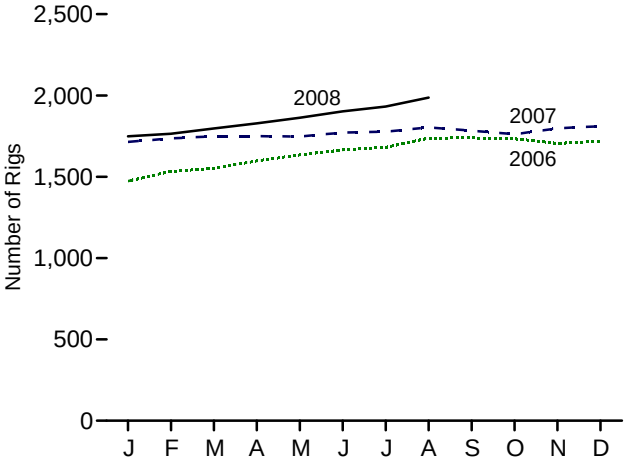
5 Crude Oil and Natural Gas Resource Development

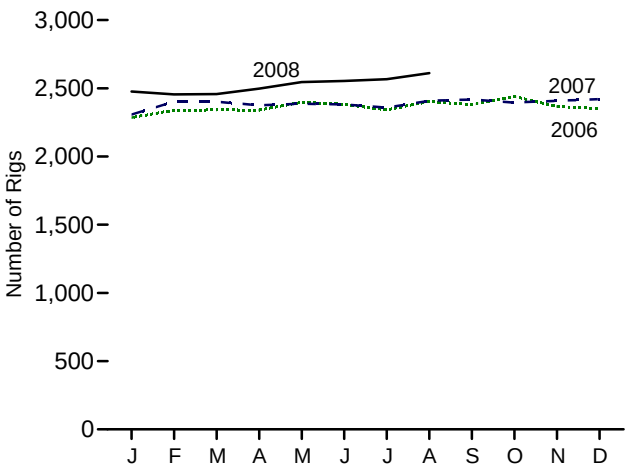
Semisubmersible drilling rig in the Gulf of Mexico. Source: U.S. Department of Energy.

Figure 5.1 Crude Oil and Natural Gas Resource Development Indicators

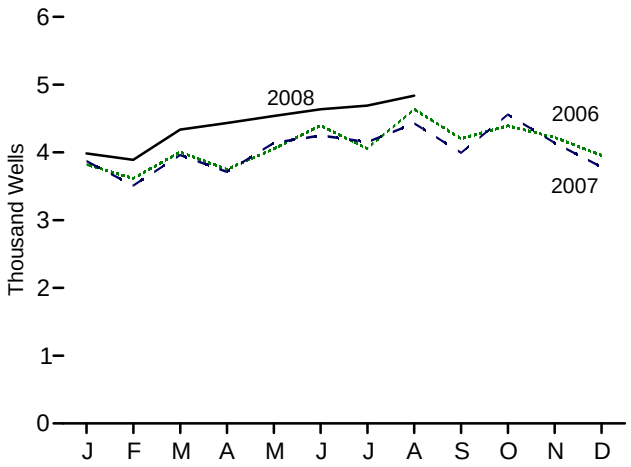
Rotary Rigs in Operation, Monthly



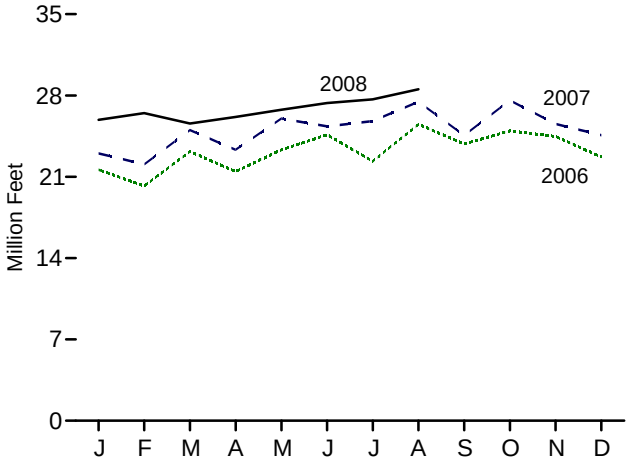
Active Well Service Rig Count, Monthly



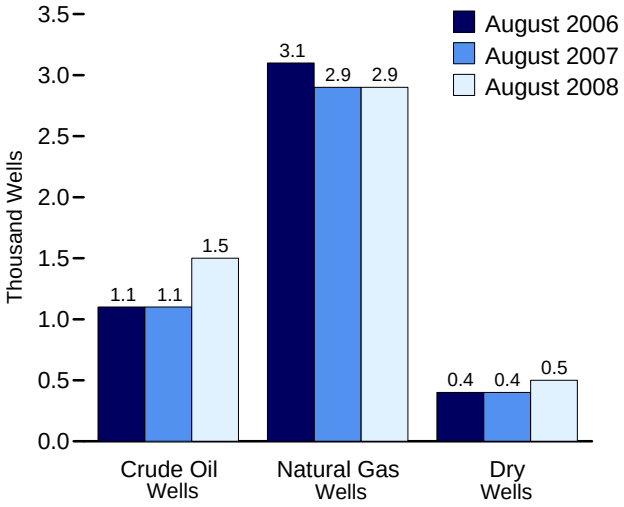
Wells Drilled, Monthly



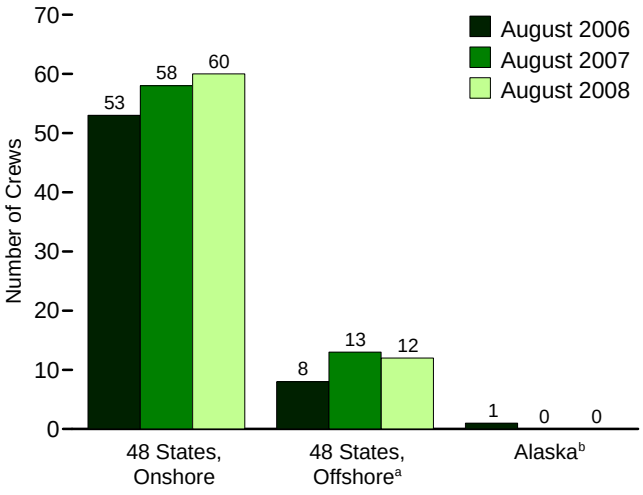
Footage Drilled, Monthly



Wells Drilled by Type



Maximum U.S. Active Seismic Crew Counts



[a]Federal and State Jurisdiction waters of the Gulf of Mexico.
[b]All onshore.

Web Page: http://www.eia.doe.gov/emeu/mer/resource.html.
Sources: Tables 5.1-5.3.

Table 5.1 Crude Oil and Natural Gas Drilling Activity Measurements

(Number of Rigs)

	Rotary Rigs in Operation[a]					Active Well Service Rig Count[c]
	By Site		By Type			
	Onshore	Offshore	Crude Oil	Natural Gas	Total[b]	
1973 Average	**1,110**	**84**	**NA**	**NA**	**1,194**	**2,008**
1975 Average	**1,554**	**106**	**NA**	**NA**	**1,660**	**2,486**
1980 Average	**2,678**	**231**	**NA**	**NA**	**2,909**	**4,089**
1985 Average	**1,774**	**206**	**NA**	**NA**	**1,980**	**4,716**
1990 Average	**902**	**108**	**532**	**464**	**1,010**	**3,658**
1995 Average	**622**	**101**	**323**	**385**	**723**	**3,041**
1996 Average	**671**	**108**	**306**	**464**	**779**	**3,445**
1997 Average	**821**	**122**	**376**	**564**	**943**	**3,499**
1998 Average	**703**	**123**	**264**	**560**	**827**	**3,014**
1999 Average	**519**	**106**	**128**	**496**	**625**	**2,232**
2000 Average	**778**	**140**	**197**	**720**	**918**	**2,692**
2001 Average	**1,003**	**153**	**217**	**939**	**1,156**	**2,267**
2002 Average	**717**	**113**	**137**	**691**	**830**	**1,830**
2003 Average	**924**	**108**	**157**	**872**	**1,032**	**1,967**
2004 Average	**1,095**	**97**	**165**	**1,025**	**1,192**	**2,064**
2005 Average	**1,287**	**94**	**194**	**1,184**	**1,381**	**2,222**
2006 January	1,396	77	242	1,228	1,473	2,285
February	1,455	79	209	1,321	1,533	2,339
March	1,464	88	244	1,305	1,551	2,342
April	1,502	95	259	1,337	1,597	2,340
May	1,536	100	261	1,373	1,635	2,398
June	1,570	95	285	1,376	1,665	2,382
July	1,587	94	298	1,379	1,681	2,342
August	1,639	99	316	1,417	1,738	2,404
September	1,646	93	305	1,429	1,739	2,380
October	1,644	90	288	1,441	1,734	2,440
November	1,620	87	288	1,414	1,706	2,366
December	1,634	84	281	1,431	1,718	2,351
Average	**1,559**	**90**	**274**	**1,372**	**1,649**	**2,364**
2007 January	1,630	84	270	1,440	1,714	2,307
February	1,651	85	266	1,466	1,736	2,401
March	1,667	81	282	1,461	1,749	2,401
April	1,675	75	285	1,461	1,750	2,375
May	1,671	77	282	1,464	1,748	2,387
June	1,692	79	283	1,483	1,771	2,381
July	1,698	79	285	1,486	1,777	2,358
August	1,731	73	306	1,492	1,804	2,408
September	1,718	65	302	1,475	1,783	2,418
October	1,713	49	321	1,435	1,762	2,395
November	1,737	61	341	1,451	1,798	2,408
December	1,749	62	338	1,468	1,811	2,420
Average	**1,695**	**72**	**297**	**1,466**	**1,768**	**2,388**
2008 January	1,690	60	321	1,421	1,749	2,476
February	1,709	56	331	1,426	1,765	2,455
March	1,737	60	343	1,444	1,797	2,457
April	1,765	64	358	1,461	1,829	2,498
May	1,794	68	375	1,478	1,863	2,546
June	1,834	67	383	1,510	1,902	2,554
July	1,865	67	380	1,543	1,932	2,567
August	1,920	67	397	1,581	1,987	2,611
8-Month Average	**1,791**	**64**	**362**	**1,484**	**1,854**	**2,521**
2007 8-Month Average	**1,679**	**79**	**283**	**1,470**	**1,758**	**2,377**
2006 8-Month Average	**1,518**	**91**	**264**	**1,342**	**1,609**	**2,354**

[a] Rotary rigs in operation are reported weekly. Monthly data are averages of 4- or 5-week reporting periods, not calendar months. Multi-month data are averages of the reported data over the covered months, not averages of the weekly data. Annual data are averages over 52 or 53 weeks, not calendar years. Published data are rounded to the nearest whole number.

[b] Sum of rigs drilling for crude oil, rigs drilling for natural gas, and other rigs (not shown) drilling for miscellaneous purposes, such as service wells, injection wells, and stratigraphic tests.

[c] The number of rigs doing true workovers (where tubing is pulled from the well), or doing rod string and pump repair operations, and that are, on average, crewed and working every day of the month.

NA=Not available.

Note: Geographic coverage is the 50 States and the District of Columbia.

Web Page: See http://www.eia.doe.gov/emeu/mer/resource.html for all available data beginning in 1973.

Sources: • **Rotary Rigs in Operation: By Site**–Baker Hughes, Inc., Houston, Texas, *Rotary Rigs Running–by State.* **By Type**–Baker Hughes, Inc., Houston, Texas, weekly phone recording. • **Active Well Service Rig Count:** Weatherford International, Ltd., Houston, Texas.

Table 5.2 Crude Oil and Natural Gas Exploratory and Development Wells

	Wells Drilled												Total Footage Drilled
	Exploratory				Development				Total				
	Crude Oil	Natural Gas	Dry	Total	Crude Oil	Natural Gas	Dry	Total	Crude Oil	Natural Gas	Dry	Total	
	Number												Thousand Feet
1973 Total	**642**	**1,067**	**5,952**	**7,661**	**9,525**	**5,866**	**4,368**	**19,759**	**10,167**	**6,933**	**10,320**	**27,420**	**138,223**
1975 Total	**982**	**1,248**	**7,129**	**9,359**	**15,966**	**6,879**	**6,517**	**29,362**	**16,948**	**8,127**	**13,646**	**38,721**	**180,494**
1980 Total	**1,777**	**2,099**	**9,081**	**12,957**	**31,182**	**15,362**	**11,704**	**58,248**	**32,959**	**17,461**	**20,785**	**71,205**	**316,943**
1985 Total	**1,680**	**1,200**	**8,954**	**11,834**	**33,581**	**13,124**	**12,257**	**58,962**	**35,261**	**14,324**	**21,211**	**70,796**	**314,409**
1990 Total	R **778**	R **812**	R **3,648**	R **5,238**	R **11,696**	R **10,296**	R **4,569**	R **26,561**	R **12,474**	R **11,108**	R **8,217**	R **31,799**	R **155,253**
1995 Total	R **570**	R **557**	R **2,023**	R **3,150**	R **7,345**	R **7,412**	R **2,764**	R **17,521**	R **7,915**	R **7,969**	R **4,787**	R **20,671**	R **116,590**
1996 Total	R **489**	R **576**	R **1,955**	R **3,020**	R **8,122**	R **8,367**	R **2,915**	R **19,404**	R **8,611**	R **8,943**	R **4,870**	R **22,424**	R **125,971**
1997 Total	R **491**	R **561**	R **2,108**	R **3,160**	R **10,553**	R **10,874**	R **3,740**	R **25,167**	R **11,044**	R **11,435**	R **5,848**	R **28,327**	R **161,215**
1998 Total	R **327**	R **566**	R **1,585**	R **2,478**	R **7,229**	R **10,944**	R **3,160**	R **21,333**	R **7,556**	R **11,510**	R **4,745**	R **23,811**	R **137,048**
1999 Total	R **196**	R **565**	R **1,157**	R **1,918**	R **4,538**	R **11,334**	R **2,360**	R **18,232**	R **4,734**	R **11,899**	R **3,517**	R **20,150**	R **102,594**
2000 Total	R **288**	R **657**	R **1,333**	R **2,278**	R **7,698**	R **16,278**	R **2,784**	R **26,760**	R **7,986**	R **16,935**	R **4,117**	R **29,038**	R **143,947**
2001 Total	R **353**	R **1,046**	R **1,714**	R **3,113**	R **8,452**	R **20,913**	R **2,825**	R **32,190**	R **8,805**	R **21,959**	R **4,539**	R **35,303**	R **179,624**
2002 Total	R **255**	R **843**	R **1,271**	R **2,369**	R **6,469**	R **16,382**	R **2,435**	R **25,286**	R **6,724**	R **17,225**	R **3,706**	R **27,655**	R **144,640**
2003 Total	R **349**	R **991**	R **1,285**	R **2,625**	R **7,677**	R **19,596**	R **2,613**	R **29,886**	R **8,026**	R **20,587**	R **3,898**	R **32,511**	R **176,557**
2004 Total	R **386**	R **1,653**	R **1,331**	R **3,370**	R **8,290**	R **22,075**	R **2,644**	R **33,009**	R **8,676**	R **23,728**	R **3,975**	R **36,379**	R **202,813**
2005 Total	R **515**	R **2,087**	R **1,431**	R **4,033**	R **9,866**	R **25,693**	R **3,081**	R **38,640**	R **10,381**	R **27,780**	R **4,512**	R **42,673**	R **237,214**
2006 January	R 64	R 170	R 91	R 325	R 940	R 2,257	R 299	R 3,495	R 1,004	R 2,427	R 390	R 3,821	R 21,611
February	R 51	R 176	R 107	R 334	R 843	R 2,176	R 263	R 3,282	R 894	R 2,353	R 370	R 3,617	R 20,211
March	R 41	R 193	R 91	R 325	R 944	R 2,437	R 300	R 3,681	R 985	R 2,630	R 391	R 4,006	R 23,170
April	R 44	R 165	R 120	R 329	R 936	R 2,197	R 289	R 3,422	R 980	R 2,362	R 409	R 3,751	R 21,449
May	R 60	R 210	R 130	R 400	R 1,004	R 2,393	R 254	R 3,650	R 1,064	R 2,602	R 384	R 4,050	R 23,318
June	R 77	R 217	R 128	R 422	R 1,090	R 2,567	R 316	R 3,973	R 1,167	R 2,783	R 444	R 4,395	R 24,628
July	R 36	R 202	R 122	R 360	R 1,087	R 2,327	R 282	R 3,696	R 1,123	R 2,529	R 404	R 4,056	R 22,338
August	R 59	R 260	R 126	R 445	R 1,058	R 2,841	R 291	R 4,190	R 1,117	R 3,101	R 417	R 4,636	R 25,514
September	R 54	R 210	R 125	R 389	R 1,027	R 2,528	R 258	R 3,812	R 1,081	R 2,737	R 383	R 4,201	R 23,818
October	R 59	R 225	R 117	R 401	R 1,062	R 2,631	R 300	R 3,993	R 1,121	R 2,856	R 417	R 4,394	R 24,953
November	R 58	R 252	R 103	R 413	R 1,049	R 2,444	R 314	R 3,807	R 1,107	R 2,696	R 417	R 4,220	R 24,476
December	R 34	R 219	R 140	R 393	R 1,016	R 2,301	R 247	R 3,563	R 1,050	R 2,519	R 387	R 3,956	R 22,710
Total	R **637**	R **2,498**	R **1,400**	R **4,535**	R **12,056**	R **29,098**	R **3,412**	R **44,566**	R **12,693**	R **31,597**	R **4,812**	R **49,101**	R **278,197**
2007 January	R 55	R 236	R 111	R 401	R 955	R 2,248	R 266	R 3,469	R 1,010	R 2,484	R 377	R 3,871	R 23,006
February	R 59	R 211	R 86	R 356	R 869	R 2,070	R 214	R 3,153	R 928	R 2,281	R 300	R 3,510	R 22,072
March	R 61	R 276	R 106	R 444	R 970	R 2,285	R 264	R 3,519	R 1,031	R 2,561	R 370	R 3,962	R 25,014
April	R 56	R 260	R 117	R 433	R 926	R 2,129	R 226	R 3,280	R 982	R 2,388	R 343	R 3,713	R 23,332
May	R 54	R 293	R 138	R 485	R 1,019	R 2,350	R 284	R 3,653	R 1,073	R 2,643	R 422	R 4,138	R 26,012
June	R 76	R 259	R 107	R 442	R 1,051	R 2,509	R 248	R 3,808	R 1,127	R 2,769	R 355	R 4,250	R 25,338
July	R 75	R 297	R 120	R 492	R 1,003	R 2,369	R 287	R 3,659	R 1,078	R 2,666	R 407	R 4,151	R 25,796
August	R 58	R 282	R 109	R 449	R 1,041	R 2,598	R 340	R 3,979	R 1,099	R 2,881	R 449	R 4,429	R 27,452
September	R 72	R 273	R 128	R 474	R 934	R 2,334	R 253	R 3,521	R 1,007	R 2,607	R 380	R 3,994	R 24,561
October	R 70	R 334	R 143	R 546	R 1,084	R 2,609	R 319	R 4,012	R 1,154	R 2,943	R 461	R 4,558	R 27,577
November	R 54	R 310	R 179	R 544	R 963	R 2,373	R 261	R 3,597	R 1,018	R 2,683	R 441	R 4,141	R 25,550
December	R 56	R 275	R 111	R 442	R 981	R 2,121	R 238	R 3,341	R 1,037	R 2,397	R 349	R 3,783	R 24,580
Total	R **747**	R **3,307**	R **1,455**	R **5,509**	R **11,796**	R **27,996**	R **3,200**	R **42,992**	R **12,543**	R **31,303**	R **4,655**	R **48,501**	R **300,290**
2008 January	R 73	R 278	R 132	R 483	R 1,089	R 2,164	R 248	R 3,501	R 1,162	R 2,442	R 380	R 3,984	R 25,909
February	R 72	R 291	R 86	R 449	R 1,117	R 2,076	R 247	R 3,441	R 1,189	R 2,367	R 333	R 3,889	R 26,478
March	R 69	R 238	R 134	R 441	R 1,215	R 2,384	R 297	R 3,896	R 1,284	R 2,622	R 431	R 4,337	R 25,582
April	R 72	R 241	R 136	R 449	R 1,269	R 2,412	R 304	R 3,985	R 1,341	R 2,653	R 440	R 4,434	R 26,154
May	R 76	R 243	R 139	R 458	R 1,328	R 2,441	R 311	R 4,080	R 1,404	R 2,684	R 450	R 4,538	R 26,768
June	R 77	R 249	R 142	R 468	R 1,357	R 2,493	R 318	R 4,168	R 1,434	R 2,742	R 460	R 4,636	R 27,346
July	R 77	R 254	R 144	R 475	R 1,346	R 2,548	R 322	R 4,216	R 1,423	R 2,802	R 466	R 4,691	R 27,670
August	80	260	148	488	1,407	2,611	332	4,350	1,487	2,871	480	4,838	28,537
8-Month Total	**596**	**2,053**	**1,061**	**3,710**	**10,128**	**19,130**	**2,379**	**31,637**	**10,724**	**21,183**	**3,440**	**35,347**	**214,444**
2007 8-Month Total	**494**	**2,114**	**894**	**3,503**	**7,834**	**18,559**	**2,129**	**28,521**	**8,328**	**20,673**	**3,023**	**32,024**	**198,023**
2006 8-Month Total	**432**	**1,593**	**915**	**2,940**	**7,902**	**19,194**	**2,293**	**29,390**	**8,334**	**20,787**	**3,208**	**32,330**	**182,240**

R=Revised.

Notes: • Prior to 1990, these well counts include only the original drilling of a hole intended to discover or further develop already discovered crude oil or natural gas resources. Other drilling activities, such as drilling an old well deeper, drilling of laterals from the original well, drilling of service and injection wells, and drilling for resources other than crude oil or natural gas are excluded. After 1990, a new well is defined as the first hole in the ground whether it is lateral or not. Due to the methodology used to estimate ultimate well counts from the available partially reported data, the counts shown on this page are frequently revised. See Note, "Crude Oil and Natural Gas Exploratory and Development Wells," at end of section. • Geographic coverage is the 50 States and the District of Columbia.

Web Page: See http://www.eia.doe.gov/emeu/mer/resource.html for all available data beginning in 1973.

Sources: • **1973-1989:** Energy Information Administration (EIA) computations based on well reports submitted to the American Petroleum Institute. • **1990 forward:** EIA computations based on well reports submitted to the Information Handling Services Energy Group, Inc.

Revisions from 1990 forward reflect both a redefinition of “new well” (as the first hole in the ground whether it is lateral or not) and final revisions to well classification and type (i.e., exploratory or development; crude oil, natural gas, or dry).

Table 5.3 Maximum U.S. Active Seismic Crew Counts

(Number of Crews)

	48 States, Onshore				48 States, Offshore[a]				Alaska[b]				
	Dimensions[c]				Dimensions[c]				Dimensions[c]				
	2	3	4	Total[d]	2	3	4	Total[d]	2	3	4	Total[d]	Total
2000 August	4	40	1	45	7	7	0	15	0	1	0	1	61
2001 August	8	32	1	41	7	8	0	15	0	0	0	0	56
2002 August	7	26	0	33	8	7	0	15	1	1	0	2	50
2003 August	8	22	0	30	7	4	0	11	1	1	0	2	43
2004 January	8	25	0	33	5	5	0	10	0	0	0	0	43
February	8	27	0	35	5	5	0	10	0	0	0	0	45
March	8	27	0	35	5	5	0	10	0	0	0	0	45
April	9	27	0	36	5	4	0	9	0	0	0	0	45
May	9	26	0	35	5	4	0	9	0	0	0	0	44
June	9	30	0	39	4	4	0	8	0	2	0	2	49
July	8	30	0	38	4	4	0	8	0	2	0	2	48
August	8	31	0	39	4	4	0	8	0	2	0	2	49
September	8	32	0	40	4	2	0	6	0	2	0	2	48
October	8	34	0	42	2	2	0	4	0	2	0	2	48
November	9	33	0	42	1	4	0	5	0	2	0	2	49
December	9	32	0	41	3	4	0	7	0	2	0	2	50
2005 January	8	33	0	41	5	4	0	9	0	2	0	2	52
February	8	34	0	42	5	4	0	9	0	2	0	2	53
March	6	33	0	39	6	6	0	12	0	0	0	0	51
April	8	30	0	38	6	6	0	12	0	0	0	0	50
May	8	34	0	42	7	6	0	13	0	0	0	0	55
June	9	35	0	44	7	5	0	12	0	1	0	1	57
July	8	34	0	42	6	5	0	11	0	1	0	1	54
August	8	35	0	43	6	5	0	11	0	1	0	1	55
September	7	37	0	44	6	5	0	11	0	1	0	1	56
October	6	39	0	45	6	5	0	11	0	1	0	1	57
November	5	40	0	45	6	5	0	11	0	1	0	1	57
December	6	40	0	46	6	5	0	11	0	1	0	1	58
2006 January	5	38	0	43	6	5	0	11	0	1	0	1	55
February	5	39	0	44	6	6	0	12	0	1	0	1	57
March	4	42	0	46	6	6	0	12	0	1	0	1	59
April	4	42	0	46	5	6	0	11	0	1	0	1	58
May	4	42	0	46	5	6	0	11	0	1	0	1	58
June	9	35	0	44	7	5	0	12	0	1	0	1	57
July	5	51	0	56	4	5	0	9	0	1	0	1	66
August	4	49	0	53	3	5	0	8	0	1	0	1	62
September	4	51	0	55	2	5	0	7	0	1	0	1	63
October	5	51	0	56	2	5	0	7	0	1	0	1	64
November	5	51	0	56	3	5	0	8	0	1	0	1	65
December	5	50	0	55	3	5	0	8	0	1	0	1	64
2007 January	3	51	0	54	3	5	0	8	0	1	0	1	63
February	3	51	0	54	3	5	0	8	0	1	0	1	63
March	4	55	0	59	3	5	0	8	0	1	0	1	68
April	4	55	0	59	4	6	1	11	0	1	0	1	71
May	3	55	0	58	4	6	1	11	0	1	0	1	70
June	3	55	0	58	3	6	1	10	0	1	0	1	69
July	2	57	0	59	3	6	1	10	0	0	0	0	69
August	2	56	0	58	4	8	1	13	0	0	0	0	71
September	3	58	0	61	3	8	1	12	0	0	0	0	73
October	4	60	0	65	3	8	1	12	0	0	0	0	77
November	4	60	0	65	3	10	1	14	0	0	0	0	79
December	5	54	0	60	4	10	1	15	0	0	0	0	75
2008 January	6	55	0	61	4	10	1	15	0	0	0	0	76
February	6	55	0	61	4	11	1	16	0	0	0	0	77
March	6	54	0	60	3	11	1	15	0	0	0	0	75
April	4	53	0	57	3	11	1	15	0	0	0	0	72
May	4	54	0	58	3	11	1	15	0	0	0	0	73
June	2	56	0	58	3	11	1	15	0	0	0	0	73
July	2	58	0	60	3	8	1	12	0	0	0	0	72
August	2	58	0	60	3	8	1	12	0	0	0	0	72

[a] Federal and State Jurisdiction waters of the Gulf of Mexico.

[b] All onshore.

[c] In **two-dimensional** (2D) reflection seismic surveying both the sound source and the sound detectors (numbering up to a hundred or more per shot) are moved along a straight line. The resultant product can be thought of as a vertical sonic cross-section of the subsurface beneath the survey line. It is constructed by summing many compressional (pressure) wave reflections from the various sound source and sound detector locations at the halfway sound path points beneath each location (common depth point stacking). In **three-dimensional** (3D) reflection seismic surveying the sound detectors (numbering up to a thousand or more) are spread out over an area and the sound source is moved from location to location through the area. The resultant product can be thought of as a cube of common depth point stacked reflections. Advantages over 2D include the additional dimension, the fact that many more reflections are available for stacking at each point, which provides greatly improved resolution of subsurface features, and elimination of the "ghost" or "side swipe" reflections from nearby offline features that 2D surveys are prone to (except, of course, along the outer faces of the cube). **Four dimensional** (4D) reflection seismic surveying is the exact repetition of a 3D survey at two or more time intervals. The primary application of 4D is mapping the movement of fluid interfaces in producing oil and gas reservoirs.

[d] Includes crews with unknown survey dimension.

Notes: • A "seismic crew" is a group of people, of varying number, engaged in a seismic surveying job. • "48 States" is the United States excluding Alaska and Hawaii. • Data are reported on the first and fifteenth of each month, except January when they are reported only on the fifteenth. When semi-monthly values differ for the month, the larger of the two values is shown here. Consequently, this table reflects the maximum number of crews at work at any time during the month.

Web Page: See http://www.eia.doe.gov/emeu/mer/resource.html for all available data beginning in March 2000.

Source: *World Geophysical News,* IHS Energy Group, Denver, CO, used with permission.

Crude Oil and Natural Gas Resource Development

Note. Crude Oil and Natural Gas Exploratory and Development Wells. Three well types are considered in the *Monthly Energy Review* (*MER*) drilling statistics: "completed for crude oil," "completed for natural gas," and "dry hole." Wells that productively encounter both crude oil and natural gas are categorized as "completed for crude oil." Both development wells and exploratory wells (new field wildcats, new pool tests, and extension tests) are included in the statistics. All other classes of wells drilled in connection with the search for producible hydrocarbons are excluded. If a lateral is drilled at the same time as the original hole it is not counted separately, but its footage is included.

Prior to the March 1985 *MER*, drilling statistics consisted of completion data for the above types and classes of wells as reported to the American Petroleum Institute (API) during a given month. Due to time lags between the date of well completion and the date of completion reporting to the API, as-reported well completions proved to be an inaccurate indicator of drilling activity. During 1982, for example, as-reported well completions rose, while the number of actual completions fell. Consequently, the drilling statistics published since the March 1985 *MER* are Energy Information Administration (EIA) estimates produced by statistically imputing well counts and footage based on the partial data available from the API. These estimates are subject to continuous revision as new data, some of which pertain to earlier months and years, become available. Additional information about the EIA estimation methodology may be found in "Estimating Well Completions," a feature article published in the March 1985 *MER*.