia Electric & Power	482	590	410	650	455	660	445	700	460	750	480
Wisconsin Electric Power	84	172	76	237	135	242	146	227	117	258	135
Wisconsin Public Service	48	61	18	48	(4)	73	18	101	41	107	52
Total	\$17.721	\$21.521	\$12.248	\$23.864	\$13.395	\$26.085	\$15.073	\$26.800	\$14.840	\$28.661	\$15.885

Source: Donaldson, Lufkin, & Jenrette, "Electric Utility Industry Commentary";
5 Year Capital Spending & Financing Forecast, 5/19/77.

APPENDIX C

Utility Vertical Integration
I. Electric Utilities

	<u>Oil & Gas</u>	<u>Coal</u>	<u>Uranium</u>	<u>Geothermal</u>	<u>Synthetics</u>
<u>Northeast</u>					
Boston Edison					
Consol Edison					
Delmarva Power	X				
General Publ Util					
Long Island Lighting			X		
New England Elect					
New Engl G & E					
New York State E & G					
Niagra Mohawk			X		
Northeast Util		X			
Penna Pwr & Lt		X	X		
Phila Elect	X		X		
Pub Serv Elect & Gas	X		X		
Rochester G & E					
<u>Midwest</u>					
Allegheny Pwr		X			
Amer Elec Pwr	X	X			
Cincinnati G & E					
Cleveland Elect					
Columbus & So Ohio		X			
Commonwealth Ed			X		X
Consumers Power	X		X		
Dayton P & L					
Detroit Edison		X	X		
Duquesne Light		X			
Illinois Power	X				
No States Power	X	X	X		
Ohio Edison		X			
Pub Serv Indiana					
Union Electric		X			
Wisc Elect Pwr		X	X		
TVA	X	X	X		
<u>Southeast</u>					
Baltimore G & E					
Carolina Pwr & Lt		X	X		
Duke Power		X			
Florida Power		X			
Florida Pwr & Lt	X		X		
Middle South Util	X				
Potomac Elect Pwr					
South Carolina E & G					
Southern Co		X			
Tampa Elect		X			
Va Electric & Pwr		X			

Utility Vertical Integration (Continued)
I. Electric Utilities

	<u>Oil & Gas</u>	<u>Coal</u>	<u>Uranium</u>	<u>Geothermal</u>	<u>Synthetics</u>
<u>Southwest</u>					
Arizona Pub Serv	X	X			
Central & So West					
Gulf States Util	X	X	X		
Houston L & P	X	X	X		
Okla G & E					
Texas Utilities		X	X		X
<u>West</u>					
Pacific Gas & Elect	X	X	X	X	
Pacific Pwr & Lt	X	X	X	X	
Public Serv Colo	X				
San Diego G & E	X	X	X	X	
So Cal Edison	X		X	X	
Montana Dakota Util	X	X			
Black Hills Pwr		X			

II. Gas Utilities

Producers & Pipeliners

Coastal States	X	X			
El Paso	X	X			
Ensearch	X				
Panhandle Eastern	X	X			X
So Natural Res	X	X			
Tenneco	X	X	X		X
Texas Eastern	X	X			

Pipeliners & Distributors

Amer Nat'l Res	X	X			X
Ark La Gas	X				
Columbia Gas System	X	X			X
Houston Nat'l Gas	X	X	X		
Northern Natl	X	X			X
Northwest Energy	X	X			
Peoples Gas	X				
Pioneer	X	X	X		
Texas Gas Trans	X	X			
Transco	X				
Untd Ener Res	X				

Distributors

Atlanta Gas					
Brooklyn Union	X				
Consol Natl Gas	X	X			
Entex	X	X		X	
National Fuel Gas	X				
NICOR	X	X			
No Indiana Pub Serv	X				
Okla Natl Gas	X				
Pacific Lighting	X	X			
Southern Union	X				
Kansas-Nebr Gas	X	X			

Source: Value Line and Standard and Poor's 1977

APPENDIX D

Companies Probably Affected by Legislative
Proposals On Horizontal Divestiture (S-1927)
(Companies with annual production of at least
55 million barrels of liquids
or 302.5 billion cubic feet of gas.)

Amerada Hess	Mobil
Atlantic Richfield	Panhandle Eastern
Cities Service	Pennzoil
Coastal States Gas	Phillips
Consolidated Natural Gas	Shell
Continental	Standard of California
Diamond Shamrock	Standard of Indiana
El Paso	Sun
Exxon	Superior
Getty-Skelly	Tenneco
Gulf	Texaco
Louisiana Land and Exploration	Union
Marathon	

SOURCE: American Petroleum Institute (API)

Appendix E

Financial and Operating
Summaries

SOURCES: Annual Reports, 1972 - 1976; Fortune 500 list,
1977; Standard and Poor's, Moody's, 1977.

Amerada Hess

The 16th ranked U.S. oil company, Fortune 500 Industrials ranks Amerada Hess 48th. The company is largely a refiner with a 700,000 B/D fuels refinery in the Virgin Islands. Hess, however, spent more than \$216 million (74% of expenditures) on exploration and production in 1976.

The refinery is supplied by foreign crude. Products are then shipped to Northeast and Gulf ports.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>
Operating Revenue	\$3,915	
Net Income	153	
<u>Gross Plant</u>		
Exploration and Production	\$1,430	56.2%
Refining	698	27.5
Marketing	214	8.4
Transportation	191	7.6
Other	8	.3
Total Gross Plant	<u>\$2,541</u>	<u>100.0%</u>

The company is a net buyer of crude and a net seller of product:

	<u>000 B/D</u>	<u>%</u>
Refined Product Sales	580	100.0%
Refining Capacity	798	138
Crude Production	91	16

The company has very active production development program in the North Sea. Amerada Hess has no "other energy" activities.

Financial Summary (\$ million)

	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>
Revenue	\$3949	\$3214	\$3783	\$1920
Net Income	153	128	202	246
Funds from Operations	330	289	358	354
New Investment	313	305	447	257
Gross Investment	2541	2277	2021	1648

American Petrofina

Petrofina, ranked 212th by Fortune 500, is 69% owned by Petrofina S.A., a Belgian Company. The U.S. affiliate is an integrated domestic oil company that has expanded into paints, varnishes and chemicals.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Gross Plant</u>
Operating Revenue	\$1,071		
Net Income	46		
Exploration and Production		43.3%	\$251
Manufacturing		36.4	211
Marketing		13.9	80
Transportation		6.4	37
Total Gross Plant		100.0%	\$579

The company is a net buyer of crude:

	<u>000 B/D</u>	<u>%</u>
Refined Product Sales	161	100.0%
Refining Capacity	190	118
Crude Production	20	12

The company does not participate in "other energy".

Other Energy Activities

NONE

Other Activities

The company acquired the Standard Paint and Varnish Company in December and has commenced the manufacturer and sale of marine coatings and other special paints.

Financial Summary (\$ millions)

	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>	<u>1972</u>
Revenue	\$1071	\$986	\$953	\$448	\$285
Net Income	46	40	87	37	18
Funds from Operations	74	75	119	58	35
New Investment	171	61	57	55	27
Gross Plant	579	520	472	426	298

Ashland Oil, Inc.

Ashland Oil is the 14th largest U.S. oil company and the 43rd among the Fortune 500 Industrials. The company is almost totally domestic.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Gross Plant</u>
Operating Revenue	\$4,348		
Operating Income*	\$336	100.0%	
Exploration & Production	36	10.7	\$439
Refining & Marketing	213	63.3	593
Chemicals	16	4.8	176
Construction	35	10.4	282
Canadian	30	8.9	258
Coal	12	3.6	N/A
Other	(6)	(1.7)	79
Operating Income	\$336	100.0%	\$1,827

*Excludes interest, overhead, and taxes

The company is a net purchaser of crude oil and petroleum products.

	<u>000 B/D</u>	<u>%</u>
Petroleum Product Sales	485	100.0%
Refining Capacity	395	81
Crude Production	23	5

The company is very active in other energy activities.

A. Other Energy Activities

1. Coal

	<u>Reserves</u>	<u>Production</u>
Arch Minerals (48.9%)	-	13.9 million tons
Ashland Coal Co.	500+ million tons	None

"In seven years of existence, Arch Minerals has grown to become the nation's seventh largest coal producer".* Arch operates six surface mines: three in Wyoming, two in Illinois and one in Alabama.

Additions to Arch's capacity include a new 2 million ton/year mine in Illinois. Engineering studies are being made to expand Arch's operations in Wyoming. In addition, Arch has signed several joint venture agreements with Union Pacific for the production of coal.

Ashland Coal was formed in 1975 to exploit eastern coal. Production is expected to begin in 1978.

*Source - Annual Report, 1976.

2. Oil Shale

Ashland is participating with Occidental Petroleum (tract C-b) in the development of an in-situ process. The fifth retort is currently being tested and results are encouraging.*

3. H-Coal

Construction has begun on a pilot plant to manufacture 1500 B/D of oil from 600 tons/day of coal. Start-up is expected in late 1978. ERDA funds the major portion (80%) of this effort. Other partners are Standard of Indiana, Conoco, Mobil, EPRI, State of Kentucky.

B. Other Activities

1. Ashland Construction

Gross Plant	\$282 million	9/30/76

Ashland has been in heavy and highway construction since 1966.

2. Ashland Chemicals

Gross Plant	\$176 million	9/30/76

Ashland manufactures a wide variety of chemical and petrochemical products.

*Ashland, on November 17, 1978, gave notice of its election to withdraw from the oil shale partnership.

Ashland

Financial Summary (\$ Millions)

	<u>Total(1)</u>	<u>Petroleum</u>	<u>Chemical</u>	<u>Const.</u>	<u>Other*</u>
<u>1976</u>					
Revenue	\$4,400	3,019	724	589	--
Net Income	136	249	16	35	--
Funds from					
Operations	278				
New Investment	294	199	26	31	6
Gross Investment	1,825	1,032	176	281	79

<u>1975</u>					
Revenue	3,936	2,701	623	529	--
Net Income	119	216	13	35	--
Funds from					
Operations	240				
New Investment	317	198	29	36	14
Gross Investment	1,627	917	152	256	73

<u>1974</u>					
Revenue	3,561	2,316	656	492	--
Net Income	110	124	43	42	--
Funds from					
Operations	204				
New Investment	203	105	12	32	25
Gross Investment	1,391	770	153	209	58

<u>1973</u>					
Revenue	2,382	1,449	427	429	--
Net Income	83	132	33	37	--
Funds from					
Operations	176				
New Investment	184	112	14	27	3
Gross Investment	1,237	707	149	189	17

<u>1972</u>					
Revenue	2,076	1,305	352	367	--
Net Income	62	104	23	29	--
Funds from					
Operations	154				
New Investment	264	175	23	35	3
Gross Investment	1,148	673	141	170	14

(1) Includes Ashland Canada

* Includes coal and synfuels

Atlantic Richfield Company

Arco is ranked 8th among oil companies and 15th among the Fortune 500. A predominantly domestic company, Arco sold its Canadian production for \$340 million and acquired Anaconda Co. for 8.1 million shares and \$96 million. Arco owns 20% of the Prudhoe Bay field and Alyeska Pipeline.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Gross Plant</u>
Operating Revenue	\$8,917		
Operating Income*	\$1,076	100.0%	
Petroleum 867		80.6	\$7,015
Chemicals 87		8.1	707
Other & Adjustments 122		11.3	119
Total Operating Income*	\$1,076	100.0%	\$7,841

*Excludes interest, overhead, and taxes.

In the U.S., the company is a net purchaser of crude and is balanced regarding manufactured products and sales.

	<u>000 B/D</u>	<u>%</u>
Refined Product Sales	723	100.0%
Refining Capacity	772	107
Crude Production	363	50

In spite of the heavy development costs caused by the Alaskan discoveries, Arco has remained relatively active in "other energy".

Other Energy Activities

Coal

The company holds over 1 billion tons of coal in the Powder River Basin. All coal is "compliance rated". Production at the Black Thunder mine will begin in late 1977. Maximum annual production to meet existing contracts is 14.6 million tons per year. Operating capacity at Black Thunder is expected to be 20 million tons/year. A second mine, Coal Creek, will be opened in 1981.

Uranium and Minerals

The company acquired The Anaconda Company in January, 1977. Anaconda is a producer of copper (164,000 short tons) aluminum (527 million lbs.), and uranium oxide (4.9 million lbs.).

Heavy Oils

Arco invested \$35 million in 1973 for a 30% interest in a 125,000 B/D oil plant at the Athabasca tar sands; total cost now estimated at \$2.5 billion. This investment was written off in 1974.

Oil Shale

Arco withdrew from tract C-b but has maintained its partnership (60% interest) in Colony Development Corporation. Member of Paraho Project.

Financial Summary (\$ Millions)*

	<u>Total</u>	<u>Petroleum</u>	<u>Chemicals</u>	<u>Corporate</u>
<u>1976</u>				
Revenue	\$9,256	7,102	534	
Net Income	575	869	87	
Funds from				
Operations	1,203			
New Investment	1,827	1,630	184	12
Gross Investment	9,123	8,297	707	119

<u>1975</u>				
Revenue	7,854	7,981	542	
Net Income	350	662	85	
Funds from				
Operations	953			
New Investment	1,751	1,634	102	15
Gross Investment	8,067	7,412	539	116

<u>1974</u>				
Revenue	7,305	7,607	546	
Net Income	475	606	123	
Funds from				
Operations	953			
New Investment	1,163	1,073	54	35
Gross Investment	6,825	6,257	449	119

<u>1973</u>				
Revenue	4,562	4,492	303	
Net Income	270	444	28	
Funds from				
Operations	573			
New Investment	500	449	22	29
Gross Investment	5,963			126

<u>1972</u>				
Revenue	3,899	3,757	280	
Net Income	193	320	14	
Funds from				
Operations	479			
New Investment	363	337	17	20
Gross Investment	5,733			89

*Functional data excludes taxes & overhead.

Cities Service

Cities is ranked 45th among the Fortune 500 and 15th among oil companies. All profits and 99% of revenue were generated domestically.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Gross Plant</u>
Operating Revenue	\$3,965		
Operating Income	\$471	100.0%	
Production - U.S.	\$341	72%	\$1,693
Production - Foreign	(25)	(5)	389
Refining & Marketing	52	11	704
Cities Service			
Gas Company	88	18	420
Chemicals	41	9	335
Minerals	(16)	(3)	428
Other	(10)	(2)	28
Total Operating Income	\$471	100.0%	\$3,997

Refining and marketing product sales are relatively well-balanced.

Cities, however, is a net buyer of crude.

	<u>000 B/D</u>	<u>%</u>
Refined Product Sales	290	100.0%
Refining Capacity	268	92
Crude Production	106	37

The company's "other energy" is centered about Syncrude Canadian.

A. Other Energy Activities

1. Coal

Reserves	None
Production	None

The company unsuccessfully attempted, in 1974, to buy Peabody Coal from Kennecott Copper Company.

2. Tar Sands

Reserves	245 million barrels
Production	Start-up 1978

The company has a 22% interest in Syncrude Canadian Ltd. This interest can be reduced to 12.6% if options by the Alberta government and the Alberta Energy Company are exercised. The mining and processing facility will have an ultimate capacity of 125,000 B/D. Cities Service holds other tar sand leases and is participating in the design of an in-situ process.

2. Oil Shale

The company owns 10,000 acres of oil shale properties in Colorado.

B. Other Activities

1. Minerals

Gross Plant	\$428 million	12/31/76

The company mines, manufactures and sells a variety of minerals including copper, zinc concentrates and sulphuric acid.

2. Chemicals

Gross Plant	\$335 million	12/31/76

Cities Service manufactures and sells carbon black, iron oxides, ethylene, propylene and other chemicals and petrochemicals.

3. Real Estate

The company has sold its New York properties.

4. Other

The company has continued its interest in Seadock, the planned offshore tanker facility in the Gulf of Mexico.

Cities Service

Financial Summary (\$ Millions)

	<u>Total</u>	<u>Petroleum</u>	<u>Chemical</u>	<u>Minerals</u>	<u>Alt. Fuels</u>
<u>1976</u>					
Revenue	\$4,006	3,058	376	219	--
Net Income	217	368	41	(16)	
Funds from					
Operations	529				
New Investment	651	426	13	23	138
Gross Investment	3,997	2,535	335	428	252

<u>1975</u>					
Revenue	3,238	2,532	302	144	---
Net Income	138	257	12	(27)	---
Funds from					
Operations	407				
New Investment	573	384	21	50	93
Gross Investment	3,684	2,391	325	408	121

<u>1974</u>					
Revenue	2,847	2,159	303	137	---
Net Income	204	299	24	(23)	---
Funds from					
Operations	443				
New Investment	587	409	19	91	46
Gross Investment	3,412	2,261	309	365	53

<u>1973</u>					
Revenue	2,066	1,464	240	137	---
Net Income	147	172	26	2	---
Funds from					
Operations	302				
New Investment	482	369	13	73	5
Gross Investment	3,291	2,274	313	279	6

<u>1972</u>					
Revenue	1,870	1,240	220	110	---
Net Income	112	116	23	6	---
Funds from					
Operations	309				
New Investment	327	229	13	62	---
Gross Investment	3,052	2,086	304	205	---

Clark Oil and Refining Corporation

Clark is ranked 285th among the Fortune 500 and 25th among U.S. oil companies. Although Clark purchases crude from a wide variety of foreign sources, the integrated oil and the chemical operations are domestic. Since the embargo and the reduction of Canadian crude supplies to the U.S., Clark has had trouble supplying its two refineries with sufficient crude.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Capital Assets</u>
Operating Revenue	\$721		
Operating Income	\$25	100%	
Petroleum	16	64%	\$198
Chemicals	7	28	10
Oil & Gas	<u>2</u>	<u>8</u>	<u>64</u>
Operating Income	\$25	100%	\$272

The company is a substantial net buyer of crude.

	<u>000 B/D</u>	<u>%</u>
Refined Products Sold	104	100.0%
Refining Capacity	130	125
Crude Production	1	1

The company has no activity in "other energy".

"It is hoped that in the next five years average annual capital expenditures can be held at about the 1976 level of \$12.5 million."*

Financial Summary (\$ millions)

	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>	<u>1972</u>
Total Revenue	\$724	\$615	\$593	\$419	\$289
Net Income	9	5	(7)	31	8
Funds from Operations	26	21	11	42	21
New Investment	15	46	67	20	13
Gross Investment	274	277	240	182	170

*Source, Annual Report, 1976.

Continental Oil

Conoco is ranked 17th among the Fortune 500 Industrials and 9th among the oil companies. A predominantly domestic company, 34.9% of revenue and 17.5% of operating income were generated in foreign areas.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Investment*</u>
Operating Revenue	\$8,353		
Net Income	460	100.0%	
Petroleum-U.S.	194	42.2%	\$1,238
Petroleum-Foreign	80	17.3	824
Coal	175	38.0	686
Chemicals	60	13.1	134
Minerals	(12)	(2.6)	21
Corporate	(37)	(8.0)	68
Net Income	\$460	100.0%	\$2,971

*Net property plus advances and investments

In the U.S., Conoco is a net purchaser of crude oil:

	<u>000 B/D</u>	<u>%</u>
Petroleum Product Sales	397	100.0%
Refining Capacity	373	94
Crude Production	197	50

51% of Conoco's net income came from coal and chemicals. Conoco is very active in "other energy" activities.

A. Other Energy Activities

1. Coal (Consolidation Coal Company - acquired 1966)

Gross Plant	\$947 million	12/31/76
Reserves	14.3 billion tons	
Production	50.6 million tons	

Under development: 4.8 million tons/year 1977 and 1978

- (1) DeSoto Mine - Illinois. This new mine will produce 2.0 million tons/year in 1977.
- (2) Amonate Mine - West Virginia. This reopened mine was closed because of low prices in 1961. Production will begin in 1977.
- (3) A small new mine will be completed in Western Pennsylvania in 1977.
- (4) Other projects include expansions and construction of a plant to recover metallurgical coal fines from the slurry pond of a preparation plant.

2. Uranium and Metals

Gross Plant	\$28 million	12/31/76
Production	656 thousand lbs.	

Net production came from Conoco's 66.7% owned mine in Texas. An expansion of the mill is scheduled for completion in 1977. Delineation and planning work for reserves in New Mexico continues. Net income in 1976 was a loss of \$12 million.

3. Synthetic Fuels

Liquefaction - (a) Conoco is a partner in the H-Coal test operated by Ashland. Conoco's cost this year is about \$1.2 million. (b) Experimentation, with ERDA, with zinc chloride catalyst process, developed by Consol Coal 1963-1968.

Gasification - high BTU (a) CO₂ Acceptor process with ERDA. Developed by Consol Coal in early 1960's. (b) Slagging Lurgi Fixed Bed Process. Demonstration Plant. Engineering phase, \$24 million will be spent by ERDA in 1978.

4. Oil Shale Activities

None

5. Other Activities

1. The Arizona copper project was indefinitely postponed because of the high costs to develop the deposit.

2. The underground coal slurry prototype system has worked successfully for a year. A commercial system will be completed in a mine within two years.

Continental Oil

Financial Summary (\$ Millions)

	<u>Total</u>	<u>Petroleum</u>	<u>Chemicals</u>	<u>Coal</u>	<u>Other</u>
<u>1976</u>					
Revenue	\$8,353	6,574	407	1,278	93
Net Income	460	274	60	175	(12)
Funds from					
Operations	851				
New Investment	878	690	18	139	31
Gross Investment	5,463	4,242	215	947	60

<u>1975</u>					
Revenue	7,667	6,119	298	1,157	93
Net Income	331	177	32	142	(12)
Funds from					
Operations	726				
New Investment	881	647	21	196	17
Gross Investment	4,953	3,853	201	846	53

<u>1974</u>					
Revenue	7,365	6,105	396	820	24
Net Income	307	266	68	44	(9)
Funds from					
Operations	638				
New Investment	759	568	15	149	27
Gross Investment	4,401	3,456	185	667	93

<u>1973</u>					
Revenue	4,510	3,736	232	521	4
Net Income	224	287	21	(13)	(6)
Funds from					
Operations	554				
New Investment	430	332	7	73	18
Gross Investment	3,865	3,071	174	536	84

<u>1972</u>					
Revenue	3,689	2,995	208	486	26
Net Income	178	174	17	17	(5)
Funds from					
Operations	398				
New Investment	515	404	7	78	26
Gross Investment	3,701	2,962	182	481	76

Exxon Corporation

Exxon is the world's largest petroleum company, deriving about 55% of its net income from domestic operations. Chemicals contributed about 8% of net income. It is ranked first in the Fortune 500 Industrials.

<u>Financial (\$ Millions)</u>	<u>1976</u>	<u>% of Total</u>	<u>Employed Assets</u>
Operating Revenue	\$51,626		
Net Income - Total	\$2,641		
Petroleum - U.S.	\$1264	47.9%	\$ 5,800
Petroleum - Foreign	1277	48.4	8,000
Marine	92	3.5	1,600
Chemicals - U.S.	148	5.6	500
Chemicals - Foreign	86	3.3	900
Minerals	(8)	(.3)	-
Coal and Nuclear	(43)	(1.6)	200
Other Operations	(9)	(.3)	300
Total Operations	\$2807		\$17,300
Non-Operating Income	71	2.7	4,600
Sub-Total	\$2878		\$21,900
Less: Interest	(237)	(9.0)	
Total Income	\$2,641	100%	

In the U.S., Exxon is a net buyer of crude and petroleum products.

	<u>000 B/D</u>	<u>%</u>
Refined Product Sales	1830	100.0%
Refining Capacity	1259	69%
Crude Production	812	44%

The company owns a 29.33% interest in Aramco and 11.73% of crude oil and gas production and reserves. The Saudi government owns 60% and wants 100% ownership of the production and reserves. Operations in Venezuela were nationalized 12/31/75.

The company has announced a \$22 billion capital investment program for the next four years; \$14 billion for exploration and production, \$5 billion for refining and marketing, \$2 billion for chemicals, and \$1 billion for "other".

Other Energy Activities

1. Coal

Reserves	8.4 billion tons
Production	2.8 million tons/year

Mines in operation - one mine, (Carlinville, Illinois) is currently producing.

- (1) Monterey #2 - Illinois. Production will start in 1977. Design capacity is 3.6 million tons/year.
- (2) Rawhide - Wyoming. Initial production of five million tons will start in 1977. Design capacity is twelve million tons/year.
- (3) Wayne - West Virginia. Production expected in 1978. Design capacity is two million tons/year. Exxon has a 50% interest in this mine.
- (4) Caballo - Wyoming. Production expected in mid-1979. Design capacity is five million tons/year.

2. Uranium

Production 1.5 million lbs. U₃O₈

Under development is an expansion of the existing Wyoming mine that will increase mill capacity from 2,000 to 3,000 tons/day.

Additional production is expected from a mine and mill (550 tons/day capacity) near San Antonio, Texas.

3. Tar Sands

Exxon has a 31.25% in Syncrude Canadian Ltd., a consortium building a 125,000 B/D (\$2.5 billion) plant designed to manufacture crude from the Athabasca tar sands. Commercial production is planned for 1978.

4. Nuclear

- a. Exxon owns a fuel fabrication plant. Reload fuel fabrication orders by utilities increases sharply in 1976. Backlog at year end for future deliveries of uranium and fabricated fuel totalled \$1.6 billion.
- b. Exxon had had a joint study with General Electric concerning a gaseous centrifuge enrichment program. GE dropped out in 1972, and Exxon continues alone.
- c. In 1975, Exxon announced a joint venture with the Avco Corporation to work on laser isotope separation.

5. Coal Gasification and Liquefaction

Exxon has spent nearly \$50 million since 1966. Current work; liquefaction - Donor Solvent Process. Detailed engineering and procurement leading to a pilot plant. Cost in 1978, \$60.6 million, 50% by ERDA. Also testing fluid coke process with ERDA. Current work, high BTU gasification; bench testing catalytic gasification process.

6. Oil Shale

Participated in Paraho (\$450,000) and holds oil shale reserves estimated at 10,000 acres.

Other Activities

1. Minerals

Exxon found a 75 million ton zinc-copper deposit in Wisconsin. Delineation continues.

2. Chemicals

Capital expenditures increased to \$383 million. Site preparation for a \$500 million olefins plant continues.

3. Refining

The company completed a \$500 million refinery expansion at Baytown, Texas in early 1977.

Exxon

Financial Summary (\$ Millions)

	<u>Total</u>	<u>Petroleum</u>	<u>Chemicals</u>	<u>Other</u>
<u>1976</u>				
Revenue	\$52,585	48,110	3,238	278
Net Income	2,641	2,633	234	
Funds from				
Operations	4,679			
New Investment	5,070	4,573	383	114
Gross Investment	29,502	26,446	2,346	710

<u>1975</u>				
Revenue	48,761	44,964	2,594	238
Net Income	2,503	2,510	195	
Funds from				
Operations	3,574			
New Investment	4,520	4,188	258	74
Gross Investment	26,092	23,588	1,914	590

<u>1974</u>				
Revenue	45,793	42,087	2,787	147
Net Income	3,030			
Funds from				
Operations	4,873			
New Investment	3,654	3,488	121	45
Gross Investment	25,864	23,659	1,666	539

<u>1973</u>				
Revenue	28,476	26,338	1,563	121
Net Income	2,451			
Funds from				
Operations	3,983			
New Investment	2,910	2,812	63	35
Gross Investment	23,765	21,721	1,556	488

<u>1972</u>				
Revenue	22,436	20,683	1,258	130
Net Income	1,559			
Funds from				
Operations	2,793			
New Investment	2,490			
Gross Investment				

Getty Oil Company

Getty is the 18th ranked fully integrated oil company. Fortune ranks it 67th among industrials. 81.3% of revenue and 66.0% of net was domestically generated. (All data includes Skelly Oil and Mission Corporation, merged into Getty 1/31/77.)

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>
Operating Revenue	\$3,218	
Operating Income	\$781	100.0%
Petroleum - U.S.	452	57.9
Petroleum - Foreign	262	33.5
Other - U.S.	64	8.2
Other - Foreign	<u>3</u>	<u>.4</u>
Operating Income	\$781	100.0%

Gross Plant

Exploration & Production	\$3,145	69.7%
Transportation	287	6.4
Manufacturing	561	12.5
Marketing	231	5.1
Natural Gas Plants	166	3.7
Other	<u>115</u>	<u>2.6</u>
	\$4,505	100.0%

Getty's domestic crude production, refinery capacity and product sales are almost perfectly balanced.

	<u>000 B/D</u>	<u>%</u>
Product Sales	285	100.0%
Refining Capacity	279	98
Crude Oil Production	286	101

In "other energy" Getty is particularly active in uranium.

A. Other Energy Activities

Uranium

Getty holds uranium reserves in Australia and in Wyoming. Overburden removal began in May 1976, on the Wyoming properties. Milling of this is expected in early 1977 or 1978 at a rate of 1,000 tons of uranium/day.

Oil Shale

Getty holds reserves, but is inactive.

Geothermal

Getty holds reserves, but is inactive.

B. Other Activities

1. Real Estate

Getty owns 97,000 acres of land in Los Angeles, Ventura, Orange, Santa Barbara, Kern and Fresno counties. Agricultural activities were conducted on about 13,000 acres of that land.

2. Minerals

Getty holds 50% interest in a copper mineralization discovery in Arizona. Plans for production are not expected until the 1980's.

Financial summary (\$ million)

	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>	<u>1972</u>
Revenue	\$3279	\$3175	\$2912	\$1751	\$1566
Net Income	258	257	334	122	87
Funds from Operations	614	630	608	377	303
New Investment	792	693	591	544	360
Gross Plant	4505	4090	3794	3478	3169

Gulf Oil

Gulf is ranked as the fifth largest petroleum company and the 7th largest industrial company in the U.S. 44.7% of total revenue and 53.9% of net income were generated in the U.S. in 1976.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Employed Assets</u>
Operating Revenue	\$18,117		
Net Income	816	100.0%	
Petroleum-U.S.	365	44.7%	\$3,886
Petroleum-Foreign	317	38.8	2,765
Chemicals-U.S.	94	11.5	697
Chemicals-Foreign	54	6.6	271
Nuclear	(11)	(1.3)	N.A.
Minerals-U.S.	(10)	(1.2)	287
Minerals-Foreign	5	.6	31
Other	2	.3	1,321
Total Net Income	\$816	100.0%	\$9,258

In the U.S., Gulf is a net buyer of crude.

	<u>000 B/D</u>	<u>%</u>
Refined Product Sales	829	100.0%
Refining Capacity	885	107
Crude Production	338	32

The company lost its equity interests in Kuwait and Venezuela through nationalization but has access to Kuwait crude through a purchase agreement. This agreement allows Gulf to buy at a discount of \$.15/bbl. Because Kuwaiti crude was priced \$.50-\$.60/bbl. above Saudi crude for the past few months, Gulf was largely priced out of the market. Gulf's domestic production has declined 29% in the past 5 years, from 477,000 B/D in 1972 to 338,000 B/D in 1976.

Equity Crude (000 B/D)

	<u>Difference</u>	<u>1976</u>	<u>1972</u>
United States	(139)	338	477
Canada	(33)	71	104
Latin America	(139)	67	206
Africa	(228)	225	453
Middle East	(1,842)	--	1,842
Other	(3)	2	5
Total	(2,384)	703	3,087

Gulf is very active in "other energy" operations.

Other Energy ActivitiesCoal

Production   7.9 million tons

Planned production:

- a) McKinley Mine, New Mexico currently produces 1 million tons/year. When expansions are completed in 1979, capacity will be 5 million tons/year.
- b) Two new mines in 1978 and 1979 in Western Kentucky will replace depleting mines.
- c) A new mine in Wyoming will be in production in the early 1980's with an ultimate capacity of 10 million tons/year.

Uranium

1976 production at Rabbit Lake, Saskatchewan was 1.9 million lbs. of yellowcake.

New production will come from:

- a) Mt. Taylor, New Mexico. The mine will be completed in 1979. Estimated reserves exceed 100 million lbs. Total mine investment will be about \$400 million.
- b) Mariano Mine, New Mexico. Production will begin late this year. Reserves total 3.5 million lbs.
- c) West Largo, New Mexico. Preliminary design work is underway. Production is expected in the early 1980's.

Oil Shale

Tract C-a with Standard Oil of Indiana. Lease bonus committed to the government was \$210.4 million. Current expenses exceed \$78 million on this tract (Rio Blanco Project). Companies plan to initiate an in-situ process this year. Gulf is a member of Paraho project.

Synthetic Fuels

Gulf operates the federally financed Solvent Refined Coal pilot plant at Fort Lewis, Washington and wants additional support to build a larger 6000 ton/day unit. Estimated cost is \$400 million in 1976 dollars. ERDA is giving \$12 million in 1978 for the initiation of a demonstration plant.

Tar Sands

Through Gulf Canada, owns 16.75% interest in Syncrude Canadian Ltd. to build a 125,000 B/D plant for \$2.5 billion.

Nuclear

Gulf has a 50% interest in the light water fuel reprocessing plant at Barnwell, South Carolina. General Atomic, a joint venture with Royal Dutch Shell, eliminated its last commitments for new high temperature gas cooled reactors. Gulf's nuclear losses dropped to \$11 million in 1976. Gulf nuclear investment exceeds \$350 million.

Solar

Gulf participates through General Atomic, in which Gulf and Royal Dutch Shell own 50%. Gulf sold this 50% to Royal Dutch in late 1972 for \$200+ million.

Other

Gulf had, in the past, been active in real estate development. This activity has been terminated.

Gulf Oil

Financial Summary (\$ Millions)

	<u>Total</u>	<u>Petroleum</u>	<u>Chemicals</u>	<u>Nuclear</u>	<u>Minerals</u>
<u>1976</u>					
Revenue	\$18,403	16,835	1,062	---	216
Net Income	816		148	(11)	(5)
Funds from					
Operations	1,562				
New Investment	1,742	1,459	150		91
Gross Investment	12,475	10,847	1,054		421

<u>1975</u>					
Revenue	16,042	14,943	812	---	77
Net Income	700	672	84	(14)	(26)
Funds from					
Operations	1,539				
New Investment	1,546	1,145	212		80
Gross Investment	11,886	10,498	915		364

<u>1974</u>					
Revenue	18,201	16,983	895	21	53
Net Income	1,065	1,014	176	(97)	(22)
Funds from					
Operations	1,797				
New Investment	1,661	1,546	108		
Gross Investment	11,845	10,957	710		

<u>1973</u>					
Revenue	9,996	9,309	454	33	47
Net Income	800	924	27	(133)	(8)
Funds from					
Operations	1,560				
New Investment	979	932	24		
Gross Investment	11,123	10,325	616		

<u>1972</u>					
Revenue	7,708	7,172	363	34	42
Net Income	447	507	(25)	(31)	(5)
Funds from					
Operations	1,090				
New Investment	859	814	19		
Gross Investment	10,862	10,027	615		

Kerr-McGee Corporation

Ranked 114th by Fortune Magazine, Kerr-McGee is the 20th largest oil company. Although they are actively developing foreign crude reserves and production, particularly in the North Sea, the company is primarily domestic. It is heavily diversified into uranium mining and milling, chemicals, and coal.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Gross Plant</u>
Revenue	\$1,962		
Net Income	\$134	100.0%	
Petroleum	81	60.4	\$ 811
Chemicals	32	23.9	491
Nuclear	25	18.7	243
Other	(4)	(3.0)	102
Net Income	\$134	100.0%	\$1,647

In the U.S., the company is a net purchaser of both refined products and crude oil.

	<u>000 B/D</u>	<u>%</u>
Refined Products Sold	218	100.0%
Refining Capacity	181	83
Crude Production	38	17

The company is very active in other energy.

Other Energy Activities

Coal

The company has reserves of steam and metallurgical coal of approximately 2.8 billion tons.

Under development:

- 1) Jacobs Ranch open-pit mine near Gillette, Wyoming. Deliveries of low sulphur steam coal are expected to begin in early 1978. Capacity of 14.5 million tons/year will be reached in 1981.
- 2) East Gillette No. 16. First sales of coal are expected in 1979. Capacity will be 4 million tons/year.
- 3) Permits for a third mine near Gillette have been requested.
- 4) Evaluation of other properties continues.

Nuclear

Kerr-McGee delivered 4,018,000 lbs. of U_3O_8 in 1976. The company's ore comes largely from seven mines near Grants, New

Mexico. Uranium hexafluoride production at the Oklahoma facility was 3,921,000 kilograms.

Under development:

- 1) An expansion of the No. 1 mine near Gallup, New Mexico.
- 2) Completion of the Bill Smith mine in Wyoming. Initial production is anticipated in early 1977.
- 3) Two more underground mines, several open pit mines, and an ore processing facility will be built in Wyoming.

Oil Shale

The company is a member of the Paraho Project.

Other Activities

Offshore Drilling

The company added two new rigs, bringing the total number to 18.

Chemicals

Two new facilities were added in late 1976: a phosphate mine in Florida and a synthetic rutile plant in Alabama.

The trona plant expansion (\$200 million) will be completed on schedule in late 1977. Capacity will be increased from 1.45 million tons to 2.75 million tons/year.

Kerr-McGee

	<u>Total</u>	<u>Petroleum</u>	<u>Chemicals</u>	<u>Nuclear</u>	<u>Coal & Other</u>
<u>1976</u>					
Revenue	\$1962	\$1421	437	97	1
Net Income	134	81	32	25	(4)
Funds from					
Operations	237				
New Investment	367	185	125	35	21
Gross Investment	1647	811	491	243	102
<u>1975</u>					
Revenue	1807	1327	414	57	-
Net Income	131	77	49	6	(2)
Funds from					
Operations	215				
New Investment	273	142	73	34	24
Gross Investment	1337	170	372	215	80
<u>1974</u>					
Revenue	1561	1139	346	65	-
Net Income	116	77	42	(2)	-
Funds from					
Operations	193				
Net Investment	251	184	34	25	9
Gross Investment	1146	585	302	197	62
<u>1973</u>					
Revenue	735	420	243	64	-
Net Income	63	49	12	1	-
Funds from					
Operations	125				
New Investments	128	95	11	15	8
Gross Investment	969	446	264	181	78
<u>1972</u>					
Revenue	685	394	219	67	-
Net Income	49	39	9	2	(1)
Funds from					
Operations	127				
New Investments	91	59	8	17	7
Gross Investment	877	381	259	164	73

Marathon Oil

Ranked by Fortune as 55th among its largest 500, Marathon is a full integrated, primarily domestic oil company that is 17th among petroleum companies. During 1976, Marathon made two major acquisitions:

- a) Pan Ocean Oil, a predominantly foreign oil and minerals company (\$321 million)
- b) Energy Corporation of Louisiana (ECOL), whose primary asset is a new 200,000 B/D domestic refinery designed to maximize middle distillate yields (\$401 million)

Marathon expects to develop the resources provided by these acquisitions. These include the Brae Field in the U.K. sector of the North Sea in which Marathon holds a 38% interest in blocks 16/7 and 16/3 and a 48% interest in block 16/2. Evaluation wells have been drilled and testing is being completed. With Pan Ocean, Marathon also obtained a wide range of interests in foreign coal, uranium, zinc, and other minerals, and domestic fluorspar.

The company will spend an additional \$160 million to increase the gasoline yield at the ECOL refinery.

Marathon does not release functional earnings. During 1976, however, operating revenue was \$3,829 million and net income was \$196 million. Gross Plant was \$2,107 million.

In the U.S., Marathon is net purchaser of crude and products.

	000 B/D	%
Petroleum Product Sales	368	100.0%
Refining Capacity	526*	143
Crude Production	168	47

Bucking the trend, Marathon's domestic crude runs increased from 164,000 B/D to 168,000 B/D.

*ECOL, acquired in mid 1976, is 200,000 B/D of this total

A. Other Energy Activities

None

B. Other Activities

1. Acquisition of ECOL

Marathon acquired a new 200,000 B/D refinery in Louisiana for \$401 million. They plan to spend an additional \$161 million to revise its yield pattern.

2. Acquisition of Pan Ocean

With the acquisition of Pan Ocean, Marathon obtained a wide range of interests in coal, uranium, fluorspar, zinc and other minerals. However, most of Pan Ocean's assets come from four discovery wells in the North Sea. Domestically, Marathon is expanding the fluorspar operation, having raised its percentage interest in it from 21% to 95%.

Financial summary (\$ million)

	<u>Total</u>	<u>Exploration Production</u>	<u>Ref, Mkt, Trans</u>	<u>Other*</u>
<u>1976</u>				
Revenue	\$3856			
Net Income	196			
Funds from Operations	354			
New Investment	1153	641	506	6
Gross Investment	3385	1813	1518	54

<u>1975</u>				
Revenue	3189			
Net Income	128			
Funds from Operations	269			
New Investment	360	256	101	3
Gross Investment	2403	1320	1035	48

<u>1974</u>				
Revenue	3177			
Net Income	170			
Funds from Operations	298			
New Investment	305	253	49	3
Gross Investment	2159	1202	911	46

<u>1973</u>				
Revenue	1859			
Net Income	143			
Funds from Operations	257			
New Investment	169	130	36	3
Gross Investment	1934	1018	871	45

<u>1972</u>				
Revenue	1509			
Net Income	80			
Funds from Operations	182			
New Investment	192	135	55	2
Gross Investment	1903	1010	851	42
-----				

*Includes Research

Mobil Corporation

Mobil ranks 3rd in world petroleum product sales and fifth in domestic refining capacity. In 1976, Mobil completed its purchase of Marcor, consisting of Montgomery Ward and Container Corporation. Mobil is ranked 5th in the Fortune 500 Industrials.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Gross Plant</u>
Operating Revenue	\$27,621		
Net Income-Total	\$943	100.0%	
Petroleum-U.S.	430	45.6%	\$7,291
Petroleum-Foreign	342	36.2	4,803
Chemicals	78	8.3	619
Montgomery Ward	86	9.1	814
Container Corp.	38	4.0	825
Other	(31)	(3.2)	78
Total	\$943	100.0%	\$14,430

In the U.S., Mobil is a net purchaser of crude oil:

		<u>%</u>
Production Sales (000 B/D)	855	100
Refining Capacity	896	105
Crude Production	323	38

38% of Mobil's net income came from foreign operations. Mobil is a member of Aramco and is increasing its equity interest from 11% to 15% over the next four years. Mobil also has 7% of a contractual arrangement with Iran.

A. Other Energy Activities

1. Coal

Reserves	3 billion +
Production	None

Mobil is "laying the groundwork"*for its first coal mine, a joint venture with Continental Oil.

2. Uranium

Mobil has begun planning a commercial uranium plant in Texas; commercial production could begin by early 1979.

3. Solar

Mobil is committed to spend up to \$30 million on solar energy research with Tyco Solar Energy Corporation (80% owned by Mobil) to develop solar cells.

*Source - Annual Report, 1976.

4. Oil Shale

Participated in Paraho project (\$450,000) "Mobil holds substantial reserves of high grade oil shale and has been active in oil shale research."* Reserves are estimated at 22,000 acres.

5. Synthetic Fuels

Mobil is a partner in the H-Coal test operated by Ashland. Cost to Mobil in 1978 estimated at \$1.2 million. ERDA supplies 80%. Mobil is also testing (for ERDA) a method of indirect liquefaction.

B. Non-Energy Activities

Chemicals

Revenue	
Gross Plant	\$619 million

Mobil is the largest manufacturer of plastic packaging in the U.S.

C. Other

Mobil merged with Marcor on July 1, 1976. Marcor was bought at a cost of \$1.7 billion.

*Source - Annual Report, 1976.

Mobil Corp.

Financial Summary (\$ Millions)*

	<u>Total</u>	<u>Petroleum</u>	<u>Chemical</u>	<u>Wards</u>	<u>Container</u>
<u>197</u>					
Revenue	\$28,046	24,909		\$3,137	
Net Income	943	772	78	86	38
Funds from					
Operations	1,582				
New Investment	1,494	1,273	112	54	55
Gross Investment	14,429	12,094	619	814	825

<u>1975</u>					
Revenue	22,357	22,357			
Net Income	810	681	89		
Funds from					
Operations	1,137				
New Investment	1,449	1,372	77		
Gross Investment	11,796	11,279	517	---	---

<u>1974</u>					
Revenue	20,491	20,491			
Net Income	1,047	946	106		
Funds from					
Operations	1,933				
New Investment	1,639	1,559	80		
Gross Investment	11,250	10,755	495	---	---

<u>1973</u>					
Revenue	12,756	12,755			
Net Income	849	816	36		
Funds from					
Operations	1,363				
New Investment	1,334	1,297	37		
Gross Investment	10,254	9,820	434	---	---

<u>1972</u>					
Revenue	10,295	10,295			
Net Income	574	557	20		
Funds from					
Operations	1,041				
New Investment	1,180	1,153	27		
Gross Investment	9,309	8,858	451	---	---

*Excludes "Other"

Murphy Oil Corporation

Ranked 229th in Fortune, Murphy is the 23rd largest integrated oil company. While primarily a domestic integrated oil company, Murphy owns a 51.8% interest in Ocean Drilling and Exploration Co. (ODECO), the owner of the world's largest fleet of drilling barges. Murphy also owns agriculture, timber, and lumber operations.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Gross Plant</u>
Revenues	\$1,020		
Net Income	\$49	100.0%	
Petroleum-U.S.	20	40.8%	)\$ 709
Petroleum-Foreign	10	20.4	)
Drilling-U.S.	13	26.6	) 303
Drilling-Foreign	3	6.1	)
Agriculture, timber & lumber	3	6.1	34
Other	-	-	15
Net Income	\$49	100.0%	\$1,061

In the U.S., Murphy has two refineries, one of which (Superior, Wisconsin) has historically had its crude supplied from Canada. This supply is being reduced. Murphy is a domestic purchaser of both crude and products.

	<u>000 B/D</u>	<u>%</u>
Refined Product Sales	141	100.0%
Refining Capacity	138	98
Crude Production	9	7

The company has limited activity in "other energy".

Other Energy Activities

The company has an 11% interest in a group proposing to mine Canadian tar sands.

Other Activities

Murphy owns a 51.8% equity interest in Ocean Drilling and Exploration Company, one of the largest offshore drilling companies. ODECO owns 39 offshore rigs (drilling barges, jack-ups and semi-submersible) and is also active in exploration and production for its own account.

Deltec Farm and Timber Company

Capital Employed   \$31 million   12/31/76

Net land holdings of 237,000 acres (primarily in Arkansas) are used for timber and farming operations.

Murphy Oil

Financial Summary (\$ Millions)

	<u>Total</u>	<u>Petroleum</u>	<u>Drilling</u>	<u>Agriculture</u>
<u>1976</u>				
Revenue	\$1,019	814	163	21
Net Income	49	30	16	3
Funds from				
Operations	152			
New Investment	209	180	18	7
Gross Investment	1,061	709	303	34

<u>1975</u>				
Revenue	951	739	171	14
Net Income	40	23	16	1
Funds from				
Operations	142			
New Investment	251	168	67	4
Gross Investment	945	576	311	27

<u>1974</u>				
Revenue	877	741	101	12
Net Income	60	52	13	1
Funds from				
Operations	150			
New Investment	309	155	134	4
Gross Investment	858	496	304	23

<u>1973</u>				
Revenue	508	419	69	9
Net Income	52	36	9	1
Funds from				
Operations	116			
New Investment	144	100	35	6
Gross Investment	617	395	184	19

<u>1972</u>				
Revenue	388	317	52	8
Net Income	14	6	7	1
Funds from				
Operations	59			
New Investment	146	91	50	1
Gross Investment	531	343	158	20

Occidental Petroleum Corporation

Occidental is ranked 26th in the Fortune 500 and 11th among oil companies. The company is widely diversified with substantial interests in oil, chemicals and coal. Oil operations are predominantly foreign; the company's domestic petroleum revenue was 29% of total revenue, 8% of net income.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Gross Plant</u>
Operating Revenue	\$5,489		
Operating Income 27	\$341	100.0%	
Petroleum - U.S. 27		7.9	\$1,824
Petroleum - Foreign 54		15.9	
Chemicals 155		45.4	1,035
Coal 111		32.6	626
Other (6)		(1.8)	15
Operating Income	\$341	100.0%	\$3,500

As these data indicate, 78% of Occidental's operating income comes from chemicals and coal.

In the U.S., the company markets crude oil and natural gas, but neither owns nor operates refineries.

Occidental is very active in "other energy" areas.

A. Other Energy Activities

Coal

Reserves	3.4 billion tons
Production	17.6 million tons

The company, through Island Creek Coal, has six new mines under development; five are underground mines and one is surface. All are in the East. Five of these six mines will be in production in 1977. Ultimate capacity of these new mines will be 9 million tons/year.

Other mines are planned that will add an additional 10 million tons of annual capacity.

Capital expenditures for coal in 1976 were \$125 million; planned expenditures in 1977 will be about \$140 million.

Oil Shale

Occidental is continuing its joint program with Ashland Oil to develop an in-situ oil shale operation on a federal lease.

(tract C-b) in Colorado. Process was developed without government funds at a cost, to date, of approximately \$50 million.

Geothermal

Exploration efforts are planned.

Synthetic Fuels

Coal liquefaction. Testing, with ERDA, an entrained pyrolysis process begun by Occidental in 1969. Testing a 3 ton/day unit.

Occidental

	<u>Total</u>	<u>Oil & Gas Division</u>	<u>Hooker Chemicals</u>	<u>Island Creek Coal</u>
<u>1976</u>				
Sales & Services	5534	3393	1538	603
Contribution to Income	185	64	83	98
Funds from Operations	365	149	153	111
New Investment	554	359	82	108
Gross Plant	3500	1825	1035	626
<u>1975</u>				
Sales & Services	5346	3068	1585	696
Contribution to Income	175	5	86	131
Funds from Operations	419	149	149	167
New Investment	496	315	115	70
Gross Plant	3503	1475	974	531
<u>1974</u>				
Sales & Services	5578	3334	1709	578
Contribution to Income	323	163	104	101
Funds from Operations	449	170	160	153
New Investment	424	267	119	31
Gross Plant	2631	1274	876	464
<u>1973</u>				
Sales & Services	3480	2113	1080	305
Contribution to Income	80	85	44	11
Funds from Operations	240	155	92	33
New Investment	199	109	78	18
Gross Plant	2306	1071	779	447
<u>1972</u>				
Sales & Services	2743	1692	851	257
Contribution to Income	20	28	26	7
Funds from Operations	120	54	68	21
New Investment	182	83	50	39
Gross Plant	2142	975	712	438

Pennzoil Company

Pennzoil is a domestically-oriented natural resources company engaged in the production and sale of oil and gas, petroleum products, copper, sulphur, and other minerals. The company does not mine, and has specifically excluded from present or future operations, coal.

Financial Summary (\$ millions)

		<u>1976</u>	<u>% of Total</u>	<u>Gross Plant</u>
Revenue		\$1,047		
Operating Income		243	100.0%	
Oil & Gas	\$113		46.5	\$1,125
Refining & Marketing	34		14.0	151
Mining	96		39.5	551
Other	-		-	81
Total		\$243	100.0%	\$1,908

Pennzoil owns and operates three lube plants with a total capacity of 17,000 B/D. They also have a fuels refinery rated at 45,000 B/D they are planning to expand to 70,000 B/D.

Pennzoil recently "spun off" its 40% share of POGO. (Pennzoil Off-shore Gas Operators) POGO now operates as a totally separate entity.

	<u>000/BD</u>	<u>%</u>
Refined Product Sales	62	100%
Refining Capacity	62	100%
Crude Production	33	53%

The company does not engage in other energy activities. Mining operations encompass sulphur, potash, copper, molybdenum, silver, and gold.

Pennzoil

Financial Summary (\$ millions)

	<u>Total</u>	<u>Oil & Gas</u>	<u>Refining & Marketing</u>	<u>Mining</u>
<u>1976</u>				
Revenue	\$1,047	\$ 198	\$538	\$329
Net Income	167	97	34	96
Funds From Operations	200			
New Investment	205			
Gross Investment	1,816	1,034	151	551

<u>1975</u>				
Revenue	\$ 944	\$ 175	\$502	\$284
Net Income	107	84	24	37
Funds From Operations	154			
New Investment	242			
Gross Investment	1,732	1,384*	132	606

<u>1974</u>				
Revenue	\$ 855	\$ 157	\$429	\$281
Net Income	127	73	27	70
Funds From Operations	240			
New Investment	286			35
Gross Investment	1,932	1,204*	115	557

<u>1973</u>				
Revenue	\$ 584	\$ 113	\$275	\$202
Net Income	84	36	32	34
Funds From Operations	133			
New Investment	283			
Gross Investment	1,638	958*	104	520

<u>1972</u>				
Revenue	\$ 457	\$ 103	\$191	\$166
Net Income	59	38	23	16
Funds From Operations	94			
New Investment	73			
Gross Investment				

*Includes POGO & PLATO

Phillips Petroleum Company

Phillips is ranked 24th among the Fortune 500 and 10th among oil companies. In 1976, 20% of total revenue and 25.3% of net income was generated in foreign areas. Foreign operations center on Ekofisk in the Norwegian North Sea, eight fields in U.K. North Sea, Nigeria and Indonesia. Foreign earnings should increase in the future.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Gross Investment</u>
Operating Revenue	\$5,698		
Net Income	\$412	100.0%	
Petroleum - U.S.	\$228	55.3	\$4,209
Petroleum - Foreign	102	24.8	
Chemicals	82	19.9	759
Net Income	\$412	100.0%	\$4,968

In the U.S., the company is a net purchaser of crude oil and petroleum products.

	<u>000 B/D</u>	<u>%</u>
Refined Products Sold	427	100.0%
Refining Capacity	323	76
Crude Production	115	27

Phillips is also a large factor in liquified petroleum gases, with U.S. production of 130,000 B/D.

The company is active in "other energy" activities.

A. Other Energy Activities

1. Coal

Reserves	3.0 billion tons
Production	initial production in early 1980's

Phillips controls 620,000 acres of lignite in East Texas, Mississippi and Louisiana. Studies are being made; production is expected in the early 1980's.

2. Uranium

Reserves	25 million lbs.
Production	mill construction to start in 1978

Uranium strata in New Mexico, discovered in 1975, are at a depth of 3500 feet. The first shaft will be started in 1977. Anticipated production is two million lbs/year of U₃O₈ (yellow cake).

3. Geothermal

A discovery in Nevada was made in 1976. Delineation wells were drilled for a 1975 Utah discovery. Additional tests are being made.

4. Oil Shale

A one year suspension of Utah shale operations (White River Oil Shale Project) was granted by the federal government. Phillips and its associates (Sun and Sohio) are committed to spend \$121.7 million in lease payments.

B. Other Activities

Chemicals:

Revenue	\$1230 million	
Gross Plant	\$759 million	12/31/76

Net income from chemicals was 20% of total income in 1976. The company manufactures a wide variety of chemicals and petrochemical products.

Phillips

Financial Summary (\$ Millions)

	<u>Total</u>	<u>Nat'l. Res.</u>		<u>Pet. Prod.</u>	<u>Chem.</u>	<u>Other</u>
<u>1976</u>						
Revenue	\$5,837	817		3,635	1,230	16
Net Income	412		330		82	--
Funds from						
Operations	815		---		---	--
New Investment	728	483		111	104	30
Gross Investment	4,968	2,954		1,119	759	135

<u>1975</u>						
Revenue	5,213	753		3,307	1,057	16
Net Income	343		260		83	--
Funds from						
Operations	724		---		---	--
New Investment	694	490		140	55	9
Gross Investment	4,712	2,589		1,309	701	112

<u>1974</u>						
Revenue	5,106	623		3,016	1,320	23
Net Income	430		261		169	--
Funds from						
Operations	758	---		---	---	--
New Investment	618	451		92	68	7
Gross Investment	4,411	2,440		1,199	666	106

<u>1973</u>						
Revenue	3,074	429		1,661	882	19
Net Income	230		156		75	--
Funds from						
Operations	469	---		---	---	--
New Investment	329	245		46	36	2
Gross Investment	4,124	2,079		1,147	798	100

<u>1972</u>						
Revenue	2,568	387		1,479	630	17
Net Income	148		117		31	--
Funds from						
Operations	367		---		---	--
New Investment	265	196		28	39	2
Gross Investment	3,914	1,910		1,142	763	98

Shell Oil

Shell Oil is ranked 13th in size by the Fortune 500. 69% owned by Royal Dutch Shell, the company is the 7th largest U.S. oil company. In addition to its fully integrated petroleum operations, Shell is one of the largest manufacturers and marketers of chemicals.

Financial (\$ Millions)

	<u>1976</u>	<u>% of Total</u>	<u>Gross Plant</u>
Operating Income	\$9,230		
Net Income	\$706	100.0%	
Petroleum	\$547	77.4%	\$6,413
Chemicals	<u>159</u>	<u>22.6</u>	<u>2,818*</u>
Net Income	\$706	100.0%	\$9,231

*Includes Petroleum Refining

Shell is a net buyer of domestic crude.

	<u>000 B/D</u>	<u>%</u>
Refined Product Sales	1022	100.0%
Refining Capacity	1154	113
Crude Production	535	52

Coal

Plans for development of a 3-4 million ton/year mine near Gillette, Wyoming continue. Production is expected after 1980. Reserves are difficult to ascertain because of legal problems concerning leases on Indian lands. Texas lignite production is expected to begin "in the early 1980's".* Announced purchase 7/6/77 of Seaway, Inc. owner of R and F Coal Co., producers of 3.0 million tons/year.

Geothermal

Drilling has continued in the Geyser's area in northern California. Two new wells were completed bringing the total commercial wells to four.

Oil Shale

Shell has discontinued oil shale activities, and dropped their portion of the lease on tract C-b, leased in 1974 for a bonus bid of \$117.3. Ashland and Occidental are now testing on tract C-b.

*SOURCE: Annual Report, 1976.

Tar Sands

Planning a 48 well in-situ field test. Half of the test is being funded by an agency of the Alberta government. Capital expenditures for the oil shale and tar sand operations were \$31 million in 1975 and \$33 million in 1974.

Solar

An additional \$3.6 million in debt and equity was put into SES, Inc., a solar energy company. Shell now owns 80% of the equity and has a total investment of \$6.6 million. SES is working on cadmium sulfide solar cells.

Shell Oil

Financial Summary (\$ Millions)

	<u>Total</u>	<u>Petroleum</u>	<u>Chemical</u>	<u>Mining</u>	<u>Other</u>
<u>1976</u>					
Revenues	\$9,309	7,429	1,574	---	227
Net Income	706	547	159		
Funds from					
Operations	1,394				
New Investment	1,549	1,149	400	4	32
Gross Investment	9,231	6,139	2,818*	32	242
-----	-----	-----	-----	-----	-----
<u>1975</u>					
Revenue	8,224	7,021	1,203	---	---
Net Income	515				
Funds from					
Operations	1,159				
New Investment	1,227	913	231	23	60
Gross Investment	8,206	5,571	2,320*	46	269
-----	-----	-----	-----	-----	-----
<u>1974</u>					
Revenue	7,708	6,568	1,140	---	---
Net Income	621				
Funds from					
Operations	1,140				
New Investment	1,065	824	149	21	71
Gross Investment	7,462	5,117	2,119*	24	202
-----	-----	-----	-----	-----	-----
<u>1973</u>					
Revenue	4,933	4,210	723	---	---
Net Income	333				
Funds from					
Operations	785				
New Investment	691	533	114	---	44
Gross Investment	6,836	4,705	1,990*		141
-----	-----	-----	-----	-----	-----
<u>1972</u>					
Revenue	4,108	3,452	624		
Net Income	261				
Funds from					
Operations	669				
New Investment	690	585	72	---	33
Gross Investment	6,558	4,497	1,921*		140

*Includes Petroleum Refining

Standard of California

The company is ranked sixth on the list of Fortune 500 Industrials and fourth among oil companies. In 1976, U.S. petroleum operations accounted for 39% of revenues and 48% of net income.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Net Plant</u>
Operating Revenue	\$20,180		
Net Income - Total	\$880	100.0%	
Petroleum - U.S.	425	48.3	)
Chemical - U.S.	36	4.1	) \$5,753
Petroleum - Foreign	403	45.8	)
Chemical - Foreign	<u>16</u>		
Total	\$880	100.0%	\$9,432

In the U.S., Socal is a purchaser of crude oil:

	<u>000 B/D</u>	<u>%</u>
Product Sales	1,168	100%
Refining Capacity	1,454(1)	124
Crude Production	370	32

(1) Refining capacity in 1975 was 1,062,000 bbls/day.

The company owns an 11.73% interest in Aramco production and reserves. The Saudi government wants 100% ownership. Negotiations are continuing.

Other Energy Activities

The company participates largely through its minority position in AMAX (20%) acquired at a cost of \$354 million in 1975.

Uranium

Planning construction of a 2,500 ton/day mine and mill complex in Texas. Cost will approximate \$45 million.

Geothermal

Plans are made to develop geothermal resources in California's Imperial Valley with San Diego Gas and Electric at Heber, California.

Oil Shale

Participated in the Paraho project (\$450,000). Holds oil shale reserves in Colorado estimated at 45,000 acres.

Standard of California

Financial Summary (\$ millions)

<u>1976</u>	<u>Total</u>	<u>Petroleum</u>	<u>Chemical</u>	<u>Other</u>
Revenue	20565	19496	685	-
Net Income	880	828	52	-
Funds from Operations	1435	-	-	-
New Investment	1633	979	489*	165
Gross Investment	10735	7860	2875*	179

<u>1975</u>				
Revenue	18167	16890	633	-
Net Income	773	703	70	-
Funds from Operations	1358	-	-	-
New Investment	2271	1050	764*	457(1)
Gross Investment	10237	7363	2713*	161

<u>1974</u>				
Revenue	18744	17320	604	-
Net Income	970	875	95	-
Funds from Operations	1480	-	-	-
New Investment	1726	1149	549*	28
Gross Investment	9497	7083	2255*	159

<u>1973</u>				
Revenue	8927	8133	367	-
Net Income	878	822	22	-
Funds from Operations	1284	-	-	-
New Investment	1217	949	238*	30
Gross Investment	8650	6578	1922*	150

<u>1972</u>				
Revenue	6743	-	-	-
Net Income	558	-	-	-
Funds from Operations	934	-	-	-
New Investment	1041	833	190*	18
Gross Investment	8018	6046	1825*	147
-----				

*Includes refining

(1) Includes AMAX

Standard of Indiana

The sixth largest oil company, Indiana is ranked 15th among the Fortune 500. The company's operations are primarily domestic with 78.3% of net income being generated in the U.S.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Total Assets</u>
Operating Revenue	\$12,507		
Net Income	\$893	100.0%	
Petroleum - U.S.	\$699	78.3	\$ 6,187
Petroleum - Foreign	194	21.7	3,240
Chemicals	74	8.3	1,708
Other	(74)	(8.3)	77
Net Income	\$893	100.0%	\$11,213

In the U.S., the company is active as a fully integrated oil company. It also markets plastics, chemicals, and fertilizers. It ranks fourth in crude production and third in refinery runs. The company is a net purchaser of crude oil and sells as many barrels of products as it manufactures.

	<u>000 B/D</u>	<u>%</u>
Product Sales	1,150	100.0%
Refining Capacity	1,129	99
Crude Production	532	47

The company is active in "other energy".

Other Energy Activities

1. Oil Shale

The company continues to hold, with Gulf Oil, Tract C-a, a 5,100 acre federal lease in Colorado estimated to continue some five billion bbls of recoverable shale oil. The bonus bid was \$210.4 million. A plan of development was submitted to the government in June, 1977 for an in-situ program.

2. Heavy Oils

Standard of Indiana has signed an agreement with the Alberta Oil Sands Technology and Research Authority to jointly fund an in-situ combustion test. Operations will start in 1977. Cost to Standard of Indiana is \$23 million.

3. Synthetic Fuels

The company is a partner in the H-Coal test managed by Ashland. 1978 cost to Standard of Indiana is approximately \$1.2 million.

Standard of Indiana

Financial Summary (\$ Millions)

	<u>Total</u>	<u>Petroleum</u>	<u>Chemical</u>	<u>Other</u>
<u>1976</u>				
Revenue	\$12,668	11,227	1,432	9
Net Income	893	893	74	(74)
Funds from				
Operations	1,693	---	---	--
New Investment	1,729	1,405	306	18
Gross Investment	11,860	10,233	1,491	136

<u>1975</u>				
Revenue	11,146	8,179	1,190	6
Net Income	787	761	39	(12)
Funds from				
Operations	1,482	---	---	--
New Investment	1,875	1,562	295	18
Gross Investment	10,770	9,443	1,206	121

<u>1974</u>				
Revenue	10,156	7,284	1,089	5
Net Income	958	873	95	(9)
Funds from				
Operations	1,538	---	---	--
New Investment	1,826	1,612	197	17
Gross Investment	9,573	8,554	917	102

<u>1973</u>				
Revenue	6,468	4,823	771	2
Net Income	511	467	48	(4)
Funds from				
Operations	973	---	---	--
New Investment	1,106	1,020	68	18
Gross Investment	8,268	7,430	731	107

<u>1972</u>				
Revenue	5,477	4,232	623	3
Net Income	372	348	28	(4)
Funds from				
Operations	794	---	---	--
New Investment	940	864	69	7
Gross Investment	7,592	6,793	694	105

The Standard Oil Company of Ohio

Fortune ranks Sohio 73rd among industrials. It is listed 19th among oil companies. The company's operations are almost totally domestic. In 1976, net income was \$137 million and capital expenditures were \$1,699 million (\$1,705 including exploration expenses). The great preponderance of this (93%) went for completion of Alyeska Pipeline (33.3% interest) and for development work at Prudhoe Bay, where Sohio will have all production from its leases up to 600,000 net B/D. BP owns a 75% net profits royalty interest in all oil from 600,000 B/D to 1,050,000 B/D. Historically, Sohio has been a crude deficient domestic refiner and marketer.

<u>Financial (\$ millions)</u>	<u>1976</u>	<u>% of Total</u>	<u>Gross Plant</u>
Operating Revenue	\$2,916		
Operating Income	\$235	100.0%	
Petroleum	156	66.4	\$5,226
Coal	32	13.6	186
Chemicals	47	20.0	154
Royalties	2	.9	
Other +			
Corporate	(2)	(.9)	66
Operating Income	\$235	100.0%	\$5,632

In the U.S. the company is a net buyer of crude:

	<u>000 B/D</u>	<u>%</u>
Refined Product Sales	403	100.0%
Refining Capacity	449	111
Crude Production	25	6

The company is very active in "other energy".

A. Non-Petroleum Energy Activities

1. Coal (Old Ben Coal Company - acquired 1968)

Gross Plant	\$186 million	12/31/76
Reserves	844 million tons	
Production	9.7 million tons	

Production comes from six surface and underground mines in Indiana, Illinois, and Virginia operated by Old Ben, a wholly-owned subsidiary.

Under development:

Two new deep mines in Illinois'-first production in mid-1977. Design capacity is 4.5 million tons/year. Cost is \$90 million +.

2. Uranium

Gross Plant	\$18 million	12/31/76
Production	Initiated 12/76	

Mill capacity is 1.0 million lbs/year. Sohio owns a 50% interest in the New Mexico mine-mill complex and is the operator. The mill will also process ore from other nearby producers (250,000 lbs/year).

3. Oil Shale

Gross Plant	\$26 million	12/31/76
Production	None	

Sohio is a partner in the Paraho Oil Shale Demonstration project which completed its first vertical kiln test re-torting program in 1976. The company also has an interest in tract U-b (White River Shale) which is "on hold" (lease bonus of \$121.7 million)

C. Other Activities

1. Alaskan production and the Alyeska Pipeline (gross plant - \$3,952 million).

2. Chemicals and Plastics

Gross Plant	\$154 million	12/31/76

The company manufactures and sells a wide variety of industrial and nitrogen chemicals and fabricated plastics.

Standard of Ohio

Financial Summary (\$ Millions)

	<u>Total Co.</u>	<u>Petroleum</u>	<u>Coal</u>	<u>Uranium</u>	<u>Oil Shale</u>
<u>1976</u>					
Revenue	\$ 2,916	2,444	149		
Net Income*	137	156	32	---	---
Funds from					
Operations	268				
New Investment	1,705	1,645	38	5	---
Gross Investment	5,632	5,226	186	18	26

<u>1975</u>					
Revenue	2,507	2,037	166	---	---
Net Income*	127	84	52	---	---
Funds from					
Operations	243				
New Investment	1,647	1,576	29	8	9
Gross Investment	3,967	3,618	148	13	26

<u>1974</u>					
Revenue	2,207	1,788	115	---	---
Net Income*	148	73	32	---	---
Funds from					
Operations	209				
New Investment	704	670	20	2	1
Gross Investment	2,362	2,081	119	---	---

<u>1973</u>					
Revenue	1,507	1,204	85	---	---
Net Income*	89	60	12	---	---
Funds from					
Operations	156				
New Investment	193	178	6	---	---
Gross Investment	1,705	1,453	98	---	---

<u>1972</u>					
Revenue	1,387	1,112	78	---	---
Net Income*	57	58	12	---	---
Funds from					
Operations	141				
New Investment	124	102	16	---	---
Gross Investment	1,670	1,445	93	---	---

*Will not add because of taxes, overhead allocations, and intra-company eliminations.

Sun Company

Sun is the 12th largest integrated petroleum company and is ranked 29th in the Fortune 500. It is primarily domestic, with 72.7% of revenue and 97.3% of net income generated in the U.S.

<u>Financial (\$ Millions)</u>	<u>1976</u>	<u>% of Total</u>	<u>Investments*</u>
Total Revenue	\$5,451		
Operating Income	\$378	100.0%	
Production - U.S. 286		75.7	\$869
Production - Foreign (16)		(4.2)	193
Oil Sands 13		3.4	271
Coal (7)		(1.9)	101
Refining & Marketing 73		19.3	1,052
Other 29		7.7	535
Operating Income	\$378	100.0%	\$3,021

*Includes net plant plus investments and advances

Sun is a net seller of refined products and a net purchaser of crude oil.

	<u>000 B/D</u>	<u>%</u>
Refined Product Sales	590	100.0%
Refining Capacity	654	111
Crude Production	203	34

The company is very active in "other energy" activities.

A. Other Energy Activities

Mining-Gross Investments   \$452 million   12/31/76

1. Coal

Reserves   2.3 billion tons (457 proven and probable)

Production   Initiated 12/76

Contracts beginning in 1977 call for 6 million tons/year from the first mine near Gillette, Wyoming. The mine has a crushing and loading capacity of 12 million tons/year. Plans have been drawn, and are being reviewed by the Department of the Interior, to increase production capability to 24 million tons/year.

Feasibility studies are being made concerning an underground mine near Rock Springs, Wyoming and for the development of a significant lignite deposit near Lufkin, Texas.

2. Tar Sands

Reserves   454 million bbls

Production   48,000 B/D

Sun owns 96% of Great Canadian Oil Sands, since 1967, the sole commercial producer of synthetic crude from oil sands. GCOS contributed \$12.5 million to Sun's net income in 1976. In 1977, the company will add a \$7 million back-up system to the sulphur recovery unit in order to meet environmental standards.

3. Uranium

Reserves	None
Production	None

Sun formed a uranium exploration company in mid-1976.

4. Oil Shale

Sun is a member, with Phillips and Sohio, of the White River Shale group (tracts U-a, U-b) \$121.7 million lease bonus. The operation is "on hold." Member Paraho group.

B. Other Activities

Major activities include:

1. Sun Shipbuilding and Dry Dock

Gross Plant	\$122 million	12/31/76

2. Real Estate

The company invested in several new projects in 1976 including a hotel and office buildings.

3. Miscellaneous trading and manufacturing facilities.

Sun Company

Financial Summary (\$ Millions)

	<u>Total</u>	<u>Petroleum</u>	<u>Mining</u>	<u>Shipyd.</u>	<u>Other</u>
<u>1976</u>					
Revenue	\$5,451	6,030	163	82	277
Net Income	356	376	6	(2)	3
Funds from					
Operations	680				
New Investment	617	512	67	8	30
Gross Investment	4,846	4,173	452	112	109

<u>1975</u>					
Revenue	4,430	5,261	123	44	93
Net Income	220	241	48	12	(2)
Funds from					
Operations	591				
New Investment	680	534	56	67	23
Gross Investment	4,502	3,939	398	105	60

<u>1974</u>					
Revenue	3,825	3,650	60	49	60
Net Income	378	813	12	5	(14)
Funds from					
Operations	609				
New Investment	881	747	66	59	9
Gross Investment	4,340	3,845	348	109	38

<u>1973</u>					
Revenue	2,318			116	
Net Income	230				
Funds from					
Operations	463				
New Investment	331	293	25	6	7
Gross Investment	3,690	3,308	293	51	38

<u>1972</u>					
Revenue	1,939			87	
Net Income	155				
Funds from					
Operations	344				
New Investment	322	303	12	2	5
Gross Investment	3,507	3,149	278	45	35

The Superior Oil Company

Superior is ranked 405th among industrial corporations by Fortune magazine. Superior is an independent oil and gas producer with interest centered in the U.S. and Canada. Active exploration programs are in the North Sea and South America. Holdings include 43.3% of Canadian Superior, 40.5% of McIntyre Porcupine Mines, and 950,000 shares of Texaco.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Gross Plant</u>
Operating Revenue	\$441		
Net Income	51	100.0%	
Petroleum 107		209.8	\$672
Agriculture (4)		(7.8)	121
Mining (4)		(7.8)	123
Other (48)		(94.2)	78
Net Income	\$51	100.0%	\$994

The company neither refines crude or markets petroleum products. Net U.S. production was 41,000 B/D in 1976.

Superior is active in "other energy".

A. Other Energy Activities

Oil Shale

Reserves	N.A.
Production	None

The company has been active in oil shale for years and has patented the "multi-mineral oil shale process" for the mining and processing of multiple minerals found on the Superior property. The company currently is attempting to exchange its existing properties for others held by the government.

B. Other Activities

1. Mining

Gross Investment   \$123 million   12/31/76

Superior holds a 40.5% equity interest in McIntyre Mines Ltd., a 24.0% interest in Western Platinum Ltd., a 20.6% interest in Austral Oil Company, and a 23.75% interest in the Dolamar Silver Mine. These companies produce a wide variety of base and precious metals.

McIntyre also has a coal division operating in Canada that earned \$14.2 million in 1976.

2. Agriculture

Gross Plant

\$121 million

12/31/76

Superior raises grapes, raisins, figs and nuts.

Financial Summary (\$ Millions)

	<u>Total</u>	<u>Petroleum</u>	<u>Agric.</u>	<u>Mining</u>	<u>Other</u>
<u>1976</u>					
Revenue	\$441	410	27	12	--
Net Income	51	107	(4)	(4)	(48)
Funds from					
Operations	116				
New Investment	230	207	6		17
Gross Investment	994	672	121	123	78

<u>1975</u>					
Revenue	382	357	19	---	--
Net Income	55	114	(11)	---	(46)
Funds from					
Operations	98				
New Investment	213	193	6		14
Gross Investment	918	612	116	119	71

<u>1974</u>					
Revenue	333	307	19		
Net Income	68	99	(2)		(33)
Funds from					
Operations	114				
New Investment	178	153	12		13
Gross Investment	858	590	116	97	55

<u>1973</u>					
Revenue	173	222	18		--
Net Income	34	62	3		(23)
Funds from					
Operations	79				
New Investment	151	89	57		5
Gross Investment	679	430	105	95	49

<u>1972</u>					
Revenue	144	198	6		
Net Income	(3)	37	(1)		(9)
Funds from					
Operations	47				
New Investment	112	95	12		5
Gross Investment	455	362	47	---	46

Tenneco, Inc.

Tenneco is ranked 20th among industrial corporations by the Fortune 500. The company has eight operating divisions:

1976 (\$000)	<u>Operating Revenue</u>	<u>Operating Income</u>	<u>% of Total</u>	<u>Gross Plant</u>
Oil Company	\$1,615	\$294	33.2%	\$2,343
Gas Pipeline	1,495	247	27.9	2,543
Construction & Farm Equipment	1,348	104	11.8	405
Automotive	378	62	7.0	175
Packaging	451	56	6.3	400
Chemicals	445	50	5.6	302
Shipbuilding	688	41	4.6	450
Agriculture	210	28	3.3	177
Investments	27	3	.3	2
Other	(168)	-	-	-
Total	<u>\$6,489</u>	<u>\$885</u>	<u>100.0%</u>	<u>\$6,797</u>

The oil company is currently the largest producer of operating revenue and operating income.

Tenneco in general, and the oil company in particular, is largely domestic.

<u>Domestic Operations</u>	<u>000 B/D</u>	<u>%</u>
Refined Product Sales	154	100.0%
Refining Capacity	100	64.9%
Crude Production	72	46.8%
Natural Gas Production	1.149 million cu. ft.	

Other Energy

<u>Coal</u>	Reserves	2.4 billion tons
	Production	None

Most of the coal (1.8 million tons) is in Montana and North Dakota and was purchased with a view toward gasification. The remainder (.6 billion tons) is located along the Gulf Coast.

Synthetic Fuels

A gasification process designed by the company is currently being tested by the Illinois Coal Gasification Group. DOE is funding it with \$34 million in 1978.

Tenneco, Inc.

Financial Summary (\$ millions)

	<u>Total*</u>	<u>Oil</u>	<u>Gas Pipelines</u>	<u>Farm Equipment</u>	<u>Chemical</u>	<u>Pkg.</u>
<u>1976</u>						
Revenue	\$6,489	\$1,615	\$1,488	\$1,334	\$437	\$449
Net Income	384	294	247	104	50	56
Funds From Operations	778					
Net Investment	613	305	96	56	25	31
Gross Investment	6,797	2,343	2,543	405	302	400

<u>1975</u>						
Revenue	\$5,739	\$1,485	\$1,216	\$1,243	\$361	\$376
Net Income	343	287	213	89	50	47
Funds From Operations	737					
New Investment	545	226	79	61	17	42
Gross Investment	6,295	2,099	2,453	365	279	379

<u>1974</u>						
Revenue	\$5,065	\$1,456	\$ 930	\$1,088	\$378	\$365
Net Income	314	301	234	103	52	53
Funds From Operations	718					
New Investment	642	313	71	49	50	55
Gross Investment	5,948	2,008	2,404	311	272	347

<u>1973</u>						
Revenue	\$3,940	\$ 827	\$ 709	\$ 919	\$302	\$311
Net Income	221	154	131	67	19	32
Funds From Operations	501					
New Investment	392	151	87	32	21	27
Gross Investment	5,228	1,554	2,342	264	240	306

<u>1972</u>						
Revenues	\$3,324	\$ 658	\$ 700	\$ 610	\$285	\$286
Net Income	207	92	171	27	16	17
Funds From Operations	436					
New Investment	345	141	97	23	16	16
Gross Investment	4,927	1,440	2,269	237	258	309

*Functional data is before interest, overhead, or taxes

Tesoro Petroleum

The company is the 22nd largest integrated oil company and is ranked 213th among the Fortune 500. Although the company is active in Indonesia and Trinidad, operations are diversified and primarily domestic. The acquisition, in late 1974, of a minority interest (37%) in the Commonwealth Oil Refinery Co. (Corco) has caused Tesoro some problems. The company has recently acquired coal reserves and producing properties.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Gross Plant</u>
Revenue	\$1,088		
Operating Income	\$56	100.0%	
Exploration & Production-U.S.	6.9	12.4%	
Exploration & Production-Foreign	(1.1)	(1.9)	\$219
Crude Oil Sales	2.4	4.3	20
Refining & Marketing	25.7	45.9	66
Contract Drilling	12.2	21.8	43
Coal	(3.2)	(5.8)	12
Unconsolidated Affiliates	<u>13.1</u>	<u>23.3</u>	<u>10</u>
Operating Income	\$56	100.0%	\$370

In the U.S., the company is a net buyer of crude and petroleum products:

	<u>000 B/D</u>	<u>%</u>
Refined Product Sales	109	100.0%
Refining Capacity	77	71
Crude Production	5	5

The company plans to expand its coal operations.

A. Other Energy Activities

Coal

Production 376,000 tons

Tesoro Coal Company operates strip and auger mines in Kentucky. The company plans to begin construction of a preparation plant in 1977. Tesoro is actively investigating the possible acquisition of additional coal properties in the eastern U.S.

B. Other Activities

1. Wheatly Company and Land and Marine Rental Company

Gross Plant \$43 million 9/30/76

Wheatly manufactures and sells valves and pumps. Tesoro is considering the construction of a new \$10 million plant. Marine Rental rents oil field operating equipment.

2. Commonwealth Oil Refining Company

Tesoro acquired a 37% equity interest in this Puerto Rican plant in late 1974 and currently has invested \$133 million in this refining and petrochemical complex. The company's equity in Corco's 1976 loss was \$5.2 million.

Tesoro

Financial Summary (\$ Millions)

	<u>Total</u>	<u>Petroleum</u>	<u>Svc. Cos.</u>	<u>Coal</u>
<u>1976</u>				
Revenue	\$1,088	1,000	57	12
Net Income	29	34	12	(3)
Funds from				
Operations	74			
New Investment	68	63	10	5
Gross Investment	371	306	43	12

<u>1975</u>				
Revenue	834	763	46	6
Net Income	43	40	10	1
Funds from				
Operations	65			
New Investment	93	88	12	5
Gross Investment	325	276	35	7

<u>1974</u>				
Revenue	541	474	36	--
Net Income	61	40	8	
Funds from				
Operations	51			
New Investment	78	60	3	--
Gross Investment	229	138	24	--

<u>1973</u>				
Revenue	289	263	20	--
Net Income	20	12	3	
Funds from				
Operations	25			
New Investment	47	32	7	--
Gross Investment	162	85	21	--

<u>1972</u>				
Revenue	210	190	14	--
Net Income	13	5	4	
Funds from				
Operations	13			
New Investment	28	22	2	--
Gross Investment	118	54	15	--

Texaco

Texaco is ranked fourth among Fortune's largest industrials and second among oil companies. The company is international, with about 45% of 1976 earnings coming from foreign operations.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Total Assets</u>
Operating Revenue	\$26,452		
Net Income	\$870	100.0%	
Petroleum - U.S.	418	48.1	)
Petrochemicals - U.S.	60	6.9	) \$8,324
Petroleum - Foreign	369	42.4	)
Petrochemicals - Foreign	23	2.6	) \$9,870
Net Income	\$870	100.0%	\$18,194

The company holds a 11.73% equity interest in Aramco's production and reserves. Full nationalization of this interest is being negotiated. The company has additional contractual arrangements and equity interests throughout the world.

In the U.S., Texaco is a net buyer of petroleum products and crude.

	<u>000 B/D</u>	<u>%</u>
Product Sales	1,318	100.0%
Refining Capacity	1,098	83%
Crude Production	611	47%

The company's activities in other energy areas are limited.

Other Energy Activities

Coal

Reserves, currently in excess of 2 billion tons, are located at Lake DeSmet Reservoir in Wyoming. The company is "continuing its engineering studies to determine the best method of utilizing these coal reserves."*

Synthetic Fuels

The company continues "development of a process to convert coal, heavy oils, and other fossil fuels into substitute natural gas or hydrogen, or into raw materials for synthetic liquid fuels and petrochemical feedstocks."* Texaco is building a liquefaction plant in Germany in which the German government is participating. The company is also doing work with DOE on liquefaction of residue materials from gasification.

Heavy Oils

Texaco expanded its Athabasca tar sands operation, testing two promising in-situ recovery processes.

SOURCE: Annual Report, 1976.

Oil Shale

Participated in Paraho (\$450,000) and holds oil shale reserves estimated at 25,000 acres.

Texaco

Financial Summary (\$ Millions)

	<u>Total</u>	<u>Petroleum</u>	<u>Petrochemicals</u>	<u>Other</u>
<u>1976</u>				
Revenue	\$26,932			
Net Income	870	787	82	
Funds from				
Operations	1,520			
New Investment	1,505	1,301	151	53
Gross Investment	14,780	13,941	626	213

<u>1975</u>				
Revenue	25,096			
Net Income	830	762	67	
Funds from				
Operations	882			
New Investment	1,674	1,565	72	37
Gross Investment	13,842	13,194	484	164

<u>1974</u>				
Revenue	23,994			
Net Income	1,545	1,439	106	
Funds from				
Operations	2,635			
New Investment	1,965	1,829	103	33
Gross Investment	13,164	12,618	415	131

<u>1973</u>				
Revenue	11,835			
Net Income	1,243			
Funds from				
Operations	1,926			
New Investment	1,334	1,324	6	4
Gross Investment	11,640	11,356	184	100

<u>1972</u>				
Revenue	8,972			
Net Income	820			
Funds from				
Operations	1,319			
New Investment	1,193	1,166	20	7
Gross Investment	10,987	10,704	178	105

Tosco Corporation

The company is ranked 258th in the Fortune 500. Previously known as The Oil Shale Company, Tosco is now, at 220,000 B/D capacity, one of the larger refining companies in the U.S. All manufacturing facilities came through acquisitions. Tosco has sharply reduced its efforts in the oil shale business.

<u>Financial</u> (\$ millions)	<u>1976</u>	<u>% of Total</u>	<u>Total Assets</u>
Operating Revenue	\$848		
Operating Income	\$11	100.0%	
Oil Shale (11)		(100%)	\$ 31
Petroleum Refining 22		200%	165
Coal Mining -		-	11
Total Operating Income	\$11	100.0%	\$207

Operating losses on the oil shale operation from 1972-1976 totaled \$63.3 million.

The company buys crude from others, processes it, and wholesales the refined products to others.

The company is active in "other energy".

A. Non-Petroleum Energy Activities

1. Oil Shale

Tosco owns and test operates a 5 ton/day oil shale pilot plant, owns and/or controls 26,000 oil shale bearing acres in Utah and Colorado, and holds patents on oil shale technology. The company is attempting to use retorting technology in a variety of other applications.

Because of severe capital constraints, Tosco sharply curtailed its oil shale efforts and has expanded its petroleum refining activities. They still have an interest (40%) in Colony Development and are expanding their shale oil interests in Utah.

2. Coal

Production 450,000 tons

Tosco acquired three coal properties in 1976 to produce and clean coal. All coal is surface mined. Construction of a new cleaning facility will allow capacity to increase to 600,000 tons and to upgrade some coal to metallurgical grade.

Tosco

Financial Summary (\$ Millions)

	<u>Total</u>	<u>Mktg. & Ref.</u>	<u>Coal</u>	<u>Oil Shale</u>
<u>1976</u>				
Revenue	\$849	839	9	--
Net Income	8	22	--	(11)
Funds from				
Operations	25			
New Investment	119	119		
Gross Investment	207	165	11	31

<u>1975</u>				
Revenue	439	437	1	--
Net Income	(4)	24	--	(30)
Funds from				
Operations	19			
New Investment	15	9	6	
Gross Investment	77	59	10	8

<u>1974</u>				
Revenue	372	362		6
Net Income	9	21		(8)
Funds from				
Operations	18			
New Investment	10	8		2
Gross Investment	60	56		4

<u>1973</u>				
Revenue	180	179		--
Net Income	4	17		(9)
Funds from				
Operations	14			
New Investment	3	2		1
Gross Investment	50	49		1

<u>1972</u>				
Revenue	72	72		--
Net Income	(2)	4		(5)
Funds from				
Operations	3			
New Investment	19	19		--
Gross Investment	48	47		1

Union Oil Company of California

Ranked 30th in the Fortune 500, Union is the 13th largest oil company. It is primarily domestic: 80.9% of revenue and 91.8% of pre-tax net income were generated in the U.S. In 1978, Union acquired Molycorp, Inc. at a cost of more than \$200 million.

<u>Financial</u> (\$ Millions)	<u>1976</u>	<u>% of Total</u>	<u>Operating Assets</u>
Operating Revenue	\$5,703		
Operating Income	\$648	100.0%	
Petroleum	575	88.7	\$3,392
Chemicals	82	12.7	401
Other	(9)	(1.4)	112
Operating Income	\$648	100.0%	\$3,905

The company is a domestic net purchaser of crude oil.

Petroleum Produce Sales (000 B/D)	453	100.0%
Refining Capacity	390	86
Crude Production	205	45

Union is active in "other energy" activities.

A. Other Energy Activities

1. Nuclear

Uranium mining to begin by late 1977. Mill start up expected in early 1979. Estimated production: 1 million lbs. U₃O₈ annually.

In 1970, uranium mineralization was discovered on mining claims in Wyoming, in which the company has a 65% interest. Plans to develop a \$45 million uranium mining and milling complex were announced in 1976.

2. Geothermal

Gross Generating Capacity: 740,000 kilowatts

Union Geothermal Division operates the Geyser's field in Northern California, the only commercial project in the U.S., and the largest in the world.

A 110,000 kilowatt and a 55,000 kilowatt plant are under construction at two geothermal fields on Luzon Island in the Philippines.

3. Union has developed a process for exploiting oil shale reserves and is actively seeking partners.

B. Other Activities

1. Mining

Union continues their mining activities, producing copper and small amounts of molybdenum and silver.

2. Other

Union is also active in the chemical and petrochemical areas.

Union Oil

Financial Summary (\$ Millions)

	<u>Total</u>	<u>Petroleum</u>	<u>Refining Chemical</u>	<u>Other</u>
<u>1976</u>				
Revenue	\$5,781	5,258	531	114
Net Income	269	575	82	(9)
Funds from				
Operations	757			
New Investment	814	609	174	30
Gross Investment	5,496	4,316	1,044	136

<u>1975</u>				
Revenue	5,501	4,970	515	108
Net Income	215	441	117	5
Funds from				
Operations	656	---	---	---
New Investment	686	600	77	10
Gross Investment	4,895	3,888	886	121

<u>1974</u>				
Revenue	4,787			
Net Income	268			
Funds from				
Operations	724			
New Investment	688			
Gross Investment	4,435			

<u>1973</u>				
Revenue	2,963			
Net Income	156			
Funds from				
Operations	479			
New Investment	391			
Gross Investment	3,907			

<u>1972</u>				
Revenue	2,458			
Net Income	98			
Funds from				
Operations	406			
New Investment	314			
Gross Investment	3,701			

North American Coal Corporation

A. Energy (Coal) Activities

	<u>1976</u>
	<u>Millions of Tons</u>
Reserves	5,100
Production	11
Sales	12

North American Coal is the tenth largest coal company and second largest independent. With the exception of one operating and one planned mine in North Dakota, the other eleven steam coal properties operated by the company are in Ohio and Pennsylvania. The company operates through a series of subsidiaries that are jointly owned by North American and the particular coal-consuming utility that financed the mine. North American Coal has not individually financed a mine since 1964.

B. Financial Information (\$ Millions)

	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>	<u>1972</u>
Revenue	\$269	\$243	\$161	\$125	\$100
Funds from Operations					
Less Dividends	25	25	15	15	
Capital Expenditures	27	26	17	24	37
Long-Term Debt	156	160	141	132	127
Common Stockholders'					
Equity	50	44	38	34	31

Peabody Coal Company

A. Energy (Coal) Activities

1976

Millions of Tons

Reserves	9,300
Production	69 (U.S.)
Sales	71 (U.S.)

Peabody Coal is the largest producer of coal in the U.S. Almost all production is steam coal, 90% of which is sold to electric utilities. In 1976, sales of coal were \$849 million, net income was \$30.8 million.

Acquired by Kennecott Copper in 1968, Peabody has been sold under FTC divestiture decree to Newmont Mining (27.5%) Williams Companies (27.5%), Bechtel (15%), Boeing (15%), Fluor (10%), and Equitable Life (5%) for \$1.2 billion.

The company operates 49 mines in the U.S., 35 of which are surface facilities and 17 underground. Almost all of Peabody's reserves east of the Mississippi River and 10% of the western reserves have more than 1% sulphur.

Peabody also mines metallurgical coal in Australia, producing 2.6 million metric tons in 1976. This operation was sold to Broken Hill Proprietary Co. Ltd. of Australia.

B. Financial Information (\$ Millions)

	<u>1976</u>	<u>1975</u>	<u>1974</u>
Revenue	\$881	\$723	\$706
Funds from Operations			
Less Dividends	78	82	53
Capital Expenditures	52	55	60
Long-Term Debt	12	15	19
Common Stockholders' Equity	928	905	835

Pittston Company

A. Energy (Coal) Operations

1976

Millions of Tons

Reserves	1,500
Production	18
Sales	18

Coal revenue in 1976 was 53% of total revenue; net income from coal was 91% of total income.

The company is the largest producer of metallurgical coal in the U.S. with 12.8 million tons being sold in 1976. The remaining 5.3 million tons was steam coal. Pittston is the fifth largest coal producer in the U.S. and operates under the following divisions and subsidiaries:

1. Clinchfield Coal - Virginia and West Virginia
2. Amigo Smokeless - West Virginia
3. Badger Coal - West Virginia
4. Buffalo Mining - West Virginia
5. Eastern Coal - Kentucky
6. Jewel Ridge Coal - Virginia
7. Kentland-Elkhorn Coal - Kentucky
8. Pittston Coal Export - New York
9. Pittston Coal Sales - New York
10. Ranger Fuel - West Virginia
11. Sewall Coal - West Virginia

Because 71% of their coal is sold to domestic and foreign steel companies, the financial health of the company is directly tied to U.S. and, to a lesser extent, world steel production and demand.

B. Non-Energy Activities

1. Brinks, Inc., revenue \$130 million. Revenue was 9% of total revenue, and 5% of net income. Company expects to expand this business.
2. Trucking and warehousing, revenue \$14 million. Revenue was 1% of total revenue, net income was 0. "Continued improvement.....is anticipated for 1977".*
3. Metropolitan Petroleum Company, revenue \$524 million. This subsidiary markets and distributes light and heavy refined oils on the East Coast. Net income in 1976 was \$6 million.

*SOURCE: Annual Report, 1976.

Financial Information (\$ Millions)

	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>	<u>1972</u>
Revenue	\$1,415	\$1,504	\$1,146	\$683	\$625
Funds from Operations					
Less Dividends	173	219	140	47	46
Capital Expenditures	110	76	52	40	35
Long-Term Debt	76	94	105	120	138
Common Stockholders'					
Equity	603	496	323	230	227

Westmoreland Coal Company

A. Energy (Coal) Activities

	<u>1976</u>
	<u>Millions of Tons</u>
Reserves	776
Production	8
Sales	12

Westmoreland's sales were equally divided between steam and metallurgical coal. A new operating group, however, has been formed to mine low sulphur steam coal reserves in Colorado. In addition, Westmoreland has a 36% interest in Westmoreland Resources, the operator of a low sulphur steam coal open pit mine in eastern Montana. Current capacity of this five million ton/year mine will be doubled in three years. Other partners are Kewanee, Morrison-Knudsen and Penn-Virginia Corporation (which owns 31% of Westmoreland). Westmoreland is building, for \$100 million, two new deep mines with a capacity of 2,250,000 tons/year.

B. Non-Energy Activities

1. Subsidiaries

- a. Virginia Birmingham Bolt Inc.
The company manufactures and sells roof bolts, both mechanical and resin, for use in underground mines. Westmoreland owns 80%, the Birmingham Bolt Co. owns 20%.
- b. Central Supply Company of Virginia, Inc.
A wholesale distributor of mining equipment and supplies. Wholly owned by Westmoreland.

2. The company attempted to buy Continental Conveyor, another supplier, in 1976, but dropped it because of inability to agree on the price.

Financial Information (\$ Millions)

	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>	<u>1972</u>
Revenue	\$414	\$452	\$399	\$173	\$160
Funds from Operations					
Less Dividends	55	67	42	9	8
Capital Expenditures	52	21	14	13	22
Long-Term Debt	-	-	14	26	16
Common Stockholders' Equity	190	152	99	66	64

American Nuclear

The company gets most of its revenue (94%) from its drilling company acquired in 1974, but is directing its efforts toward the exploration and development of uranium. American Nuclear holds a 40% interest in Federal American Partners, the owners and operators of a 950 ton/day mill. Production is currently shut-in but is expected to reach one million lbs. by 1979.

American Nuclear also has a program with the Tennessee Valley Authority to develop some Powder River, Wyoming, uranium properties that have indicated reserves of some 10 million lbs.

Financial Summary (\$ millions)

	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>	<u>1972</u>
Revenues	\$1.3	\$1.1	\$ .6	\$ .5	-
Net Income	(.3)	(.1)	(.3)	(.6)	\$(.2)
Funds from Operations	.1	(.1)	(.2)	(.2)	1.1
New Investment	1.3	.3	2.1	1.0	.5
Gross Investment	7.2	7.1	7.4	8.7	10.1

Atlas Corporation

The company operates in three functional areas:

- a) Minerals. The primary business is the processing of uranium ore, owned by the company or others, at the company's mill. In 1976, the company sold 707,000 lbs. of U_3O_8 . Atlas explores for profitable properties containing uranium, vanadium, or coal.
- b) Manufacturing. Atlas manufactures a broad range of flexible metal and teflon hoses, plastic parts for shoes, injection molded parts for automotive and aviation industries, and pre-stressed concrete.
- c) Services. A group that does a wide variety of support work of industry and government.

Financial Summary (\$ millions)

<u>1976</u>	<u>Total</u>	<u>Natural Resources</u>	<u>Manufac- turing</u>	<u>Services</u>
Revenue	\$57	\$16	\$31	\$10
Net Income*	4	5	2	1
Funds from Operations	8	-		
New Investment	8			
Gross Investment	66	47	19	-
<u>1975</u>				
Revenue	\$53	\$11	\$31	\$11
Net Income*	3	3	2	1
Funds from Operations	5			
New Investment	7			
Gross Investment	58	40	18	-

* Functional profits exclude interest, taxes, and overhead.

Ranchers Exploration and Development

The major portion of Ranchers 1976 revenues (75%) came from sales of copper. Uranium earnings (48% of the total in 1976), have in the past, come from royalties paid to the company by Kerr-McGee and others operating on company properties. In 1976, the company began shipping its own ore to the mill.

The company operates three mines. The first, a joint venture with Houston Natural Gas, is under construction. The second and third are rehabilitations of previously closed mines.

Financial Summary (\$ millions)

	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>	<u>1972</u>
Revenue	\$16	\$18	\$20	\$11	\$10
Net Income	1	2	3	1	1
Funds from Operations	3	5			
New Investment	3	1			
Gross Investment	24	21			

United Nuclear Corporation

United Nuclear is predominantly an energy company with operations in:

- a. Energy Minerals. The company is the largest independent producer of uranium. In addition to uranium exploration, mining and milling (2 million lbs.), the company also mines Western steam coal (500,000 tons) and produces some oil and gas.
- b. Nuclear Products and Services. Supplies reactor cores to the Navy; manufactures zirconium alloy tubing.
- c. Real Estate. These activities "are being gradually phased out".*

Financial Summary (\$ millions)

	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>	<u>1972</u>
Revenue	\$105	\$ 83	\$ 68	\$ 73	\$ 73
Net Income from					
Continuing Operations	9	-	(1)	1	3
Cash Flow from					
Operations	15	3	3	5	7
New Investment	34	20	12	13	12
Gross Investment	171	139	125	115	107

The company had previously had a joint venture with Gulf Oil to design, manufacture, and sell nuclear fuels for light water reactors.

Current joint ventures include those with Homestake Mining and the Tennessee Valley Authority.

*Sources, 1976 Annual Report

Union Pacific Corporation

This is a railroad based holding company with substantial interests in oil and coal. Operations are totally domestic in nature. The company operates through four major operating divisions: transportation, oil and gas, minerals, and land development.

Financial Summary

1976 (\$000)	<u>Revenues</u>	<u>Operating Inc.</u>	<u>% of Total</u>	<u>Gross Plant</u>
Railroad	\$1,175	99	52.6%	\$2,886
Oil & Gas	816	76	40.4	944
Minerals	12	16	8.5(	
Land	21	5	2.4(	70
Other	-	(8)	(4.0(	
Total	<u>\$2,024</u>	<u>188</u>	<u>100.0%</u>	<u>\$3,900</u>

Operatating Data - Petroleum

Through Champlin Petroleum (acquired 1/1/70) the company operates a fully-integrated oil company. The company is a net purchaser of crude and seller of products.

	<u>000 B/D</u>	<u>%</u>
Refined Product Sales	39	100%
Refining Capacity	155	397
Crude Production	44	113

Energy Operations

Coal

Reserves 10.0 billion tons
Production 8.0 million tons from Union Pacific lands

The company has two joint venture mines in operation, both in Wyoming.

- a) With Arch Minerals (Ashland and Hunt) in 1975. First year's production was 2.8 million tons
- b) With Ideal Basic Industries in mid-1976

Six more joint venture mines are being developed and will be in operation in the late 1970's or early 1980's. Two more joint ventures have been signed with Peter Kiewit and Sons (contractors) that will produce coal in excess of five million tons/year. Other recent activities will increase production an additional seven million tons/year.

Between 1976 and 1985, Union Pacific will add 29.7 million tons of annual coal capacity.

Uranium

Active exploration with a subsidiary of Southern California Edison, U.P. is currently constructing a mine and mill in Wyoming to process 1,000 tons of uranium ore/day.

Petroleum

Active exploration in the Overthrust Belt, Austin Chalk Trend, and offshore U.S. Recently expanded their refinery from 62,500 B/D to 155,000 B/D. Recently formed a joint venture with Imperial Chemicals and Solray and Co. to construct a petrochemical complex. Total cost, \$630 million.

Union Pacific

Financial Summary (\$ Millions)

<u>1976</u>	<u>Total</u>	<u>Railroads</u>	<u>Oil & Gas</u>	<u>Mining</u>	<u>Land</u>	<u>Other</u>
Revenue	\$2024	\$1175	\$816	\$13	\$21	
Net Income	188	99	76	16	5	(8)
Funds From Operations	344					
New Investment	378	178	187	13		
Gross Investment	3900	2886	944	69		

<u>1975</u>						
Revenue	\$1755	\$1004	\$722	\$10	\$19	
Net Income	149	84	52	12	4	(4)
Funds From Operations	356					
Net Investment	440	206	206	28		
Gross Investment	3676	2765	852	59		

<u>1974</u>						
Revenue	\$1599	\$1000	\$583	16		
Net Income	125	99	30	3		(7)
Funds From Operations	453					
New Investment	404	195	198			10
Gross Investment	3306	2598	652			56

American Electric Power

AEP is a holding company whose subsidiaries supply electric power to parts of Ohio, Indiana, Michigan, Virginia, Kentucky, and West Virginia. 31% of sales in 1976 were to industrial customers; 25% to other utilities. 89% of current generating capacity is coal fired; 6% is nuclear, 4% is hydropowered, and 1% is oil fired.

Coal

The company used 35.8 million tons of coal and produced 10.7 million from their own mines in 1976. In order to ensure a continued supply of energy, the company opened three new underground mines and new surface mine in 1976. By 1985, AEP will probably be the 4th largest producer of coal in the U.S.

Finance

In 1976, AEP financings totalled \$780 million. The major portion of this was to finance new construction; the remainder to improve liquidity and refinance existing debt.

The company expects to add 5,149,000 kilowatts of capacity to its existing capacity of 17,500,000 kilowatts of capacity between 1977 and 1983. At an estimated cost of \$500 per kilowatt, the cost of this expansion will total \$2.6 billion.

Financial Summary (\$000)

	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>	<u>1972</u>
Revenue	\$1,869	\$1,638	\$1,333	\$ 979	\$ 874
Net Income	285	235	167	200	168
Funds From Operations	399	280	179	185	187
New Investment	687	569	730	713	616
Gross Plant	7,139	6,645	6,221	5,597	4,940
Stockholders' Equity	2,545	2,274	1,938	1,323	1,113
Long-Term Debt	3,252	3,088	2,839	2,535	2,280
Debt/Equity Ratio	1.3	1.4	1.5	1.9	2.0

Commonwealth Edison Company

This company supplies electricity to Chicago and northern Illinois. 40% of this power is generated by nuclear power and an additional 50% with coal. 76.3% of projected capacity increases (10.6 million kilowatts) will be nuclear, with the remainder oil/gas units convertible to coal if necessary. Commonwealth expects to raise \$3.1 billion through the sale of new securities between 1977-1981. New construction will cost \$4.6 billion. During 1976, the company had four major financings, three of debt (\$450 million) and one of equity (\$127 million).

The company buys substantial amounts of coal (15 million tons/year) from Peabody, Arch, and other producers.

Financial Summary (\$ millions)

	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>	<u>1972</u>
Revenue	\$1,908	\$1,722	\$1,460	\$1,266	\$1,140
Net Income	242	207	180	184	174
Funds From Operations	563	474			
New Investment	911	678			
Gross Plant	7,398	6,531			
Stockholders' Equity	1,774	1,567			
Long-Term Debt	2,775	2,335			
Debt/Equity	1.56	1.49			

Pacific Gas & Electric

The company supplies electric power and natural gas to northern and central California. They expect about a 5% annual increase in demand in these areas of service during the next few years.

To meet this growth the company has taken the following steps:

- 1) Nuclear - started construction on two nuclear units at Diablo Canyon and filed for a second two unit plant.
- 2) Geothermal - continued development work at the Geysers, the only commercial geothermal unit in the U.S.
- 3) Coal - investigated the siting of its first coal fired generating plant.
- 4) Hydroelectric - started construction of the Helms pumped storage hydroelectric project.
- 5) Coal production - exercised an option to purchase 150 million tons of low sulphur coal reserves in Utah.
- 6) Uranium - agreed to purchase uranium rights in Texas and is negotiating for uranium in Wyoming.
- 7) Natural gas - continued its active participation in the Arctic Gas line to bring Alaskan gas to the lower 48.

Financial Summary (\$ millions)

	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>	<u>1972</u>
Revenue	\$2,647	\$2,233	\$1,727	\$1,490	\$1,351
Net Income	302	252	261	244	215
Funds From Operations	415	353			
New Investment	599	631	646	566	544
Gross Plant	8,398	7,845			
Stockholders' Equity	2,495	2,216			
Long-Term Debt	3,128	3,039			
Debt/Equity	1.25	1.37			

Philadelphia Electric Company

This company supplies Philadelphia and the surrounding areas with electricity (84% of revenue), gas (13% of revenue) and steam (3% of revenue). The company is dependent upon purchased coal (two million tons/year) and oil (14.5 million bbls) for the majority of their generating capacity. 17% of their power came from the Peach Bottom Nuclear Station. Two more nuclear plants are expected to be on stream, one in 1983, the other in 1985. With their completion, more than 50% of the power will be nuclear.

To alleviate their fuel problems, the company has entered into an agreement with Transcontinental Pipeline and an independent producer to spend \$1 million per year for three years on an oil and gas exploration program in the U.S.

Financial Summary (\$ millions)

	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>	<u>1972</u>
Revenue	\$1,024	\$ 978	\$ 874	\$ 647	\$ 574
Net Income	165	144	129	123	108
Funds From Operations	267	201	185	142	135
New Investment	380	361	477	494	400
Gross Plant	4,747	4,446	4,124	3,672	3,223
Stockholders' Equity	1,326	1,223	1,078	1,059	895
Long-Term Debt	1,936	1,777	1,598	1,319	1,287
Debt/Equity Ratio	1.46	1.45	1.48	1.25	1.44

Texas Utilities Company

Texas Utilities is an integrated holding company furnishing electricity to north-central and northwest Texas. In 1971, 100% of their operating capacity was fueled by oil or gas. By 1985, the company expects this percentage to be 25% or less, the remainder being fueled with coal and uranium. 26% of new capacity will be nuclear, 69% coal, and 5% oil/gas.

Energy

<u>Coal</u>	Reserves	915 million tons
	Production	12 million tons

The majority of the coal (715 million tons) is lignite located near the generating stations in Texas. Texas Utilities has made arrangements to mine an additional 200 million tons in New Mexico. By 1985, Texas Utilities will be the thirteenth largest coal producer at 28.2 million tons per year.

<u>Uranium</u>	Reserves	800,000 lbs.

A mine in New Mexico is being developed as a joint venture with Ranchers Exploration. Texas Utilities owns half of the reserves and has an option to purchase the other half.

Coal Gasification

The company purchased a low BTU gasification system from Russia. Tests are encouraging, but the company is still some fifteen months from a pilot plant.

Financial Summary (\$ millions)

	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>	<u>1972</u>
Revenue	\$1,082	\$ 889	\$ 727	\$ 615	\$ 563
Net Income	297	236	207	182	170
Funds From Operations	179	149	141	125	114
New Investment	622	541	399	307	253
Gross Plant	4,400	3,736	3,177	2,772	2,463
Stockholders' Equity	1,267	1,025	983	858	733
Long-Term Debt	1,627	1,335	1,140	995	952
Debt/Equity	1.28	1.30	1.16	1.16	1.30

12/31/76

Appendix F-1
FEDERAL COAL LEASES
December 31, 1976

LESSEE	STATE	LEASE	ANNIV DATE	NPACD=1 SURF=2 UNDGD=3	TOTAL NUM. CF LEASES
A. JAMES GORDON	OK	65023555	020161	1	1
A. JAMES GORDON	OK	65023556	020161	1	1
LESSEE TOTAL					2
ALASKA STATE BANK	AK	02004923	091847	1	1
LESSEE TOTAL					1
ALBERT MARTINEZ	CO	51058043	091141	1	1
LESSEE TOTAL					1
ALTON SHAKESPEAR	UT	72071561	030151	1	1
LESSEE TOTAL					1
AMERICAN COLLOID CO.	ND	19061025	030164	1	1
LESSEE TOTAL					1
AQUARIUS RESOURCES CORP.	WY	74018804	032838	1	1
LESSEE TOTAL					1
ARCH MIN. CORP. (ARK LAND, LES.)	WY	52033800	100824	2	1
ARCH MIN. CORP. (ARK LAND, LES.)	WY	52078051	050151	2	1
ARCH MIN. CORP. (ARK LAND, LES.)	WY	53016466	020171	2	1
ARCH MIN. CORP. (ARK LAND, LES.)	WY	53031258	050151	2	1
ARCH MIN. CORP. (ARK LAND, LES.)	WY	53054727	110161	1	1
ARCH MIN. CORP. (ARK LAND, LES.)	WY	53054728	110161	1	1
ARCH MIN. CORP. (ARK LAND, LES.)	WY	53054737	110161	1	1
ARCH MIN. CORP. (ARK LAND, LES.)	WY	53146195	010164	1	1
ARCH MIN. CORP. (ARK LAND, LES.)	WY	53150169	010164	1	1
LESSEE TOTAL					9
ARCH MINERAL CORP.	WY	53025406	010171	1	1
LESSEE TOTAL					1
ARPECA H. MCKINNON	UT	73044076	090165	1	1
LESSEE TOTAL					1
ATLANTIC RICHFIELD CO	CO	50001362	090167	1	1
ATLANTIC RICHFIELD CO	CO	50117192	060165	1	1
ATLANTIC RICHFIELD CO	WY	27002313	120166	1	1
ATLANTIC RICHFIELD CO	WY	27003446	110167	1	1
ATLANTIC RICHFIELD CO	WY	27036094	120166	1	1
LESSEE TOTAL					5
ATLANTIC RICHFIELD CO.	CO	49044569	083034	3	1
LESSEE TOTAL					1
BARNEY URTADO	NM	41042800	040824	1	1
LESSEE TOTAL					1

7/31/76

LESSEE	STATE	LEASE	ANNIV DATE	NPROD=1 SURF=2 UNDO=3	TOTAL NUM. OF LEASES
BAUKOL - NOONAN INC.	ND	19043848	010162	1	1
LESSEE TOTAL					1
BELCO PETROLEUM CCFP.	WY	27322794	010170	1	1
LESSEE TOTAL					1
BELDEN ENTERPRISES, INC.	CO	45036906	040124	1	1
LESSEE TOTAL					1
BIG HORN COAL CO.	WY	29025369	051730	1	1
LESSEE TOTAL					1
BLACK BUTTE COAL CO	WY	75006266	050176	2	1
LESSEE TOTAL					1
BRIDGER COAL CO	WY	75313558	010168	2	1
LESSEE TOTAL					1
CALIFORNIA PORTLAND CEMENT CO.	UT	72051279	010435	2	1
LESSEE TOTAL					1
CAMERON COAL CO.	CK	61017683	020968	1	1
CAMERON COAL CO.	OK	65029891	050162	1	1
CAMERON COAL CO.	CK	65029892	050162	1	1
LESSEE TOTAL					3
CARBON EMERY BANK	UT	72063720	121742	1	1
CARBON EMERY BANK	UT	73008606	100153	1	1
CARBON EMERY BANK	UT	73024814	010158	1	1
LESSEE TOTAL					3
CARROLL COUNTY COAL CO.	UT	73007653	090170	1	1
LESSEE TOTAL					1
CARTER OIL COMPANY	WY	27003397	120167	1	1
CARTER OIL COMPANY	WY	27005035	120167	1	1
CARTER OIL COMPANY	WY	27005036	120167	1	1
CARTER OIL COMPANY	WY	27049644	090165	1	1
LESSEE TOTAL					4
CENTENNIAL COAL ASSOC.	UT	72027304	090125	1	1
CENTENNIAL COAL ASSOC.	UT	72063058	080342	1	1
CENTENNIAL COAL ASSOC.	CT	73010581	020156	1	1
LESSEE TOTAL					3
CF&I STEEL	CO	50000067	070152	1	1
LESSEE TOTAL					1
CHARLES W. KINGSTON	UT	73022918	040158	1	1
LESSEE TOTAL					1

2/11/76

LESSEE	STATE	LEASE	ANNIV DATE	NPROD=1 SURF=2 UNDGC=3	TOTAL NUM. OF LEASES
CHLS. & PAUL SILENGE	CO	50012894	120156	1	1
LESSEE TOTAL					1
COAL SEARCH CORP.	UT	73141171	030167	1	1
COAL SEARCH CORP.	UT	73141176	030167	1	1
COAL SEARCH CORP.	UT	73141177	030167	1	1
COAL SEARCH CORP.	UT	73141178	030167	1	1
LESSEE TOTAL					4
COASTAL STATES ENERGY	UT	73149084	060166	3	1
LESSEE TOTAL					1
COASTAL STATES ENERGY CO.	UT	72062583	091141	3	1
LESSEE TOTAL					1
COLLINS MINING CO.	OH	88080717	070168	1	1
LESSEE TOTAL					1
COLUMBINE MINING CO.	WY	74015155	091927	1	1
LESSEE TOTAL					1
COMMONWEALTH COAL CO.	CO	49044240	011233	1	1
COMMONWEALTH COAL CO.	CO	50076713	020166	3	1
LESSEE TOTAL					2
CONSOLIDATION COAL CO.	CO	50000245	100166	1	1
CONSOLIDATION COAL CO.	CO	50001545	090167	1	1
CONSOLIDATION COAL CO.	CO	50001546	090167	1	1
CONSOLIDATION COAL CO.	CO	50001711	040167	1	1
CONSOLIDATION COAL CO.	CO	50093714	060167	1	1
CONSOLIDATION COAL CO.	CO	50093715	060167	1	1
CONSOLIDATION COAL CO.	CO	50093716	060167	1	1
CONSOLIDATION COAL CO.	ND	19011269	050171	1	1
CONSOLIDATION COAL CO.	ND	19015896	050171	2	1
CONSOLIDATION COAL CO.	ND	19070203	110165	1	1
CONSOLIDATION COAL CO.	NM	40510466	070167	1	1
CONSOLIDATION COAL CO.	NM	40510467	070167	1	1
CONSOLIDATION COAL CO.	NM	40510468	070167	1	1
CONSOLIDATION COAL CO.	NM	40555316	020169	1	1
CONSOLIDATION COAL CO.	NM	40555317	120164	1	1
CONSOLIDATION COAL CO.	UT	73098783	050167	1	1
CONSOLIDATION COAL CO.	UT	73098784	050167	1	1
CONSOLIDATION COAL CO.	UT	73098785	050167	1	1
CONSOLIDATION COAL CO.	UT	73098787	050167	1	1
CONSOLIDATION COAL CO.	UT	73103107	090167	1	1
CONSOLIDATION COAL CO.	UT	73103109	050167	1	1
CONSOLIDATION COAL CO.	UT	73103129	090167	1	1
CONSOLIDATION COAL CO.	UT	73103130	090167	1	1
CONSOLIDATION COAL CO.	UT	73105418	090167	1	1

12/31/76

LESSEE	STATE	LEASE	ANNIV DATE	NPROL=1 SURF=2 UNDGC=3 L
EMPIRE ENERGY CORP	CO	49056258	120149	1
EMPIRE ENERGY CORP	CO	50127865	110166	1
LESSEE TOTAL				
EN. FUEL CO. (MORE. COAL-LESSEE)	CO	49052547	030145	2
LESSEE TOTAL				
ENERGY DEVELOPMENT CO	WY	53016465	050169	2
LESSEE TOTAL				
ENERGY FUELS CORPORATION	CO	50081330	110163	2
ENERGY FUELS CORPORATION	CO	50128433	040175	2
LESSEE TOTAL				
EVANS COAL CO.	OK	60028799	050156	1
EVANS COAL CO.	OK	60029794	040156	1
EVANS COAL CO.	OK	60030584	090156	1
EVANS COAL CO.	OK	60031611	100156	1
EVANS COAL CO.	OK	60032224	030154	1
EVANS COAL CO.	OK	61017564	012968	1
EVANS COAL CO.	OK	61017612	030870	1
EVANS COAL CO.	OK	61022012	080153	1
LESSEE TOTAL				
EWING, SHAW, PETERSON & ZINKL	CO	50001538	060151	1
LESSEE TOTAL				
F. V. COLOMBO	LT	73020641	060161	1
LESSEE TOTAL				
FERNE M. JAMES	CO	50064416	010166	1
LESSEE TOTAL				
FLORENTINO PADILLA	NM	41075321	121139	1
FLORENTINO PADILLA	NM	41077779	050149	1
LESSEE TOTAL				
FMC CORP.	WY	75061421	030163	1
FMC CORP.	WY	75061422	030163	1
LESSEE TOTAL				
FRANKLIN REAL ESTATE	UT	72029093	061721	3
FRANKLIN REAL ESTATE	UT	72071737	050150	1
FRANKLIN REAL ESTATE	UT	73019524	060157	1
LESSEE TOTAL				
FRANKLIN REAL ESTATE CORP	UT	72046652	080321	1
FRANKLIN REAL ESTATE CORP	UT	72048442	112130	1
FRANKLIN REAL ESTATE CORP	LT	73025484	070174	1

12/11/76

LESSEE	STATE	LEASE	ANNIV DATE	NPRCD=1 SURF=2 N UNDGC=3 L
FRANKLIN REAL ESTATE CORP	UT	73025485	070174	1
FRANKLIN REAL ESTATE CORP	UT	73058184	061721	3
FRANKLIN REAL ESTATE CORP	UT	73146345	110165	1
FRANKLIN REAL ESTATE CORP	UT	73148779	080166	1
LESSEE TOTAL				
GARLAND COAL & MINING CO.	CO	50008172	060158	1
GARLAND COAL & MINING CO.	CO	50008173	060158	1
GARLAND COAL & MINING CO.	CO	50012765	060160	1
GARLAND COAL & MINING CO.	OK	60018983	042350	1
GARLAND COAL & MINING CO.	OK	60022999	060162	1
GARLAND COAL & MINING CO.	OK	60027239	080453	1
GARLAND COAL & MINING CO.	OK	60028369	070152	1
GARLAND COAL & MINING CO.	OK	60028370	050156	1
GARLAND COAL & MINING CO.	OK	60030765	020155	1
GARLAND COAL & MINING CO.	OK	60030953	090158	2
GARLAND COAL & MINING CO.	OK	60031135	050156	1
GARLAND COAL & MINING CO.	OK	60031985	020157	1
GARLAND COAL & MINING CO.	OK	60032614	020158	1
GARLAND COAL & MINING CO.	OK	60035068	100153	2
GARLAND COAL & MINING CO.	OK	60035069	100153	1
GARLAND COAL & MINING CO.	OK	61018074	100169	1
GARLAND COAL & MINING CO.	OK	65025632	050161	1
GARLAND COAL & MINING CO.	OK	65029132	060161	1
GARLAND COAL & MINING CO.	OK	65029179	020161	1
GARLAND COAL & MINING CO.	OK	65029180	020161	1
GARLAND COAL & MINING CO.	OK	65033508	020162	1
GARLAND COAL & MINING CO.	OK	65033722	030162	1
GARLAND COAL & MINING CO.	OK	65033723	030162	1
GARLAND COAL & MINING CO.	OK	65033866	030162	1
GARLAND COAL & MINING CO.	OK	65034521	030162	1
GARLAND COAL & MINING CO.	OK	65036953	050163	1
GARLAND COAL & MINING CO.	OK	65556624	010170	1
GARLAND COAL & MINING CO.	OK	65557450	050165	1
LESSEE TOTAL				
GEORESOURCES EXPLCR. INC.	ND	19065329	120164	1
LESSEE TOTAL				
GEORGE H. FRANDSEN	UT	72048223	040530	1
GEORGE H. FRANDSEN	UT	72050638	051041	1
LESSEE TOTAL				
GLENN JOHNSON	MT	22028531	030328	1
LESSEE TOTAL				
GLENN MOCK	MT	21006770	010154	1
LESSEE TOTAL				

2/31/76

LESSEE	STATE	LEASE	ANNIV DATE	NPRGC=1 SURF=2 UNCGC=3	TI NL LE
GRANITE CREEK COAL LESSEE TOTAL	WY	74019039	021141	1	
GULF OIL CORP LESSEE TOTAL	WY	27256663	030165	1	
GULF OIL CORP.	NM	40065466	010164	1	
GULF OIL CORP.	WY	27220516	030165	1	
GULF OIL CORP.	WY	27236507	030165	1	
GULF OIL CORP.	WY	27236621	060163	1	
GULF OIL CORP.	WY	27240559	090163	1	
LESSEE TOTAL					
GULF OIL CORPORATION LESSEE TOTAL	CO	45036955	122823	1	
HEINER COAL CO. ET. AL.	UT	72052354	072540	1	
HEINER COAL CO. ET. AL.	UT	73007746	060357	1	
HEINER COAL CO. ET. AL.	UT	73053995	030162	1	
HEINER COAL CO. ET. AL.	UT	73062453	030162	1	
HEINER COAL CO. ET. AL.	UT	73089096	070162	1	
HEINER COAL CO. ET. AL.	UT	73092147	120162	1	
HEINER COAL CO. ET. AL.	UT	73144820	090166	1	
LESSEE TOTAL					
HELEN MINING CO	PA	89009403	070174	1	
HELEN MINING CO	PA	89013845	070174	1	
LESSEE TOTAL					
HENRIETTA MINES, INC. LESSEE TOTAL	CO	51059300	091141	3	
HENRY L. & EUGENE WEAVER LESSEE TOTAL	CC	50069942	040162	3	
HIKO BELL MINING	UT	73118266	110165	1	
HIKO BELL MINING	UT	73120794	030166	1	
HIKO BELL MINING	UT	73146654	120165	1	
LESSEE TOTAL					
INDUSTRIAL RESOURCES INC.	CO	50125436	050168	1	
INDUSTRIAL RESOURCES INC.	CO	50125437	050168	1	
INDUSTRIAL RESOURCES INC.	CO	50125438	050168	1	
INDUSTRIAL RESOURCES INC.	CO	50125439	050168	1	
INDUSTRIAL RESOURCES INC.	CO	50125515	050168	1	
INDUSTRIAL RESOURCES INC.	CO	50125516	050168	1	
LESSEE TOTAL					
INTERMOUNTAIN EXPLORATION LESSEE TOTAL	UT	72050641	120638	1	

12/31/76

LESSEE	STATE	LEASE	ANNIV DATE	NPCC=1 SURF=2 UNDGC=3
JAMES BROS. COAL CO. LESSEE TOTAL	CO	50029889	110164	1
JAMES L SIMMONS LESSEE TOTAL	NM	41076644	051044	1
JAMES REESE LESSEE TOTAL	CA	03032582	090943	1
JEROME CRUZE LESSEE TOTAL	WY	75023373	020158	1
JOE PETRANOVICH LESSEE TOTAL	CO	49052546	052748	1
JOHN E SACKETT LESSEE TOTAL	NM	41048323	071929	1
JOHN F. SANDERS JOHN F. SANDERS LESSEE TOTAL	UT	72050655	111738	1
	UT	72062648	010342	1
JOHN L BELL LESSEE TOTAL	UT	73082996	070162	1
KAISER STEEL CORP.	UT	72062966	111243	3
KAISER STEEL CORP.	UT	72066490	123147	1
KAISER STEEL CORP.	UT	72069291	040150	1
KAISER STEEL CORP.	UT	73002785	070152	1
KAISER STEEL CORP.	UT	73014217	020155	1
KAISER STEEL CORP.	UT	73014218	020155	1
KAISER STEEL CORP.	UT	73039706	070160	1
KAISER STEEL CORP.	LT	73126947	120163	1
KAISER STEEL CORP. LESSEE TOTAL	UT	73126948	120163	1
KANAWHA & HOCKING	UT	72062605	021739	1
KANAWHA & HOCKING	UT	73017354	090156	1
KANAWHA & HOCKING	UT	73067498	010162	1
KANAWHA & HOCKING LESSEE TOTAL	UT	73013120	020164	1
KEMMERER COAL CO.	CO	49038385	030129	1
KEMMERER COAL CO.	CO	50105299	060168	1
KEMMERER COAL CO.	CO	50105300	060168	1
KEMMERER COAL CO.	CO	50120073	110168	1
KEMMERER COAL CO.	CO	50120076	120168	1
KEMMERER COAL CO.	CO	50120077	110168	1
KEMMERER COAL CO.	CO	50120078	110168	1

LESSEE	STATE	LEASE	ANNIV DATE	NPRUD=1 SURF=2 UNDO=3
KEMMERER COAL CO.	CO	50120079	110168	1
KEMMERER COAL CO.	CO	50120080	110168	1
KEMMERER COAL CO.	CO	50123177	080166	1
KEMMERER COAL CO.	WY	75055246	030158	2
KEMMERER COAL CO.	WY	75056471	040162	1
KEMMERER COAL CO.	WY	75060274	020163	1
KEMMERER COAL CO.	WY	75075206	010259	1
KEMMERER COAL CO.	WY	75075207	010259	1
KEMMERER COAL CO.	WY	75294513	070164	1
LESSEE TOTAL				
KEMMERER&CONSOL. COAL COS.	UT	73005287	070170	1
KEMMERER&CONSOL. COAL CCS.	UT	73073039	060162	1
KEMMERER&CONSOL. COAL COS.	UT	73073040	060162	1
KEMMERER&CONSOL. COAL COS.	UT	73073041	060162	1
KEMMERER&CONSOL. COAL COS.	UT	73090231	110162	1
KEMMERER&CONSOL. COAL COS.	UT	73101213	060165	1
KEMMERER&CONSOL. COAL CCS.	UT	73101214	060165	1
KEMMERER&CONSOL. COAL COS.	UT	73101215	060165	1
KEMMERER&CONSOL. COAL COS.	UT	73101217	060165	1
KEMMERER&CONSOL. COAL CCS.	UT	73101218	060165	1
LESSEE TOTAL				
KEANECOTT COAL CO.	UT	73005067	060152	1
KEANECOTT COAL CO.	UT	73007064	010157	1
LESSEE TOTAL				
KERMIT L. JAMES	CO	50024998	100163	1
LESSEE TOTAL				
KERR - MCGEE CORP	WY	27023528	050170	1
KERR - MCGEE CORP	WY	27024710	090170	1
KERR - MCGEE CORP	WY	27311810	010170	1
KERR - MCGEE CORP	WY	27312311	070165	1
KERR - MCGEE CORP	WY	27313668	100165	1
LESSEE TOTAL				
KIP	CO	50114093	050164	1
LESSEE TOTAL				
KING CANNEL COAL CO.	UT	72050619	060138	1
LESSEE TOTAL				
KNIFE RIVER COAL MINING CO.	MT	18023207	030157	2
KNIFE RIVER COAL MINING CO.	ND	19000437	030169	1
KNIFE RIVER COAL MINING CO.	ND	19000438	030169	1
KNIFE RIVER COAL MINING CO.	ND	19025702	050158	1
KNIFE RIVER COAL MINING CO.	ND	19041765	080161	2
KNIFE RIVER COAL MINING CO.	ND	23021807	052123	1

LESSEE	STATE	LEASE	ANN IV DATE	AFRCD=1 SURF=2 UNCGD=3	TOTAL NUM. LEASE
KNIFE RIVER COAL MINING CO. LESSEE TOTAL	ND	33019127	C1C151	2	1 7
L. M. COOLEY LESSEE TOTAL	CO	50028875	110163	1	1 1
LEECC. INC. LESSEE TOTAL	KY	89012847	030175	3	1 1
LEC WARREN LESSEE TOTAL	AM	41077115	072744	1	1 1
LEFOY E. BONSNESS LESSEE TOTAL	ND	33018222	01C151	1	1 1
LONE STAR STEEL CC. LONE STAR STEEL CC. LONE STAR STEEL CC. LONE STAR STEEL CC. LONE STAR STEEL CC. LONE STAR STEEL CC. LESSEE TOTAL	OK OK CK OK CK CK	60018125 60018820 60021851 65050405 65050406 65059992	090150 050162 080151 120159 120199 060159	1 1 2 1 1 1	1 1 1 1 1 1 6
MACK R. PATERSCH LESSEE TOTAL	CO	49055156	101848	1	1 1
MALCOLM N. MCKINNEN MALCOLM N. MCKINNEN MALCOLM N. MCKINNEN MALCOLM N. MCKINNEN LESSEE TOTAL	UT UT UT UT	72050862 73020305 73142235 73147570	080537 030162 100164 050166	1 1 1 1	1 1 1 1 4
MAKDRONE MINING CC. LESSEE TOTAL	OR	05005272	C6C157	3	1 1
MANEOTIS SHEEP CO. LESSEE TOTAL	CO	49051376	100840	1	1 1
MARJORIE B. MANA LESSEE TOTAL	CC	50030472	070160	1	1 1
MEADOWLARK FARMS, INC. MEADOWLARK FARMS, INC. LESSEE TOTAL	WY WY	27313773 27317682	090165 090165	1 2	1 1 2
MEDICINE BOW COAL CO LESSEE TOTAL	WY	59042254	020171	2	1 1
MIC-COINT. COAL&CCKE CO.	CO	50009004	05C161	1	1

12/31/76.

LESSEE	STATE	LEASE	ANNIV DATE	APROD=1 SURF=2 UNOD=3
MID-CONT. COAL&COKE CO.	CO	50009005	110158	3
MIC-CONT. COAL&COKE CO.	CO	50011646	100158	1
MID-CONT. COAL&CCNE CO.	CO	50012640	010165	1
MID-CONT. COAL&COKE CO.	CO	50030345	040161	1
MIC-CONT. COAL&COKE CO.	CO	50074632	120166	1
MID-CONT. COAL&CCNE CC.	CO	50115606	010165	1
MIC-CONT. COAL&COKE CO.	CO	50125456	040161	1
MIC-CONT. COAL&CCNE CO.	CO	50125457	100165	3
LESSEE TOTAL				
MIC-CONT. LIMESTONE CO.	CO	49040389	052132	1
MID-CONT. LIMESTONE CO.	CO	50037277	100162	1
MID-CONT. LIMESTONE CO.	CO	50059420	100165	1
LESSEE TOTAL				
MIDWEST MINING CO.	OK	65141015	070162	1
MIDWEST MINING CO.	OK	65161332	120161	1
LESSEE TOTAL				
MOBIL OIL CORP.	WY	27023929	020171	1
LESSEE TOTAL				
MONOLITH PORT. MIDWEST CO.	CO	49057166	062151	1
MONOLITH PORT. MIDWEST CO.	UT	72070806	070153	1
MONOLITH PORT. MIDWEST CO.	UT	73019274	080157	1
LESSEE TOTAL				
MOON LAKE ELEC. ASSOC.	CO	50023703	030163	1
LESSEE TOTAL				
MRS. FRED A SILVA	NM	41071448	061140	1
LESSEE TOTAL				
NEV. ELEC. INVEST. CO.	UT	72058575	100836	1
NEV. ELEC. INVEST. CO.	UT	72064507	110141	1
NEV. ELEC. INVEST. CO.	UT	73060745	110161	1
NEV. ELEC. INVEST. CO.	UT	73060746	110161	1
NEV. ELEC. INVEST. CO.	UT	73065012	110161	1
NEV. ELEC. INVEST. CO.	UT	73083072	070162	1
NEV. ELEC. INVEST. CO.	UT	73098705	050163	1
NEV. ELEC. INVEST. CO.	UT	73101153	050163	1
LESSEE TOTAL				
NORTH AMER. COAL CORP.	NC	23020273	102122	2
LESSEE TOTAL				
NORTHWESTERN RESOURCES COMPANY	WY	26069111	120145	1
LESSEE TOTAL				

12/31/76

LESSEE	STATE	LEASE	ANNUAL DATE	NPRCD=1 SURF=2 UNDGD=3
PACIFIC POWER&LIGHT CO	MT	18069782	070165	1
PACIFIC POWER&LIGHT CO	MT	21057934	100163	1
PACIFIC POWER&LIGHT CO	OR	05003520	011959	1
PACIFIC POWER&LIGHT CO	OR	05012472	060162	1
PACIFIC POWER&LIGHT CO	WY	27321780	120166	1
PACIFIC POWER&LIGHT CO	WY	27322255	120166	1
PACIFIC POWER&LIGHT CO	WY	52054769	053133	1
PACIFIC POWER&LIGHT CO	WY	53038597	080158	2
PACIFIC POWER&LIGHT CO	WY	53038602	060156	2
PACIFIC POWER&LIGHT CO	WY	53041355	070256	2
PACIFIC POWER&LIGHT CO	WY	53092140	070162	1
PACIFIC POWER&LIGHT CO	WY	53092141	070162	1
PACIFIC POWER&LIGHT CO	WY	53244167	060163	1
PACIFIC POWER&LIGHT CO	WY	53312517	040167	1
PACIFIC POWER&LIGHT CO	WY	53312918	040165	1
PACIFIC POWER&LIGHT CO	WY	53313559	060165	1
PACIFIC POWER&LIGHT CO	WY	75002727	100169	1
PACIFIC POWER&LIGHT CO	WY	75002728	100169	1
LESSEE TOTAL				
PACCLA COMPANY	OK	61018108	052570	1
LESSEE TOTAL				
PAUL REES COAL CO.	OK	61017902	092569	2
LESSEE TOTAL				
PEABODY COAL (UN. EL. COAL-LES.)	CO	50081251	050165	1
PEABODY COAL (UN. EL. COAL-LES.)	CO	50081258	050165	1
LESSEE TOTAL				
PEABODY COAL CO.	CO	50086654	070163	1
PEABODY COAL CO.	CO	50088199	070163	2
PEABODY COAL CO.	CO	50112685	120167	1
PEABODY COAL CO.	CO	50112686	120167	1
PEABODY COAL CO.	CO	50112687	120167	1
PEABODY COAL CO.	CO	50125957	100165	1
PEABODY COAL CO.	CO	50126477	120167	1
PEABODY COAL CO.	MT	18015965	040171	2
PEABODY COAL CO.	NM	40315559	080163	1
PEABODY COAL CO.	UT	72051721	110534	1
PEABODY COAL CO.	UT	72064607	100446	3
PEABODY COAL CO.	UT	72064900	020345	3
PEABODY COAL CO.	UT	72066116	060155	1
PEABODY COAL CO.	UT	72070645	040152	3
PEABODY COAL CO.	UT	73001358	080167	3
PEABODY COAL CO.	UT	73006039	050153	1
PEABODY COAL CO.	UT	73014275	100165	1
PEABODY COAL CO.	UT	73020668	050158	1
PEABODY COAL CO.	UT	73024316	050158	1

12/31/76

LESSEE	STATE	LEASE	ANNIV DATE	NPROC=1 SURF=2 UNOSD=3
PLATEAU MINING CO.	UT	72031286	090423	1
PLATEAU MINING CO.	UT	73007949	C9017C	3
PLATEAU MINING CO.	UT	73013097	050174	1
LESSEE TOTAL				
RASMUSSEN, AARON F & VECLA M	UT	72045042	C81437	1
LESSEE TOTAL				
RELIABLE COAL & MINING CO.	CO	49047201	072536	1
RELIABLE COAL & MINING CO.	CO	50078049	080166	1
LESSEE TOTAL				
REPUBLIC STEEL CO	AL	89012284	06C174	3
LESSEE TOTAL				
RESOURCES CO.	UT	73087805	110165	1
RESOURCES CO.	UT	73087806	110165	1
RESOURCES CO.	UT	73087807	110165	1
RESOURCES CO.	UT	73087828	110165	1
RESOURCES CO.	UT	73087833	110165	1
RESOURCES CO.	UT	73087834	110165	1
RESOURCES CO.	UT	73087835	110165	1
RESOURCES CO.	UT	73087836	110165	1
RESOURCES CO.	UT	73092138	110165	1
RESOURCES CO.	UT	73092139	110165	1
RESOURCES CO.	UT	73092140	110165	1
RESOURCES CO.	UT	73092141	110165	1
RESOURCES CO.	UT	73092142	110165	3
RESOURCES CO.	UT	73096486	110165	1
RESOURCES CO.	UT	73096494	110165	1
RESOURCES CO.	UT	73096495	110165	1
RESOURCES CO.	UT	73096496	110165	1
RESOURCES CO.	UT	73096497	110165	1
RESOURCES CO.	UT	73096508	040166	1
RESOURCES CO.	UT	73096509	110165	1
LESSEE TOTAL				
RICHARD D. BASS	WY	27000961	120167	1
LESSEE TOTAL				
ROBERT LEE DAVIS	AM	41074673	011041	1
LESSEE TOTAL				
ROSEBUD COAL SALES	MT	18061686	030164	1
ROSEBUD COAL SALES	WY	52057086	040535	2
LESSEE TOTAL				
ROUTT MINING CORP.	CO	49046544	120337	3
ROUTT MINING CORP.	CO	50127592	100166	1
LESSEE TOTAL				

12/31/76

LESSEE	STATE	LEASE	ANNUAL DATE	NFRCC=1 SURF=2 UNCC=3
PEABODY COAL CO.	UT	73024317	050158	1
FEABCOY COAL CO.	UT	73024318	050158	1
PEABODY COAL CO.	UT	73024319	050160	1
PEABODY COAL CO.	UT	73040151	030162	3
PEABCOY COAL CO.	UT	73044025	080160	3
PEABODY COAL CO.	UT	73083066	030162	1
FEABCOY COAL CO.	UT	73084523	080164	1
FEABCOY COAL CO.	UT	73084924	080164	1
PEABODY COAL CO.	UT	73096476	030167	1
PEABODY COAL CO.	UT	73096477	030167	1
FEABODY COAL CO.	UT	73098786	030167	1
PEABODY COAL CO.	UT	73101140	040167	1
PEABODY COAL CO.	UT	73101141	040167	1
PEABODY COAL CO.	UT	73101142	040167	1
PEABODY COAL CO.	UT	73103108	030167	1
FEABCOY COAL CO.	UT	73103131	040167	1
PEABODY COAL CO.	UT	73103132	040167	1
FEABODY COAL CO.	UT	73103133	040167	1
PEABCOY COAL CO.	UT	73113254	080167	1
PEABODY COAL CO.	UT	73115656	110167	1
PEABODY COAL CO.	UT	73115657	110167	1
PEABODY COAL CO.	WY	27037829	120166	1
PEABODY COAL CO.	WY	27271199	120167	1
FEABCOY COAL CO.	WY	27271200	120167	1
PEABODY COAL CO.	WY	27271201	120167	1
PEABODY COAL CO.	WY	27313667	100165	1
FEABCOY COAL CO.	WY	27321779	120166	1
PEABODY COAL CO.	WY	75003438	030170	1
FEABODY COAL CO.	WY	75220486	110168	1
LESSEE TOTAL				
PEAVELY-SMITH	KY	89003615	010174	3
LESSEE TOTAL				
PETROLEUM INTERNATIONAL INC.	CK	65000957	090167	1
PETROLEUM INTERNATIONAL INC.	CK	65003172	050168	1
PETROLEUM INTERNATIONAL INC.	OK	65003174	050168	1
LESSEE TOTAL				
PITKIN IRON CORP	CO	50020740	100158	1
LESSEE TOTAL				
PITTSBURG&MIDWAY (GULF LESSEE)	CC	49033327	042325	1
PITTSBURG&MIDWAY (GULF LESSEE)	CO	49041478	050630	1
PITTSBURG&MIDWAY (GULF LESSEE)	CC	49053710	081047	1
PITTSBURG&MIDWAY (GULF LESSEE)	CO	50021601	060162	1
PITTSBURG&MIDWAY (GULF LESSEE)	NM	40057348	040161	2
PITTSBURG&MIDWAY (GULF LESSEE)	NM	40057349	040161	2
PITTSBURG&MIDWAY (GULF LESSEE)	NM	40554844	110164	1
LESSEE TOTAL				

2/31/76

LESSEE	STATE	LEASE	ANNIV DATE	NPRGD=1 SURF=2 UNDGC=3	T NUI LE
S. E. EVANS, INC.	OK	65059996	040160	1	
LESSEE TOTAL					
S. W. WEST	UT	73103141	C5C167	1	
LESSEE TOTAL					
SHELL OIL COMPANY	MT	18069945	070165	1	
SHELL OIL COMPANY	WY	27325878	110167	1	
LESSEE TOTAL					
STANICH & BUGNI	MT	25082523	C6C642	1	
LESSEE TOTAL					
STANSBURY COAL COMPANY	WY	75012793	060170	3	
LESSEE TOTAL					
SUMMIT EXPLOR&DEV CO	WY	53310712	120166	1	
SUMMIT EXPLOR&DEV CO	WY	53324701	020170	1	
LESSEE TOTAL					
SUN OIL CO.	WY	75313201	070168	1	
LESSEE TOTAL					
SUNOCO ENERGY DEVELOPMENT CO.	WY	53136194	060161	1	
SUNOCO ENERGY DEVELOPMENT CO.	WY	53136195	060161	1	
SUNOCO ENERGY DEVELOPMENT CO.	WY	53136196	060161	1	
LESSEE TOTAL					
SUNOCO ENERGY DEVELOPMENT COMP	WY	27008385	030171	2	
LESSEE TOTAL					
SWISHER COAL CO	UT	73008319	030170	3	
LESSEE TOTAL					
SWISHER COAL CO.	UT	72064902	012446	1	
LESSEE TOTAL					
TEXACO, INC.	WY	27030009	120155	1	
TEXACO, INC.	WY	27030052	110159	1	
TEXACO, INC.	WY	27046349	100161	1	
TEXACO, INC.	WY	27051559	080157	1	
TEXACO, INC.	WY	27321120	050166	1	
LESSEE TOTAL					
TEXAS INDUSTRIES, INC.	NM	41066817	012535	1	
LESSEE TOTAL					
THERMAL ENERGY CO.	NM	40002457	C5C167	1	
LESSEE TOTAL					

12/31/76

LESSEE	STATE	LEASE	ANNIV DATE	NPRCD= SLRF=2 UNDGD=
THOMAS E. BARTON	CO	49051698	091141	1
LESSEE TOTAL				
THOMPSON CREEK COALECOKE	CO	49037766	110527	1
LESSEE TOTAL				
UNITED ELEC. COAL CC.	OK	65536361	060164	1
LESSEE TOTAL				
LS FUEL CO.	UT	72025431	020823	3
LS FUEL CO.	UT	72069985	110149	3
US FUEL CO.	UT	73026583	020161	3
LESSEE TOTAL				
US STEEL CORP.	CO	49052504	081944	3
US STEEL CORP.	CO	49052558	121444	1
US STEEL CORP.	CO	50001894	120166	1
US STEEL CORP.	CO	50007852	120166	1
US STEEL CORP.	CO	50007853	010165	1
US STEEL CORP.	CO	50012638	010165	1
US STEEL CORP.	CO	50012639	120166	1
US STEEL CORP.	CO	50030344	050160	1
US STEEL CORP.	CO	50030346	050160	1
US STEEL CORP.	CO	50033301	070160	1
US STEEL CORP.	CO	50033302	070164	1
US STEEL CORP.	CO	50051669	090161	1
US STEEL CORP.	CO	50068389	090161	1
US STEEL CORP.	CO	50125485	010165	1
US STEEL CORP.	MT	18003831	120167	1
US STEEL CORP.	MT	18003832	120167	1
US STEEL CORP.	UT	72046612	040229	3
US STEEL CORP.	UT	72066145	061946	3
US STEEL CORP.	UT	72068754	060151	3
LESSEE TOTAL				
USIBELLI COAL MINE INC	AK	02001068	060723	1
USIBELLI COAL MINE INC	AK	02007350	070550	2
USIBELLI COAL MINE INC	AK	02008798	090352	2
LESSEE TOTAL				
UTAH INTERNATIONAL INC.	CO	50000813	040170	1
UTAH INTERNATIONAL INC.	CO	50007518	060158	1
UTAH INTERNATIONAL INC.	CO	50007519	060158	1
UTAH INTERNATIONAL INC.	CO	50079641	100162	1
UTAH INTERNATIONAL INC.	CO	50123476	120166	1
UTAH INTERNATIONAL INC.	CO	50123480	120166	1
UTAH INTERNATIONAL INC.	UT	73098775	080165	1
UTAH INTERNATIONAL INC.	UT	73105404	060165	1

12/31/76

LESSEE	STATE	LEASE	ANNIV DATE	NFF SUR UNC
UTAH INTERNATIONAL INC.	UT	73115938	100165	
UTAH INTERNATIONAL INC.	UT	73122579	050168	
UTAH INTERNATIONAL INC.	UT	73122582	110168	
UTAH INTERNATIONAL INC.	UT	73122583	110168	
UTAH INTERNATIONAL INC.	UT	73122584	110168	
UTAH INTERNATIONAL INC.	UT	73122623	040166	
UTAH INTERNATIONAL INC.	UT	73122647	110168	
UTAH INTERNATIONAL INC.	UT	73122649	110168	
UTAH INTERNATIONAL INC.	LT	73122650	110168	
UTAH INTERNATIONAL INC.	UT	73122651	110168	
UTAH INTERNATIONAL INC.	UT	73122652	110168	
UTAH INTERNATIONAL INC.	UT	73122675	110168	
UTAH INTERNATIONAL INC.	UT	73124768	110168	
UTAH INTERNATIONAL INC.	UT	73126916	110168	
UTAH INTERNATIONAL INC.	UT	7314077C	C1C165	
UTAH INTERNATIONAL INC.	UT	73147999	050166	
UTAH INTERNATIONAL INC.	LT	73149582	090166	
LESSEE TOTAL				
UTAH POWER & LIGHT CO.	UT	72050133	080133	
LESSEE TOTAL				
UTAH POWER & LIGHT	UT	73002664	010157	
LESSEE TOTAL				
W. R. GRACE & CO	CO	49034365	1C2524	
LESSEE TOTAL				
WASATCH COAL COMPANY, INC.	LT	72063011	112841	
LESSEE TOTAL				
WASHINGTON IRRIGATION	WA	10004322	110161	
WASHINGTON IRRIGATION	WA	10006527	04C171	
LESSEE TOTAL				
WAYNE BRANNON	WY	29031719	112232	
LESSEE TOTAL				
WESTERN AMERICA ENERGY CORP	UT	73002810	100167	
LESSEE TOTAL				
WESTERN COAL CO.	NM	40045196	110161	
WESTERN COAL CO.	NM	40045197	110161	
WESTERN COAL CO.	NM	40045217	12C161	
WESTERN COAL CO.	NM	40186612	080161	
WESTERN COAL CO.	NM	40186613	080161	
WESTERN COAL CO.	NM	40186615	C8C161	
LESSEE TOTAL				

12/31/76

LESSEE	STATE	LEASE	ANNIV DATE	NPROD: SURF = UNODG:
WESTERN ENERGY CO.	MT	18073109	090166	1
WESTERN ENERGY CO.	MT	22020989	050523	2
LESSEE TOTAL				
WESTERN NUCLEAR, INC.	WY	30022578	080154	1
LESSEE TOTAL				
WESTERN SLOPE CARBON, INC.	CO	49042921	022531	3
WESTERN SLOPE CARBON, INC.	CO	49056724	120150	3
WESTERN SLOPE CARBON, INC.	CO	50017130	120173	3
LESSEE TOTAL				
WILBERG, ELIZA & LLOYD A.	UT	72036407	051026	1
LESSEE TOTAL				
WYDOAK RESOURCES DEV. CORP	WY	27111833	040161	2
WYDOAK RESOURCES DEV. CORP	WY	27313666	100165	1
WYDOAK RESOURCES DEV. CORP	WY	28073289	050159	2
WYDOAK RESOURCES DEV. CORP	WY	29037423	022244	1
LESSEE TOTAL				
FINAL TOTALS				
537 RECORDS TOTAL				

Source: U. S. Geological Survey
National Center, Conservation
Division,
Reston, Virginia
Private Communication
July 29, 1977

Appendix F-2a

Producers of 3 million tons or more in 1985 *

OIL & GAS

COMPANY	RANK 1985	MILLIONS OF ANNUAL TONS			
		CAPACITY 1976	EXPANSION		CAPACITY 1985
			E.	W.	
CONOCO	2	60.1	5.4	24.5	90.0
EXXON	7	3.1	7.9	22.0	33.0
KERR-McGEE	8	0.3		32.7	33.0
OCCIDENTAL	9	20.1	8.9	3.0	32.0
ATLANTIC RICHFIELD	12			30.0	30.0
ASHLAND (INCL. ARCH)	15	14.0	2.1	6.5	22.6
GULF OIL	17	7.9	1.5	12.1	21.5
NATURAL GAS PIPELINE OF AMERICA	18 (Gasification)			21.0	21.0
SHELL	19			21.0	21.0
SOHIO	24	11.6	4.4		16.0
SUN	27			13.0	13.0
HOUSTON NATURAL GAS	28	7.1	4.0	1.9	13.0
MAPCO	30	5.8	4.2		10.0
QUAKER STATE	32	4.1	1.5	2.9	8.5
CROWN CENTRAL	34	3.1		4.9	8.0
MOBIL	37			6.5	6.5
EL PASO	64			3.5	3.5
GENERAL EXPLORATION	68	0.4		2.6	3.0
		137.6	39.9	208.1	385.6

* Does not include mine depletion.

Sources: FEA Western Coal Mine Development Monitoring System, March 1977, (Western Data), Keystone Coal Industry Manual, 1976, (Subsidiary relationships) Keystone News Bulletin, Jan. 1977 P. 5 (Eastern data)

APPENDIX F-2b

ELECTRIC UTILITIES

Producers of 3 million tons or more in 1985

UTILITIES

<u>COMPANY</u>	<u>RANK 1985</u>	<u>CAPACITY 1976</u>	<u>EXPANSION</u> <u>E.</u> <u>W.</u>		<u>CAPACITY 1985</u>
AMERICAN ELECT. PWR.	4	16.9	37.1	2.5	56.5
TEXAS UTILITIES	5	13.8		38.5	52.3
PACIFIC POWER & LIGHT	6	12.7		35.2	47.9
MONTANA POWER	20	9.3		10.7	20.0
UTAH POWER & LIGHT	35	2.0		5.6	7.6
NOKOTA	36			6.6	6.6
MONTANA DAKOTA UTIL.	40	4.6		1.4	6.0
BRAZOS ELECTRIC	41			6.0	6.0
COMMONWEALTH EDISON	45			5.0	5.0
WESTERN FUELS **	46			5.0	5.0
BLACK HILLS POWER	47	0.7		4.3	5.0
PUBL. SERV. of N.M.	48	1.2		3.7	4.9
DUKE POWER	53	3.0	1.5		4.5
IOWAS PUB. SVC.	54	1.2		3.2	4.4
TEX. MUNIC. POWER	59			4.0	4.0
		<u>65.4</u>	<u>38.6</u>	<u>131.7</u>	<u>235.7</u>

* Does not include mine depletion.

** Electric Utility Group

Sources: See Appendix F-2a

Appendix F-2c

METALS MINING

Producers of 3 million tons or more in 1985 *

COMPANY	RANK 1985	MILLIONS OF ANNUAL TONS			
		CAPACITY 1976	EXPANSION E. W.		CAPACITY 1985
NEWMONT (PEABODY)	1	76.0	2.8	16.6	95.4
AMAX	3	25.2	14.4	40.4	80.0
ST. JOE MINERAL	25 (Met Coal)	10.8	5.2		16.0
UNITED NUCLEAR	56	1.5	2.5	0.2	4.2
RANCHERS ENERGY	61			3.7	3.7
ASARCO	62	3.0	0.5		3.5
		116.5	25.4	60.9	202.8

* Does not include mine depletion.

Sources: See Appendix F-2a

Appendix F-2d

INDEPENDENT COAL

Producers of 3 million tons or more in 1985 *

COMPANY	RANK 1985	MILLIONS OF ANNUAL TONS			
		CAPACITY 1976	EXPANSION E. W.		CAPACITY 1985
NORTH AMERICAN COAL	11	11.4	1.7	17.4	30.5
WESTMORELAND COAL (incl. Resources)	13	13.6	2.0	10.9	26.5
PITTSTON	14 (Met Coal)	19.0	7.5		26.5
EASTERN ASSOC. GAS & FUEL	26 (Met Coal)	9.1	2.9	3.0	15.0
ROCHESTER & PITTSBURGH	31	6.1	2.9		9.0
FALCON SEABOARD	38	6.5			6.5
KEMMERER	42	4.0		1.5	5.5
BAUKOL-NOONAN	51	2.1		2.6	4.7
BENJAMIN COAL	55	3.5	0.9		4.4
JEWELL COAL & COKE	57 (Met Coal)	4.2			4.2
		79.5	17.9	35.4	132.8

* Does not include mine depletion.

Sources: See Appendix F-2a

Appendix F-2e

RAILROADS

Producers of 3 million tons or more in 1985 *

COMPANY	RANK 1985	MILLIONS OF ANNUAL TONS		
		CAPACITY 1976	EXPANSION E. W.	CAPACITY 1985
UNION PACIFIC	23	1.4	14.8	16.2
BURLINGTON/NORTHERN	39		6.2	6.2
		1.4	21.0	22.4

* Does not include mine depletion.

Sources: See Appendix F-2a

Appendix F-2f

CONSTRUCTION

Producers of 3 million tons or more in 1985 *

<u>COMPANY</u>	<u>RANK</u> <u>1985</u>	<u>MILLIONS OF ANNUAL TONS</u>		
		<u>CAPACITY</u> <u>1976</u>	<u>EXPANSION</u> <u>E. W.</u>	<u>CAPACITY</u> <u>1985</u>
PETER KIEWIT	16	7.7	14.0	21.7

* Does not include mine depletion.

Sources: See Appendix F-2a

Appendix F-2g

STEEL

Producers of 3 million tons or more in 1985 *

<u>COMPANY</u>	<u>RANK</u> <u>1985</u>		<u>MILLIONS OF ANNUAL TONS</u>		
			<u>CAPACITY</u> <u>1976</u>	<u>EXPANSION</u> <u>E. W.</u>	<u>CAPACITY</u> <u>1985</u>
U.S. STEEL	10	(Met Coal)	19.9	12.1	32.0
BETHLEHEM	22	(Met Coal)	16.2	2.3	18.5
LYKES	44	(Met Coal)	3.0	2.0	5.0
ARMCO	49	(Met Coal)	3.0	1.3 0.5	4.8
INLAND	50	(Met Coal)	2.3	2.5	4.8
NATIONAL STEEL	60	(Met Coal)	<u>3.4</u>	<u>0.6</u>	<u>4.0</u>
			47.8	20.8 0.5	69.1

* Does not include mine depletion.

Sources: See Appendix F-2a

Appendix F-2h

OTHER INDUSTRIAL

Producers of 3 million tons or more in 1985 *

COMPANY	RANK 1985	MILLIONS OF ANNUAL TONS			CAPACITY 1985
		CAPACITY 1976	EXPANSION E.	W.	
GENERAL ELECTRIC	21	6.5		12.0	18.5
GENERAL DYNAMICS	29	6.6	1.9	2.5	11.0
JIM WALTER	33 (Met Coal)	1.2	7.3		8.5
MOORE-McCORMACK	43	1.9	3.1		5.0
ALCO STANDARD	52	2.2	2.3		4.5
ITT	58	2.6	0.2	1.2	4.0
BATES MFG.	63 (Met Coal)	3.5			3.5
MARMON GROUP	65 (Met Coal)	3.0			3.0
W. R. GRACE	66			3.0	3.0
		27.5	14.8	18.7	61.0

* Does not include mine depletion

Sources: See Appendix F-2a

Appendix F-3

PRODUCTIVE CAPACITY AND COAL UNDER CONTRACT FOR SELECTED YEARS:
WESTERN STATES (Million Short Tons)

State	1977		1980		1985		1/
	Productive Capacity	Under Contract	Productive Capacity	Under Contract	Productive Capacity	Under Contract	
Alaska	0.8	0.7	1.0	1.0	1.5	1.5	
Arizona	11.8	11.8	12.1	12.1	12.1	12.1	
Colorado	12.5	12.3	22.0	16.3	32.1	16.7	
Montana	27.6	26.0	43.6	30.4	101.1	66.9	
New Mexico	10.7	10.4	21.7	20.3	45.0	25.8	
North Dakota	18.8	18.6	22.4	22.0	81.6	32.9	
Oklahoma	3.1	1.8	4.2	1.8	5.1	0.2	
Texas	17.6	17.5	38.0	36.6	59.1	53.1	
Utah	12.7	10.0	21.7	16.7	34.2	22.9	
Washington	4.8	4.8	4.8	4.8	4.8	4.8	
Wyoming	51.4	49.4	146.1	102.5	260.2	144.0	
Total	171.8	156.3	337.6	264.5	636.8	376.5	

1/ Excluding 40.4 million tons for gasification.

Source FEA Western Coal Mine Development Monitoring System, Aug. 1977

Appendix F-4

Estimated Development Cost
Steam Coal Capacity
Expansion 1977-1985
(Millions of Dollars)

	<u>East</u> <u>@\$40/ton</u>	<u>West</u> <u>@\$12/ton</u>	<u>TOTAL</u>	<u>% of</u> <u>Total</u>	<u>% of</u> <u>Non-</u> <u>Captive</u>
Oil & Gas	\$1,196	\$2,234	\$3,430	33%	40%
Electric Utilities	1,544*	1,604	3,148	30	=
Metals Mining	892	702	1,594	16	23
Coal	572	429	1,001	10	14
Other Industrial	432	209	641	6	9
Railroads	-	252	252	2	4
Construction	-	168	168	2	2
Steel	<u>152</u>	<u>11</u>	<u>163</u>	<u>1</u>	<u>-</u>
	\$4,788	\$5,609	\$10,397	100	100

*American Electric Power is \$1,484 million (96%) of Eastern total for utilities.

Source: Exhibit II-5

Appendix F

Source: Burlington Northern Prospectus, July 1977

Appendix F-6

Concentration of Federal Coal Leaseholds Top 20 Lessees, U.S. Totals

Lessee	(Parent Company)	Total Acreage Under Fed. Coal Lease	Total Federal Leases	% of Total Fed. Coal Lse. Acreage
1. Peabody Coal Co.	(Kennecott Copper Co.)	83,778 acres	49 leases	10.7%
2. Garland Coal & Mining Co.		45,993	27	5.9
3. Consolidation Coal Co.	(Continental Oil Co.)	45,452	26	5.8
4. Resources Co. et al	(Ariz. Pub. Serv. & San Diego Gas & Elec.)	39,355	20	5.0
5. Pacific Power & Light		35,079	19	4.5
Top 5 Total		249,657 acres	141 leases	31.9%
6. El Paso Natural Gas		27,019 acres	15 leases	3.5%
7. Utah International, Inc.		24,228	26	3.1
8. Kemmerer Coal Co.	(Lincoln Corp.)	22,854	16	2.9
9. Richard D. Bass		20,701	1	2.6
10. Atlantic Richfield		19,186	6	2.5
Top 10 Total		363,645 acres	205 leases	46.4%
11. U.S. Steel Corp.		18,959 acres	20 leases	2.4%
12. Consol. Coal & Kemmerer Coal Co.	(Cont. Oil & Lincoln Corp.)	18,746	10	2.4%
13. Carter Oil Co.	(Exxon Corp.)	15,491	3	2.0
14. Industrial Resources, Inc.		14,929	6	1.9
15. Sun Oil Co.		14,680	1	1.9
Top 15 Total		446,450 acres	245 leases	57.0%
16. Kaiser Steel Corp.		14,617 acres	9 leases	1.9%
17. Decker Coal Co.	(Pacific Power & Light)	13,610	3	1.7
18. Kerr McGee Corp.		13,289	7	1.7
19. Evans Coal Co.		12,622	8	1.6
20. Western Coal Co.		12,289	6	1.6
Top 20 Total		512,877 acres	279 leases	65.5%
U.S. Total		781,763 acres	536 leases	100.0%

Source: Bureau of Land Management, An Analysis of Existing Federal Coal Leases, March 1976

APPENDIX F-7

CONCENTRATION OF FEDERAL COAL LEASEHOLDS Top 5 and 10 Lessees, By State

State	Federal Lessee	Fed. Lse. Acreage in State	Fed. Lse's. in State	% of Fed. Lse. Acreage in State	% of Total Fed. Coal Lease Acreage

ESO

1. Republic Steel Corp (Ala.)	2,388 acres	1 lease	59%	less than	1%
2. Peavley & Smith (Kty.)	1,282	1	32	less than	1
3. Peabody Coal Co. (Ala.)	200	1	5	less than	1
4. Collins (ohio)	144	1	4	less than	1
5. Helen Mng. Co. (Penn.)	80	2	1	less than	1
Top 5 Total	4,094 acres	6 leases	100%		.5%
State Total	4,094 acres	6 leases	100%		.5%

ALASKA

1. Isibelli Coal Mine, Inc.	1,915 acres	2 leases	74%	less than	1%
2. Alaska State Bank	600	1	23	less than	1
3. Estate of B. Agostino	79	1	3	less than	1
Top 3 Total	2,594 acres	4 leases	100%		.3%
State State	2,674 acres	4 leases	100%		.3%

CALIFORNIA

1. Dixie & Reeves	80 acres	1 lease	100%		0%

COLORADO

1. Kemmerer Coal Co.	16,269 acres	10 leases	13%		2%
2. Industrial Resources, Inc.	14,929	6	12		2
3. Peabody Coal Co.	10,306	8	8		1
4. Consolidation Coal Co.	10,015	7	8		1
5. U.S. Steel Corp.	9,471	15	8		1
Top 5 Total	60,990 acres	46 leases	49%		7.8%

CONCENTRATION OF FEDERAL COAL LEASEHOLDS

Top 5 and 10 Lessees, By State

State	Federal Lessee	Féd. Lse. Acreage in State	Fed. Lse's. in State	% of Fed. Lse. Acreage in State	% of Total Fed. Coal Lease Acreage
	6. Utah International, Inc.	8,071 acres	6 leases	7%	1%
	7. Atlantic Richfield	7,462	3	6	less than 1
	8. Mid-Cont. Coal & Coke	6,065	8	5	less than 1
	9. Garland Coal & Mining Co.	5,433	3	4	less than 1
	10. United Electric Coal Co.	4,842	2	4	1
	Top 10 Total	92,864 acres	68 leases	76%	11.9%
	State Total	121,470 acres	113 leases	100%	15.6%

MONTANA

1. Decker Coal Co.	13,610 acres	3 leases	38%	2%
2. Western Energy Co.	7,073	2	20	less than 1
3. U.S. Steel Corp.	5,096	2	14	less than 1
4. Peabody Coal Co.	4,307	1	12	less than 1
5. Pacific Power & Light Co.	3,067	2	8	less than 1
Top 5 Total	33,153 acres	10 leases	92%	4.2%
State Total	36,232 acres	17 leases	100%	4.6%

NEW MEXICO

1. Western Coal Co.	12,289 acres	6 leases	30%	2%
2. Consolidation Coal Co.	9,303	5	23	1
3. Gulf Oil Corp.	8,156	4	20	1
4. Seneca Oil Co.	6,336	1	15	less than 1
5. Peabody Coal Co.	2,044	1	5	less than 1
Top 5 Total	32,128 acres	17 leases	95%	4.9%
State Total	40,958 acres	28 leases	100%	5.2%

CONCENTRATION OF FEDERAL COAL LEASEHOLDS
Top 5 and 10 Lessees, By State

State	Federal Lessee	Fed. Lse. Acreage in State	Fed. Lse's. in State	% of Fed. Lse. Acreage in State	% of Total Fed. Coal Lease Acreage

NORTH DAKOTA

1. Knife River Coal Co.	7,792 acres	6 leases	48%	less than 1%
2. North American Coal Co.	2,843	3	17	less than 1
3. Kaukol-Noonan, Inc.	2,486	2	15	less than 1
4. Kerr McGee Corp.	2,034	1	12	less than 1
5. Consolidation Coal Co.	601	3	4	less than 1
Top 5 Total	15,756 acres	15 leases	97%	2.0%
State Total	16,235 acres	18 leases	100%	2.1%

OKLAHOMA

1. Garland Coal & Mining Co.	37,115 acres	21 leases	43%	5%
2. Evans Coal Co.	12,622	8	15	2
3. Lone Star Steel Co.	10,172	6	12	1
4. Petroleum Int'l., Inc.	9,110	3	11	1
5. Cameron Coal Co.	4,464	3	5	less than 1
Top 5 Total	73,438 acres	41 leases	84%	9.4%
State Total	87,014 acres	53 leases	100%	11.1%

OREGON

1. Pacific Power & Light Co.	4,866 acres	2 leases	90%	less than 1%
2. Mandrones et al.	538	1	10	less than 1
State Total	5,403 acres	3 leases	100%	.7%

CONCENTRATION OF FEDERAL COAL LEASEHOLDS
Top 5 and 10 Lessees, By State

State	Federal Lessee	Fed. Lse. Acreage in State	Fed. Lse's. in State	% of Fed. Lse. Acreage in State	% of Total Fed. Coal Lease Acreage
UTAH					
	1. Peabody Coal Co.	43,160 acres	31 leases	16%	6%
	2. Resources Co., et al.,	39,355	20	15	5
	3. El Paso Natural Gas	27,019	15	10	3
	4. Consolidation Coal Co.	25,533	11	10	3
	5. Consol. Coal & Kemmerer Coal Co.	18,746	10	7	2
	Top 5 Total	153,813 acres	87 leases	58%	20%
	6. Utah International, Inc.	16,157 acres	20 leases	6%	2%
	7. Kaiser Steel Corp.	14,617	9	5	2
	8. Nevada Electric	10,377	8	4	1
	9. North American Coal	8,905	8	3	1
	10. Jesse H. Knight	7,850	4	3	1
	Top 10 Total	211,719 acres	136 leases	79%	27%
	State Total	268,555 acres	197 leases	100%	34%
WASHINGTON					
	1. Wash. Irrigation & Devel. Co.	521 acres	2 leases	100%	less than 1%

CONCENTRATION OF FEDERAL COAL LEASEHOLDS
Top 5 and 10 Lessees, By State

State	Federal Lessee	Fed. Lse. Acreage in State	Fed. Lse's. in State	% of Fed. Lse. Acreage in State	% of Total Fed. Coal Lease Acreage
WYOMING					
	1. Pacific Power & Light Co.	27,146 acres	15	14%	3%
	2. Peabody Coal Co.	23,761	7	12	3
	3. Richard D. Bass	20,701	1	10	3
	4. Carter Oil Co.	15,491	3	8	2
	5. Sun Oil Co.	14,680	1	7	2
	Top 5 Total	101,779 acres	27	51%	13%
	6. Atlantic Richfield Co.	11,724 acres	3	6%	2%
	7. Ark Land Co.	11,656	8	6	1
	8. Kerr McGee	11,255	6	6	1
	9. Reynolds Mining Corp.	9,418	5	5	1
	10. Energy Development Co.	8,683	1	4	1
	Top 10 Total	154,515 acres	50	77%	20%
	State Total	199,944 acres	91	100%	26%

Source: Bureau of Land Management, An Analysis of Existing Federal Coal Leases, March 1976

Appendix F-8

Preference Right Lease Applications

State	No. of PRLA's	No. of Applicants	No. of PRLA's where applicant has adjacent lease	Acres	Private Surface Acres	Estimated Recoverable Reserves (Mill. Tons)		Dominant Type of Mine		Age of PRLA's (years)		
						S.	U.	S	U	0-3	3-6	6
Montana	8	3	-	26,305.7	13,000.0	500.0	-	8	-	-	8	-
North Dakota	0	0	-	-	-	-	-	-	-	-	-	-
Wyoming	72	12	-	169,849.0	117,982.0	4,104.1	240.3	72	-	24	47	1
Utah	38	9	2	112,887.5 ^{1/}	1,284.6	100.0	1,287.0	3	35	-	-	38
Colorado	41	12	7	94,118.0	67,052.7	937.4	1,341.9	15	26	28	10	3
New Mexico	28	6	-	77,589.6	30,316.0	760.4	-	28	-	10	18	-
Oklahoma	5	3	-	9,518.0	9,518.0	0.1	59.8	1	4	3	1	1
Total	192	45	9	490,267.8	239,153.3	6,402.0	2,929.0	127	65	65	84	43

^{1/} 25574.8 Acres in National Forests

Source: Bureau of Land Management, An Analysis of Preference Right Lease Application for Federal Coal, March 1976

Appendix F-9

PROSPECTING PERMITS

State	No. of Permits	No. of Permit- tees	Total Acreage	Private Surface Acres	Estimated Recoverable Reserves (Mill. Tons)		Minability		Age of Permits <u>1/</u> Years			Comments
					S	U	S	U	0-3	3-6	6	
Montana	4	1	10,878.2	2,675.1	-	-	4	-	-	4	-	No estimate of reserves
North Dakota	0	-	-	-	-	-	-	-	-	-	-	
Wyoming	18	6	42,267.0	36,948.0	2,675.3	33.5	18	-	-	18	-	
Utah	6	2	17,383.3	8,797.5	-	89.0	-	6	-	2	4	U-1362&3 disputed; counted under PRLA
Colorado	0	-	-	-	-	-	-	-	-	-	-	3 PP's in litigation in Solicitor's Office
New Mexico	0	-	-	-	-	-	-	-	-	-	-	
Oklahoma	0	-	-	-	-	-	-	-	-	-	-	
Totals	28	9	70,523.5	48,420.6	-	-	22	6	0	24	4	

1/ Prospecting Permits are initially issued for a two year period and are renewable for an additional two year period; however, some permits were originally issued more than four years ago because a considerable time lapsed between the expiration of the initial two year period and the approval of the second two year period. No new permits have been issued nor old permits renewed since 1973.

Source: Bureau of Land Management, An Analysis of Preference Right Lease Applications for Federal Coal, March 1976

Appendix F-10

Concentration of Preference Right Lease Applicants in the Order of Their Estimated Coal Reserves

Applicant	State	No. of PRLA's	Acreage under PRLA's Acres	% of Total PRLA Acreage	Recoverable Under PRLS's PRLA's Million Tons	% of Total PRLA Recoverable Reserve
1. Peter I Wold II	Wyo.	7	20,509	4.2%		
2. E. L. Lockhart	Wyo.	13	29,290	6.0		
3. Mintech Corp.	Colo.	8	14,314	2.9		
4. Ember Mining Co.	Colo.	3	9,626	2.0		
5. Peabody Coal Co.	Wyo.	17	14,660	3.0		
Subtotal of Top 5		48	88,399	18.1	4,595.9	49.2
6. Kemmerer Coal Co.	Wyo, Colo.	12	39,156	8.0		
7. Meadowlark Farms Inc.	Utah, Mont.	15	49,772	10.2		
8. Utah Power & Light	Utah	8	18,323	3.7		
9. Ark Land Company	Wyo, N.Mex.	11	30,050	6.1		
10. Rosebud Coal Co.	Wyo.	9	25,566	5.2		
Subtotal of 6 thru 10		55	162,869	33.2	2,105.8	22.6
11. Woods Petroleum Co.	Utah	3	13,609	2.8		
12. Eastern Assoc. Prop.	N.Mex.	10	35,938	7.3		
13. Sun Oil Company	Utah	4	18,374	3.7		
14. Mapco	Mont.	4	11,633	2.4		
15. Fred C. Woodson	Wyo, Mont.	3	9,195	1.9		
Subtotal of 11 thru 15		24	88,749	18.1	1,106.3	11.8
25 1/Remaining Applicants		65	150,251	30.6	1,523.0	16.4
Total		192	490,268	100.0%	9,331.0	100.0%
1/	Five different applicants have PRLA's in more than one State. There are only 40 different PRLA applicants but when summed by State the total is 45 because five applicants are each counted twice					

Reserve figures deleted so as not to reveal possible proprietary data.

Source: Bureau of Land Management, An Analysis of Preference Right Lease Applications for Federal Coal, March 1976.

Appendix F-11

Bituminous Coal Mining in the United States

Year	Production (net tons)	Value		Men Employed	Number of Mines	Percent of Total Production Strip Mined
		Total (thousands)	Average per ton			
1945	577,617,327	\$1,768,204	\$3.06	383,100	7,033	19.0
1946	533,922,068	1,835,539	3.44	396,434	7,333	21.1
1947	630,623,722	2,622,635	4.16	419,182	8,700	22.1
1948	599,318,229	2,993,267	4.99	441,631	9,079	23.3
1949	437,868,036	2,136,871	4.88	433,698	8,559	24.2
1950	516,311,053	2,500,374	4.84	415,582	9,429	23.9
1951	533,664,732	2,626,030	4.92	372,897	8,009	22.0
1952	466,840,782	2,289,180	4.90	335,217	7,275	23.3
1953	457,290,449	2,247,942	4.92	293,106	6,617	23.1
1954	391,706,300	1,769,620	4.52	227,397	6,130	25.1
1955	464,633,408	2,092,383	4.50	225,093	7,856	24.8
1956	500,847,077	2,412,004	4.82	228,163	8,520	25.4
1957	492,703,916	2,504,406	5.08	228,635	8,539	25.2
1958	410,445,547	1,996,281	4.86	197,402	8,264	28.3
1959	412,027,502	1,965,607	4.77	179,636	7,719	29.4
1960	415,512,347	1,950,425	4.69	169,400	7,865	29.5
1961	402,976,802	1,844,563	4.58	150,474	7,648	30.3
1962	422,149,325	1,891,554	4.48	143,822	7,740	30.9
1963	458,928,175	2,013,309	4.39	141,646	7,940	31.4
1964	486,997,952	2,165,582	4.45	128,698	7,630	31.2
1965	512,088,263	2,276,022	4.44	133,732	7,228	32.3
1966	533,881,210	2,421,293	4.54	131,752	6,749	33.7
1967	552,626,000	2,555,378	4.62	131,523	5,873	33.9
1968	543,245,000	2,546,340	4.67	127,894	5,327	34.1
1969	560,505,000	2,795,509	4.99	124,532	5,118	35.2
1970	602,932,000	3,772,662	6.26	140,140	5,601	40.5
1971	552,192,000	3,904,562	7.07	145,664	5,149	46.9
1972	595,386,000	4,561,983	7.65	149,265	4,879	48.9
1973	591,738,000	5,049,612	8.53	148,121	4,744	49.4
1974	603,406,000	9,503,644	15.75	166,701	5,247	54.0
1975	648,438,000	12,472,486	19.23	189,880	6,168	54.8
1976P	665,000,000	13,300,000	20.00	216,430	6,200	56.0

NA = Not Available
P = Preliminary.

SOURCE: Bureau of Mines

Commercial Nuclear Fuel Cycle

Source: Uranium Industry Seminar, DOE, Grand Junction, Colorado, October 19-20, 1977.

PRODUCTION CENTERS IN THE UNITED STATES U₃O₈ IN CONCENTRATE AT \$30.00 PER POUND

Source: Production Capability and Supply (Klemenic) DOE, October, 1977.

SIGNIFICANT URANIUM AREAS OF THE UNITED STATES

Source: Survey of United States Uranium Marketing Activity, DOE, May 1977.

Source: Uranium Market Activities (Peterson and Combs) DOE,
October, 1977.

URANIUM ORE PROCESSING RATES AND CONCENTRATE PRODUCTION

Source: Uranium Ore Processing, Rates and Concentrate Production P.4 (Facer)
DOE, October, 1977.

LAND ACQUIRED FOR URANIUM EXPLORATION

<u>Acquired During</u>	<u>Millions of Acres</u>	<u>Millions of Dollars</u>	<u>Avg. Cost Per Acre</u>
1966	1.64	2.24	\$1.37
1967	4.13	7.57	\$1.83
1968	6.50	18.52	\$2.85
1969	3.56	13.89	\$3.90
1970	2.02	10.74	\$5.32
1971	1.49	9.75	\$6.54
1972	1.36	4.70	\$3.46
1973	2.82	7.67	\$2.67
1974	3.32	12.61	\$3.80
1975	3.48	16.70	\$4.80
1976	4.75	13.89	\$2.92

Source: Exploration Activities (Chenoweth) DOE, October, 1977.

U. S. URANIUM RESERVES

JANUARY 1, 1977

<u>\$/LB. U₃O₈</u> <u>COST CATEGORY</u>	<u>TONS ORE</u> <u>MILLIONS</u>	<u>AV.</u> <u>GR.</u>	<u>TONS</u> <u>U₃O₈</u> <u>(1000)</u>
\$10	129	.19	250
\$10 - 15 INCREMENT	176	.09	160
\$15	305	.14	410
\$15 - 30 INCREMENT	481	.06	270
\$30	786	.09	680
\$30 - 50 INCREMENT	494	.03	160
\$50	1280	.07	840

Source: Ore Reserves (Meehan) DOE, October, 1977.

Source: Uranium Market Activities (Patterson and Combs) DOE, October, 1977.

**Price Ranges & Average Prices of U_3O_8 for 1976 Delivery
as of 7/1/74, 7/1/75, 1/1/76, 7/1/76 & 1/1/77**

Source: Uranium Market Activities (Patterson and Combs) DOE, October, 1977.

Distribution of Reported U_3O_8 Prices, 7/1/77

Source: Uranium Market Activities (Patterson and Combs) DOE, October, 1977.

Appendix H

Project Evaluation Methods

All companies interviewed use quantitative financial evaluations in making project investment decisions. Methods used for financial evaluations vary both among and within companies according to the significance to the company of the particular investment.

In large, multi-functional/multi-national organizations, decisions on significant investments are made at upper management levels; decisions on less significant investments are generally made closer to operating levels. What constitutes significant investments for each operating unit is normally determined by upper management and defined through internal investment guidelines. These guidelines normally specify the management levels of approvals required, according to investment size, type of financing, and investment purpose.

In oil and other companies, limitations on investment approvals frequently vary widely among operating units. Longer established, large-sized, on-going operations can often spend larger amounts with only departmental approvals than can newer operations. Upper management is usually more comfortable with the longer established businesses, feel they understand them better, and have more staff and management layers experienced in examining potential investments in the established businesses. This often results in top management being relatively more involved with smaller investments in new fields, and the analyses are often less formally structured.

Large oil companies make particularly wide use of formalized lower level investment evaluation methods because of the massive amounts of capital invested each year, the large number of potential

investments to be evaluated, and the great number of operating units making the investments. Smaller, simpler less capital-intensive companies generally use less elaborate investment control systems.

All oil companies use some form of discounted return on investment or present value methods in project evaluations. Oil companies were among the earliest to adopt present value techniques for financial evaluation of specific investments, largely as a matter of expediency. The oil industry is large and capital-intensive, resulting in very large numbers of potential investments to be evaluated. Present value techniques provided a more consistent basis of comparison among projects and provide a handy tool to aid management decision-making on specific investment requests.

To control lower level investment approvals, most companies (oil and non-oil) require that investments meet minimum standards for payout time and rate of return, usually including at least one method that considers the time value of money. Investments for direct replacement of operating equipment often do not require economic evaluations.

Proposed investments which require higher level approval because of their size or purpose are shipped up the line to higher management. Proposed investments which do not meet return on investment requirements are also sent for higher approval if operating management believes there are overriding reasons for approving the investment.

New investment areas usually require expanded evaluation techniques. These would include many non-petroleum energy investments. Evaluation of significant or unusual investments at higher organizational levels usually includes additional evaluation factors, which make return on investment of lesser importance. Such factors can include the basic corporation strategy, relative growth rates, competitive development and operating costs, interdepartmental effects, capital availability, and explicit risk.

For very significant investments and acquisitions, the effects on corporate profits, earning per share, dividends, cash flow, working capital, borrowing capacity and corporate image frequently override rate of return calculations. For very large, complex, long term strategic investments it is extremely difficult to compute a meaningful rate of return that can be validly used as a decision tool because of the very large number of assumptions necessary in the calculations, particularly when 10 or more year lead times are involved.

No company interviewed considered rate of return calculations to be overriding or controlling, whether the results were high or low. Most companies stated that ROI calculations are not "magic numbers" but merely quantifications of assumptions. To illustrate this point, ... "one company specifically mentioned that marketing investments must meet other, more specialized, standards because of the eternal optimism of salesmen when estimating returns on new marketing investments.

Most companies emphasized that corporate diversifications and capital allocations among functions originate at the top. While return on investment is utilized as a concept, it is not calculated for broad capital spending plans for which specific detailed investment projects usually have not yet been determined.

Return on Investment and Methods

All oil companies interviewed use return on investment (ROI) calculations as a management tool in making decisions on specific capital investment projects.

However, there is wide variation in the specific methods used:

- "Hurdle" or "cutoff" rates vary widely among companies.

Some claim to have no hurdle rates which would automatically eliminate a project from further consideration. To these companies ROI is just one of the inputs used for investment evaluation.

- Risk is factored into ROI calculations by some companies, by some is handled by varying hurdle rates, and by others is calculated through risk/reward ratios.

- Most use more than one method, many including discounted cash flow, net present value, and other variations.

- ROI assumes less relative importance in most companies in making decisions on important strategic shifts or on major acquisitions.

Because of significant non-comparability in calculations and use of ROI and hurdle rates, it would be very misleading to assign any significance to particular hurdle rates used by individual companies. This is especially true because ROI is seldom used

by oil or other companies for general strategic capital allocation among current operating units, for strategic diversification decisions, or for major acquisitions.

All oil companies state that their rate on return projections for specific investments in commercial development of non-petroleum energy exceeded the company's minimum ROI standards.

A relatively new method is the "Portfolio Management Concept*". This concept considers the various businesses of a corporation to be similar to a portfolio of stocks and bonds.

These businesses can be classified by such factors as relative competitive position within their industry, earnings potential, industry growth potential, and cash generation or use.

Company businesses are often portrayed on a matrix that depicts the relationships of company businesses in a manner similar to that below.

SCHEMATIC DEPRECIATION OF PORTFOLIO MANAGEMENT CONCEPT

*This section is adapted from a variety of sources, with particular emphasis on the Boston Consulting Group, originators of the portfolio management concept.

Arrows on the above illustration depict desirable movements of cash and businesses over time. However, any business can become a "dog" from any point in the matrix from a wide range of causes.

"Star" businesses grow rapidly and require large amounts of capital to finance the growth. However, they also generate large amounts of cash and net cash flow is approximately in balance. All growth slows over time. If "stars" retain competitive strength as growth slows, they will become "cash cows." If they lose competitive strength, they become "dogs."

"Cash cows" have slow growth and consequently low cash requirements. However, competitive strength and relative cash generation are high. "Cash cows" pay the dividends, the interest on the debt and the corporate overhead. "Cash cows" generate far more cash than they can profitably reinvest.

"Dogs" have low growth and weak competitive positions. "Dogs" often report profits, but are net cash users. They are cash traps and are considered essentially worthless to a corporation.

"Wildcats" are cash traps and real gambles. Cash needs are great because of high growth, but cash generation is very low because of competitive weakness. Wildcats can require far more cash input than they return.

Left alone, "wildcats" are considered sure losers. They can require years of heavy cash investment, but if they do not become competitive before industry growth slows, they become "dogs."

"Wildcats" are difficult to convert into "stars" because building competitive strength from weakness in an expanding market doubly compounds cash needs. "Wildcats" are considered to ultimately become big losers.

A company's definable business are grouped on a matrix as illustrated below. In this instance, the size of the "dot" represents relative invested assets.

Many variations of the portfolio management concept have been adopted by companies to suite their own circumstances.

One company with 75 definable businesses has extended the matrix to nine cells from four, as illustrated below.

	MARKET POSITION		
	LEADING	MAJOR	MINOR
	HIGH: 10% & UP	Self-sustaining growth	Maximum cash need and uncertainty
	MEDIUM: 6-8%		
MARKET GROWTH	LOW: 0-5%	Maximum cash generation	Minimum profit potential

Each of the company's 75 definable businesses is classified into a cell on the grid, and for each of the cells there is a unique strategy, investment policy, and so forth. The company intends sooner or later to divest itself of all businesses to the right of a line running from the lower left-hand to the upper right-hand of corners.

A "country grid" (below) has also been developed by this same firm to assess the business climate in each country where it does business. There is an appropriate strategy for each of the nine cells. Countries falling into the upper lefthand corner (high potential, low risk) are the most promising and call for aggressive investment and marketing strategies. Those in the lower right hand corner call for expeditious withdrawal.

		POLITICAL/ECONOMIC/ENVIRONMENTAL RISK		
		LOW	MEDIUM	HIGH
MARKET POTENTIAL	HIGH	Aggressive marketing and investment strategies in these countries		
	MEDIUM			
	LOW			Expeditious withdrawal from these countries

Companies have also found that given businesses can face much different market growth and competitive strength environments from continent to continent and country to country. This means that there can be wide continental or national variations in the investment strategies of such businesses.

Portfolio management has also been termed useful in acquisition strategy to help establish the kind of business that should be acquired (wildcat, cash cow, star) in order to get a balance portfolio of enterprise. Acquisition of "stars" or "wildcats" can actually decrease an acquiring company's growth rate because the new business requires cash that would otherwise support the company's existing "stars" and "wildcats."

**U.S. Department of Energy
Energy Information Administration
Office of Energy Information Services
1726 M St., N.W.
Washington, D.C. 20461**

**OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300**

**FIRST-CLASS MAIL
POSTAGE & FEES PAID
U.S. DEPT. OF ENERGY
PERMIT NO. G 20**

FIRST CLASS MAIL