

CENTER FOR ENERGY STUDIES
LOUISIANA STATE UNIVERSITY

NEWSLETTER

January, 1994

Is the Structure of the U.S. Petroleum Industry Changing?

In the past decade, large integrated oil and gas companies have been shifting their exploration and production focus to foreign countries. As a consequence, some claim that smaller, non-integrated oil and gas producers (the "independents") are "taking over" drilling and production activities in the U.S.

In a paper presented by Wumi Iledare, co-authored by Allan Pulsipher and Robert Baumann, at the 15th International Association for Energy Economics (IAEE) North American Conference in Seattle WA in October 1993, national data were used to explore whether, in fact, a major structural change is underway in the domestic exploration and development sector of the oil and gas industry. We examined aggregate data for major and independent producers to ascertain any relative decline in the importance of the major oil and gas producers viz a viz the relative increase in the importance of independent producers in oil and gas exploration and production. Where possible and appropriate, we also compared domestic and foreign indicators to see if there were significant differences between the two groups. The indicators we examined are shown in Table One. They included:

A: E & D Expenditures: Exploration and development expenditures have frequently been used to describe the on-going structural change in the US petroleum industry. Over the period 1988 through 1992, domestic expenditures for exploration and development by the majors declined by about 14 percent as their spending abroad grew by 79 percent. On the other hand, total domestic exploratory and development expenditures by independent producers grew, but only by approximately 6

percent, while exploratory and development expenditures abroad by large independents rose by more than 100 percent. As a consequence of this disparity, the relative share of the majors in domestic expenditures declined from 55 % in 1988 to 50 percent in 1992. However, both groups have responded aggressively to opportunities abroad.

B: Additions to Petroleum Reserves:

Despite the 14 percent decline in domestic E&D expenditures shown in Table One, total annual domestic reserve additions by the majors still rose by nearly 7.6 percent over the period. Reserve additions by independents, however, increased by approximately 11 percent, raising their share of total additions from 27 percent in 1988 to 35 percent in 1992. The sizable increases in foreign E&D expenditures by both the majors and independents paid off with a doubling of reserve additions for both the majors and the independents. The majors' share of new petroleum reserves remained at about 86 percent.

C: Production Replacement Ratios:

The extent to which new reserve additions by the majors have kept up with production remained at about 51 percent of domestic production over the period while the independents replaced, on average, about 37 percent of their domestic production. Both majors and independents, on the other hand, added foreign reserves more rapidly than they produced abroad--each showing an average replacement rate of 115 percent that increases with time.

D: Reserve Purchase Costs:

The two components of costs incurred in replacing reserves are--the cost of purchasing reserves and the cost of finding reserves through drilling. Still influenced by the economic echoes from the

1986 world oil price collapse, both cost components show sizable decreases over the period. The cost of purchasing domestic reserves fell by about 14-18 percent for both the majors and the independents. On average the majors retained a statistically insignificant cost advantage of about 1.5 percent throughout the period. The decline in the cost of purchasing reserves abroad was about the same, a drop of about 30 percent for the majors and independents.

E: Finding Costs: Domestic finding costs declined significantly by about 13 percent for the majors and 20 percent for independents. And for the most part, the trends in domestic and foreign finding costs for the majors are negatively sloped. The reverse, however, is the case for independent producers. In the aggregate, the domestic finding costs for independent producers remained significantly below the finding costs abroad.

F: Crude Oil Production: Production of domestic oil by the majors fell by 14 percent over the period while independent production declined by 2 percent. The majors accounted for 51 percent of total domestic oil production in 1992--off by 4 percentage points from their 1988 share of 55 percent. Production of oil abroad has increased significantly for both majors and independents--majors increased production by 14 percent and independents by 60 percent. Foreign production is still dominated by the majors as their share of foreign production rose from 80 percent in 1988 to 88 percent in 1992.

G: Natural Gas Production: Independent producers accounted for more natural gas production than the majors, 60 percent in 1988 and 61 percent in 1992. Both groups of petroleum producers experienced higher production in 1992 than in 1988. However, gas production by the majors grew by only two percent during the period, while independent gas production rose by about 27 percent.

Conclusion: The data we have reviewed suggest that, at least from a national perspective, the "take-over" of the domestic oil and gas producing industry by the independents may be an exaggeration. Although independents are playing an increasingly important role in domestic petroleum resource development, the increased share of independents appears to be more reflective of

the decline in domestic activity by the majors rather than increased activity by independents. Further, the measures we have analyzed indicate that the independents have been just as aggressive as the majors in pursuing reserves and production abroad. In the aggregate, the evidence is not very persuasive that the independents are pursuing strategies tilted toward domestic production while the majors shift their activity abroad. Thus, although independents are playing an increasingly important role in both domestic and foreign sectors, the strategies and performance of the majors will remain a key focus in energy policy in the United States for some time to come.

References

1. Arthur Anderson and Co., Oil and Gas Disclosure Reports, 1984, 1990 and 1993.
2. U.S. DOE/EIA, Performance Profiles of Major Energy Producers, 1987-1992.

Table One: Selected Petroleum Industry's Statistics, 1988-1992*

	1988	1989	1990	1991	1992	Percent Change 1988 to 1992
A: E & D Expenditures (\$ Billion)						
Domestic:	22.8	21.7	22.1	21.3	21.7	(5.1)
Majors	12.5	11.8	12.2	11.6	10.8	(13.6)
Independents	10.3	9.9	9.9	9.5	10.8	5.5
Foreign:	16.5	19.8	24.1	27.5	30.0	82.0
Majors	14.3	17.5	21.0	23.7	25.8	78.8
Independents	2.2	2.3	3.1	3.8	4.5	103.0
B: Reserve Additions (Million boe)						
Domestic:	2,533	2,675	3,020	2,815	2,761	9.0
Majors	1,363	1,451	1,615	1,610	1,465	7.6
Independents	1,170	1,224	1,405	1,205	1,295	10.7
Foreign:	1,835	2,081	2,817	3,395	3,727	103.0
Majors	1,549	1,736	2,369	2,918	3,196	106.3
Independents	286	323	418	477	530	85.2
C: Production Replacement Ratio						
U.S. Total:	39	41	47	44	43	11.9
Majors	43	47	54	55	51	17.0
Independents	35	36	41	35	37	6.1
Foreign:	100	117	122	117	117	17.0
Majors	99	118	123	117	116	17.5
Independents	106	115	114	116	119	9.8
D: Reserve Purchase Cost (\$/boe)						
Domestic:	4.48	4.71	4.63	4.40	3.98	(11.1)
Majors	3.62	4.80	5.07	4.82	3.37	(14.0)
Independents	4.94	4.72	4.41	4.15	4.06	(17.9)
Foreign:	4.40	3.71	3.89	3.93	3.67	(18.7)
Majors	5.91	3.37	4.29	4.44	4.16	(29.5)
Independents	3.92	4.78	3.93	3.42	2.79	(28.9)
E: Finding Costs (\$/boe)						
Domestic:	9.02	8.11	7.32	7.55	7.85	(12.9)
Majors	9.20	8.11	7.54	7.31	7.37	(19.9)
Independents	8.81	8.11	7.06	7.68	8.40	(4.7)
Foreign:	6.99	9.62	8.57	8.10	8.06	(10.3)
Majors	9.23	10.09	8.77	8.11	8.00	(13.3)
Independents	7.68	7.13	7.42	8.03	8.42	9.8
F: Oil Production (Million Bbl)						
Domestic:	3,632	3,501	3,373	3,273	3,323	(8.5)
Majors	1,971	1,901	1,815	1,751	1,694	(14.0)
Independents	1,661	1,600	1,558	1,522	1,629	(1.6)
Foreign:	2,252	2,330	2,459	2,554	2,651	17.7
Majors	2,046	2,111	2,209	2,259	2,323	13.5
Independents	206	219	250	295	328	59.5
G: Gas Production (Bcf)						
Domestic:	16,131	16,599	16,992	17,139	16,897	4.7
Majors	6,516	6,585	6,612	6,990	6,549	2.0
Independents	9,615	10,024	10,350	10,479	10,248	6.8
Foreign:	5,172	5,998	6,999	7,672	8,251	59.5
Majors	4,396	5,036	5,874	6,435	6,827	57.6
Independents	776	929	1,095	1,237	1,324	70.5

* Three-Year Lagged Averages from Arthur Anderson and DOE/EIA-0206

BP AMERICA GIVES FUNDS FOR OCS STUDY

January 1994 [LSU Press Release]

BP America has awarded LSU's Center for Energy Studies \$24,000 to support economic studies of developments on the Outer Continental Shelf of the Gulf of Mexico.

Robert Baumann, Executive Director of the center, said the award will be combined with other grants from the Louisiana Sea Grant Program and the U. S. Minerals Management Service to develop the studies.

Keith Owen, BP America's director of government affairs, presented the check to LSU Executive Vice Chancellor James Coleman.

Massive investments will be required for further development of the Gulf of Mexico, according to Baumann. He cited the \$1.2 billion planned for the Mars platform in which BP America is a partner. That one investment, Baumann said, is roughly equal to five percent of all the exploration and development expenditures of all companies in the United States.

Baumann said the BP America funds will be used to study emerging OCS development policy questions for which basic economic data is unavailable. They include: how much development activity can be expected, given the high development costs? Will federal royalty and leasing policies used in developing the shallower waters work for deep OCS development? What economic spin offs can be expected for the Gulf Coast States from technology required to develop in waters deeper than 1,500 feet? How will the technology shift to deeper waters affect operators accustomed to working in shallow Gulf waters?

Owen said BP America's decision to provide seed funds for the study was based in part on the LSU Energy Center's track record for providing objective studies and effectively transmitting the results to industry policy makers.

Owen said BP America, one of the leading oil and gas producers in the Louisiana OCS, plans to increase its future presence in the area. The company employs some 700 Louisianans in its offshore and pipeline operations and its refinery located in Myrtle Grove, LA.

Coleman said the company has also supported LSU in the past, providing funds for scholarships, graduate assistantships and faculty, donating some major

computer equipment and providing funds for a comparative oil and gas tax study by the Center for Energy Studies that was published nationally and used by many states, including Louisiana, to support policy decisions.

REQUALIFICATION OF OFFSHORE PLATFORMS

Allan Pulsipher was the co-chair of the public policy working group at an international conference on the Assessment and Requalification of Offshore Production Structures, sponsored by Minerals Management Service, the American Society of Civil Engineers and the Marine Technology Society, held in New Orleans on December 8-10, 1993. The workshop discussed the American Petroleum Institute's draft standards for the requalification of offshore production platforms released in November 1993. The API's standards follow an 'if-it-isn't-broke-don't-fix-it' approach as contrasted with the more comprehensive 'safety case' approach (similar to many EPA and OSHA regulations) being implemented in the North Sea. From a public policy perspective, the workshop concluded that the API approach was much better suited to requalification of platforms in the Gulf of Mexico than the 'safety case' method.

LOUISIANA NATURAL GAS STUDIES

An article summarizing the Center's study on residential and commercial natural gas pricing in Louisiana was the lead feature in the January 1, 1994 issue of Public Utilities Fortnightly. The Center recently acquired data for 1992 from the Energy Information Agency and will use it to update the residential and commercial study as well as a report on industrial gas use. The natural gas studies are a joint effort by Bob Baumann, Wumi Iledare, Dmitry Mesyanzhinov and Allan Pulsipher.

ELLIE LEAVES TO LEARN OIL AND GAS BUSINESS AND TO PLAY GOLF

Ms. Ellie Faul (formerly Jeansonne) officially retired on December 31 after 31 years of service at LSU. Ellie served as the Assistant to the Executive Director at CES since its inception in 1982. Prior to CES, Ellie worked throughout the campus in Physics, Alumni Affairs, Mechanical Engineering, Men's Housing (we've always wondered about that), Chemical Engineering, Personnel Services (now Human Resource Management) and the Institute for Environmental Studies. Affectionately known to us as the 'Sergeant Major,' Chancellor Emeritus James Wharton referred to Ellie as 'one of the best counter bureaucrats' he ever encountered (she

could get things done and get the paperwork through).

Among some parting gifts, CES' Industry Advisory Council presented Ellie with a new set of golf clubs. Informed sources have reported that Ellie made her first legitimate par this past week. In addition to her recreational activities and playing grandma, Ellie will also be working part-time for Southwest Gas Producing Co. in Lafayette, LA, which is owned and operated by her husband E. J. Faul. Contrary to popular rumors, our analysis indicates that the timing of Ellie's entrance into the E&P business and the failure of OPEC to curb the dramatic December decline in oil prices is just coincidental. Good luck Ellie!

DEBORAH PITCHER REJOINS CES

Debbie Pitcher has replaced Ellie Faul as Assistant to the Executive Director. Debbie is no stranger to the LSU campus. She has a BA in French from LSU and was formerly with CES' Information Services Division and its LEERIC program funded by DNR. Debbie's extensive library background, 14 years at LSU's Middleton Library, will be utilized in support of our energy policy research activities. In addition, Debbie is a certified Paralegal, recently completing the LSU Paralegal Studies Program.