

3. Crude Oil Statistics

The United States had 20,972 million barrels of crude oil proved reserves as of December 31, 2006. This is 4 percent (-785 million barrels) less than in 2005. The principal factors contributing to the decline were lower than average net revisions and adjustments and fewer total discoveries.

The Gulf of Mexico Federal Offshore and Alaska, two of the largest U.S. oil-producing areas, reported 10 and 7 percent declines in crude oil proved reserves. Downward revisions exceeded revision increases in these two areas in 2006.

Reserves additions of crude oil in the U.S. did not keep pace with production. Operators replaced only 52 percent of 2006 crude oil production with reserves additions (Figure 15).

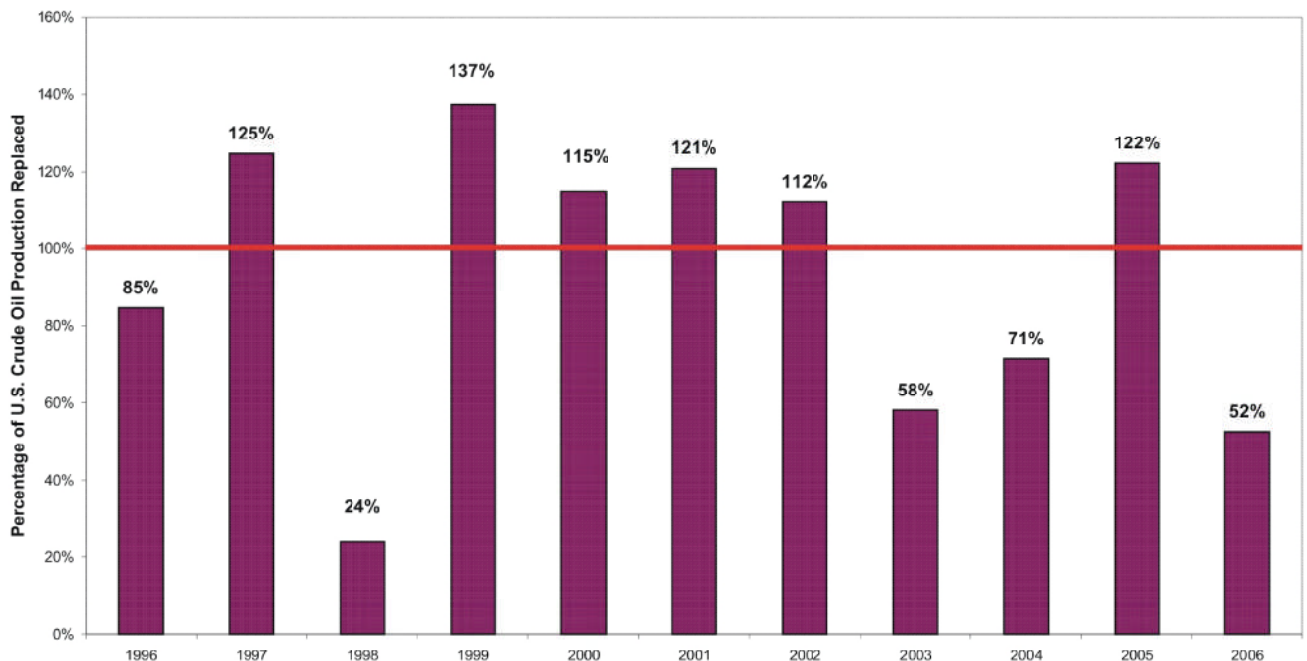
Proved Reserves

Table 6 presents the U.S. proved reserves of crude oil as of December 31, 2006, by selected States and State subdivisions.

Figure 16 maps 2006 crude oil proved reserves by area. The following four areas account for 74 percent of U.S. crude oil proved reserves:

Area	Percent of U.S. Oil Reserves
Texas	23
Alaska	18
Gulf of Mexico Federal Offshore	17
California	16
Area Total	74

Figure 15. Replacement of U.S. Crude Oil Production by Reserves Additions, 1996-2006.



Source: Energy Information Administration, Office of Oil and Gas.

Table 6. Crude Oil Proved Reserves, Reserves Changes, and Production, 2006
(Million Barrels of 42 U.S. Gallons)

State and Subdivision	Published Proved Reserves 12/31/05	Changes in Reserves During 2006							New Reservoir Discoveries in Old Fields (+)	Estimated Production (-)	Proved Reserves 12/31/06
		Adjustments (+,-)	Revision Increases (+)	Revision Decreases (-)	Sales (-)	Acquisitions (+)	Extensions (+)	New Field Discoveries (+)			
Alaska	4,171	1	84	235	0	0	100	0	0	242	3,879
Lower 48 States	17,586	93	1,506	1,353	982	1,176	404	30	43	1,410	17,093
Alabama	55	2	2	4	19	14	0	0	0	5	45
Arkansas	40	5	3	5	0	0	0	0	0	6	37
California	3,435	13	243	125	120	130	27	0	8	222	3,389
Coastal Region Onshore	374	1	22	10	46	47	0	0	2	15	375
Los Angeles Basin Onshore	300	6	83	23	47	49	6	0	6	16	364
San Joaquin Basin Onshore	2,556	6	115	76	27	34	16	0	0	176	2,448
State Offshore	205	0	23	16	0	0	5	0	0	15	202
Colorado	250	4	30	7	72	68	19	0	0	18	274
Florida	59	1	0	20	0	0	0	0	0	2	38
Illinois	95	2	6	6	0	1	0	0	1	10	89
Indiana	16	-5	1	2	0	3	0	0	0	1	12
Kansas	281	9	23	20	1	1	3	1	1	35	263
Kentucky	23	3	1	0	0	0	0	0	0	2	25
Louisiana	432	13	47	31	44	39	23	0	2	53	428
North	68	8	5	8	2	2	3	0	0	8	68
South Onshore	299	16	37	16	36	34	15	0	2	39	312
State Offshore	65	-11	5	7	6	3	5	0	0	6	48
Michigan	62	5	5	6	1	2	0	1	0	5	63
Mississippi	189	5	7	11	6	7	8	0	2	15	186
Montana	427	1	29	35	53	50	36	0	0	36	419
Nebraska	16	0	1	1	0	0	0	0	0	2	14
New Mexico	690	-2	66	45	64	90	26	0	0	56	705
East	682	-5	65	43	64	90	26	0	0	55	696
West	8	3	1	2	0	0	0	0	0	1	9
North Dakota	418	8	36	30	142	140	15	2	3	38	412
Ohio	46	1	5	1	0	1	1	0	0	4	49
Oklahoma	630	-21	51	68	29	45	10	0	0	49	569
Pennsylvania	14	5	3	2	0	0	2	0	0	2	20
Texas	4,919	50	340	312	100	198	128	1	2	355	4,871
RRC District 1	65	5	7	3	20	24	8	0	0	10	76
RRC District 2 Onshore	62	12	7	9	2	2	1	0	0	8	65
RRC District 3 Onshore	179	11	21	20	7	10	9	1	1	25	180
RRC District 4 Onshore	40	7	2	15	1	0	1	0	0	4	30
RRC District 5	24	1	4	1	0	0	0	0	0	4	24
RRC District 6	168	8	8	36	0	18	6	0	0	15	157
RRC District 7B	80	-5	25	4	1	3	1	0	0	10	89
RRC District 7C	245	3	15	16	4	40	25	0	0	20	288
RRC District 8	1,731	2	119	102	42	75	44	0	1	111	1,717
RRC District 8A	2,164	2	107	88	18	25	30	0	0	129	2,093
RRC District 9	103	6	8	5	4	1	0	0	0	13	96
RRC District 10	53	-2	17	11	1	0	3	0	0	6	53
State Offshore	5	0	0	2	0	0	0	0	0	0	3
Utah	256	0	55	12	42	76	16	2	0	17	334
West Virginia	21	2	6	4	0	0	0	0	0	2	23
Wyoming	704	-2	72	51	32	37	19	2	0	43	706
Federal Offshore	4,483	-3	471	555	257	272	71	21	24	431	4,096
Pacific (California)	441	0	29	6	0	0	2	0	1	26	441
Gulf of Mexico (Louisiana)	3,852	-2	397	520	202	215	68	21	18	347	3,500
Gulf of Mexico (Texas)	190	-1	45	29	55	57	1	0	5	58	155
Miscellaneous ^a	25	-3	3	0	0	2	0	0	0	1	26
U.S. Total	21,757	94	1,590	1,588	982	1,176	504	30	43	1,652	20,972

^aIncludes Arizona, Missouri, Nevada, New York, South Dakota, Tennessee, and Virginia.

Note: The production estimates in this table are based on data reported on Form EIA-23, "Annual Survey of Domestic Oil and Gas Reserves." They may differ from the official Energy Information Administration production data for crude oil for 2006 contained in the *Petroleum Supply Annual 2006*, DOE/EIA-0340(06).

Source: Energy Information Administration, Office of Oil and Gas.

Figure 16. Crude Oil Proved Reserves by Area, 2006

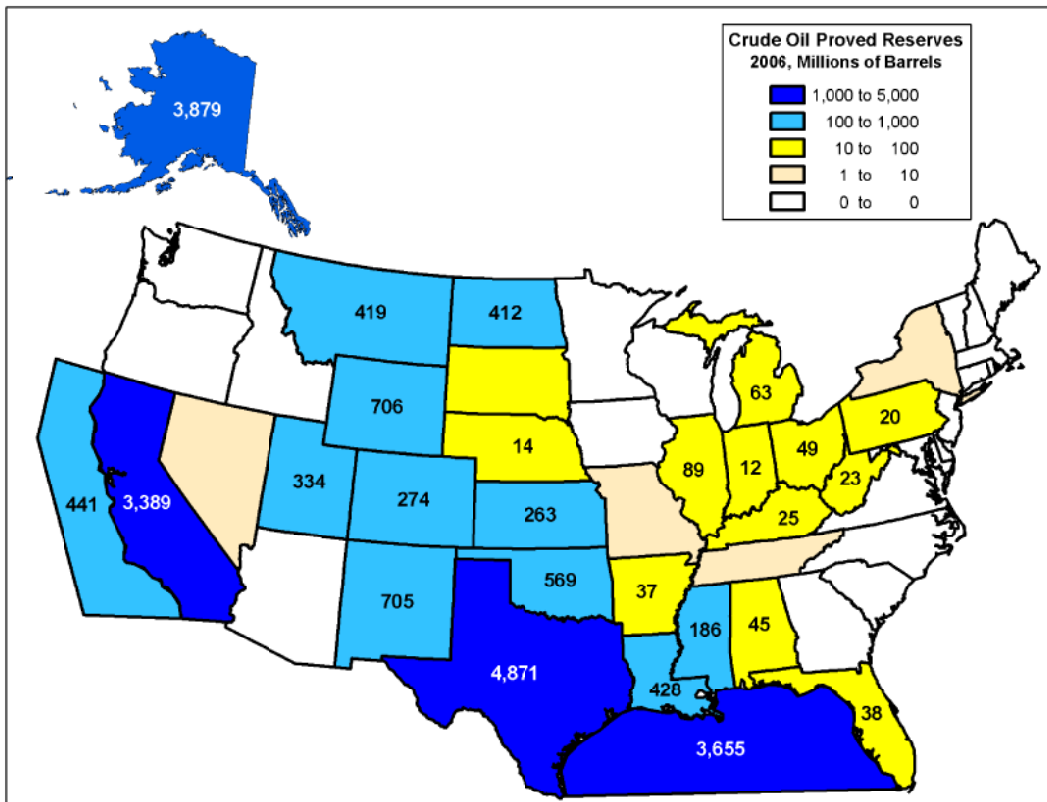
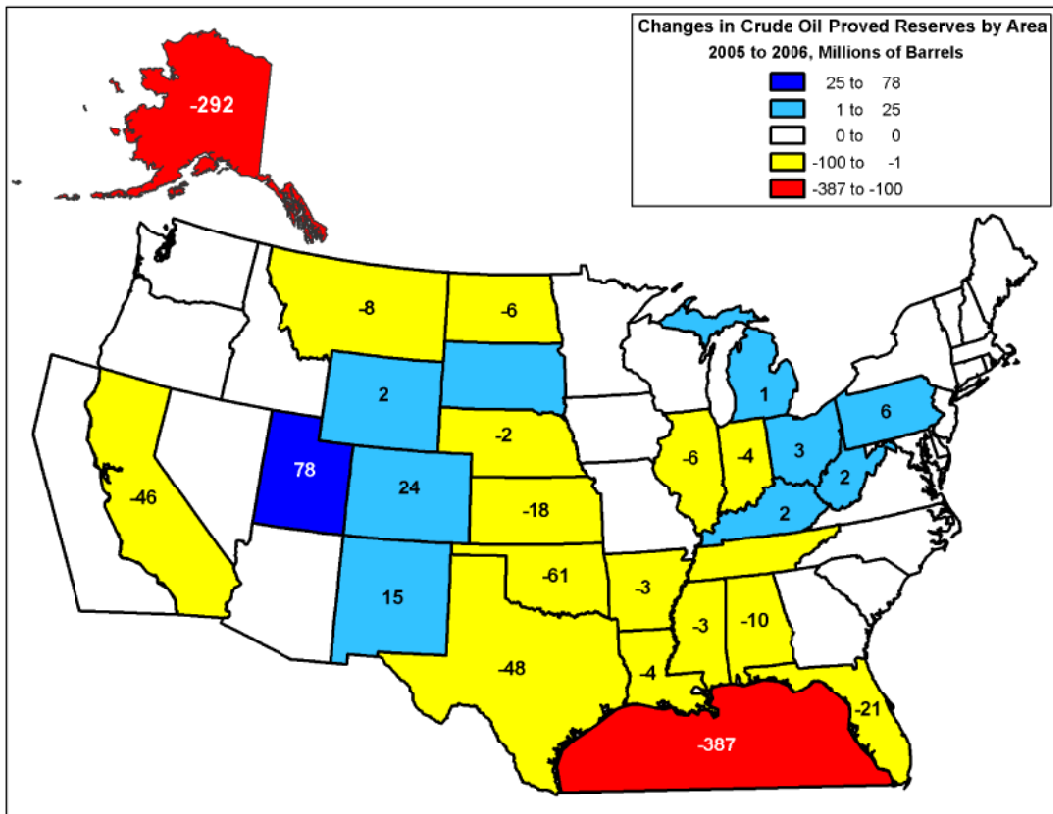


Figure 17. Changes in Crude Oil Proved Reserves by Area, 2005 to 2006



Source: Energy Information Administration, Office of Oil and Gas.

Discussion of Reserves Changes

Figure 17 maps the change in crude oil proved reserves from 2005 to 2006 by area. Here's how the top four areas fared compared to the total United States:

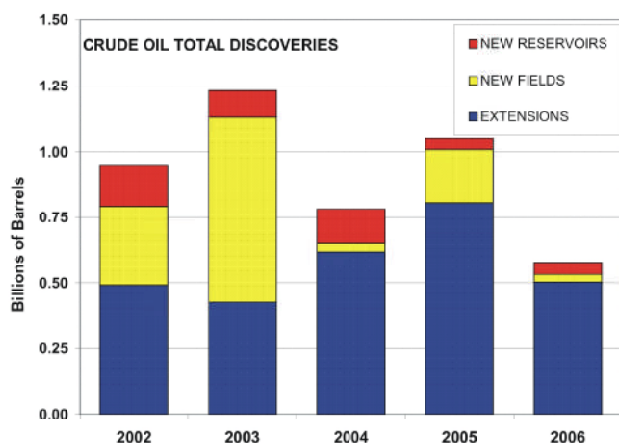
Area	Change in U.S. Oil Reserves (million barrels)
Texas	-48
Alaska	-292
Gulf of Mexico Federal Offshore	-387
California	-46
Area Total	-773
U.S. Total	-785

The Gulf of Mexico had a 10 percent decrease in crude oil proved reserves in 2006. Alaska declined 7 percent, and Texas and California each declined 1 percent.

Figure 2 in Chapter 2 shows the components of the changes in crude oil proved reserves for 2006 and the preceding 10 years.

Total Discoveries

Total discoveries are those new reserves attributable to extensions of existing fields, new field discoveries, and new reservoir discoveries in old fields (see graph below). They result from the drilling of exploratory wells.



Total discoveries of crude oil were 577 million barrels in 2006, 45 percent less than those of 2005 (1,051 million barrels).

Only five areas had total discoveries of 35 million barrels or more in 2006:

Area	Percent of U.S. Oil Total Discoveries
Texas	23
Federal Offshore Gulf of Mexico	20
Alaska	17
Montana	6
California	6
Area Total	72

The United States discovered an average of 1,135 million barrels of new crude oil proved reserves per year in the prior 10 years. Total discoveries in 2006 were 49 percent lower than that average.

Extensions

Operators reported 504 million barrels of extensions in 2006, 37 percent less than in 2005. The highest volume of extensions was reported in Texas (128 million barrels). The second highest volume of 2006 extensions was 100 million barrels in Alaska, followed by 69 million barrels in the Gulf of Mexico Federal Offshore and 36 million barrels in Montana.

In the prior 10 years, U.S. operators reported an average of 558 million barrels of extensions per year. The 2006 extensions were 10 percent less than that average.

New Field Discoveries

New field discoveries accounted for 30 million barrels of crude oil reserves additions. This was 85 percent less than the new field discoveries of 2005. Seventy percent of these discoveries (21 of 30 million barrels) were in the Gulf of Mexico Federal Offshore.

In the prior 10 years, U.S. operators reported an annual average of 428 million barrels of reserves from new field discoveries. Reserves from new field discoveries in 2006 were only 7 percent of that average.

New Reservoir Discoveries in Old Fields

Operators reported 43 million barrels of crude oil reserves from new reservoir discoveries in old fields in 2006. This is 5 percent more than in 2005. The majority of the new reservoir discoveries in old fields (23 of 43 million barrels) came from the Gulf of Mexico Federal Offshore.

In the prior 10 years, U.S. operators reported an annual average of 149 million barrels of reserves from new reservoir discoveries in old fields. Reserves from new reservoir discoveries in old fields in 2006 were 71 percent less than that average.

Revisions and Adjustments

Operators report thousands of positive and negative revisions to proved reserves each year as development wells are drilled, well performance is analyzed, new technology is applied, or economic conditions change. Adjustments are the annual changes in the published reserve estimates that cannot be directly attributed to the estimates for other reserve change categories because of the survey and statistical estimation methods employed.

There were 1,590 million barrels of revision increases, 1,588 million barrels of revision decreases, and 94 million barrels of adjustments in 2006. Combined, there were 96 million barrels of net revisions and adjustments for crude oil in 2006.

In the prior 10 years, net revisions and adjustments added an annual average of 759 million barrels. The 2006 net revisions and adjustments were 87 percent less than that average.

Sales and Acquisitions

In the context of this report, *Sales* represents the volume of crude oil proved reserves deducted from an operator's total reserves by sale or transfer of operations of existing oil fields or properties to another operator, instead of a volume of production "sold" at the wellhead. Similarly, *Acquisitions* are that volume of proved reserves added to an operator's total reserves through purchase or operations transfer of an existing oil field or properties.

There are several reasons why sales and acquisitions volumes are not equal for a given year. Since operators have different engineering staffs and resources, or different development plans or schedules, the estimate of proved reserves for a field can change upon a change in operatorship. Timing of the transfer of operations can also impact these values.

In 2006, there were 982 million barrels of sales transactions between operators and 1,176 million barrels of acquisitions yielding a net difference of +194 million barrels.

Production

U.S. production of crude oil in 2006 was an estimated 1,652 million barrels. This volume, which does not include lease condensate, was 5 percent lower than 2005's production of 1,733 million barrels.

Part of the decline resulted from an August 2006 shut-in of producing wells in half of Alaska's Prudhoe Bay Field (still the largest producing U.S. oil field) for inspection and repair of corrosion in the gathering system.

In 2006, the Gulf of Mexico Federal Offshore remained the largest oil producing area in the United States with 25 percent of the national total (405 million barrels of production). Texas and Alaska were second and third, with 21 and 15 percent of the national production total, respectively. California was fourth with 13 percent.

For the second year in a row Montana had the largest annual oil production increase of any State (6 million barrels; a 20 percent increase) owing to continued development of the Bakken Formation in the Elm Coulee Field. This relatively new and important oil field is difficult to produce and requires cutting-edge technology for economic production.

The 2006 Form EIA-23 national production estimates (1,652 million barrels of crude oil and 182 million barrels of lease condensate) are 1.5 percent lower than the comparable Petroleum Supply Annual (PSA) 2006 volumes for crude oil and lease condensate production combined (1,862 million barrels).

Areas of Note: Large Discoveries and Reserves Additions

The following State and area discussions summarize notable activities during 2006 concerning expected new field reserves, development plans, and possible production rates as reported in various trade publications. The citations do not necessarily reflect EIA's concurrence, but are considered important enough to be brought to the reader's attention.

The following areas were the major success stories for crude oil reserves and production for 2006.

Utah

Utah reported the largest increase (78 million barrels) of proved oil reserves in 2006. The majority of these

reserves additions were reported as acquisitions. Utah's production increased by 13 percent from 15 to 17 million barrels in 2006.

- **Greater Aneth Field:** On April 26, 2006, Resolute Natural Resources Company and Navajo Nation Oil and Gas Company announced they had completed the purchase of ExxonMobil's assets in Greater Aneth Field in southeast Utah. Their combined assets now include 359 active producing wells and 289 active [CO₂] injection wells in the Aneth, McElmo Creek, and Ratherford Units. {40}

Colorado

Colorado reported a net increase of 24 million barrels of crude oil proved reserves in 2006, primarily from revision increases and extensions. Colorado's production decreased from 19 million barrels in 2005 to 18 million barrels in 2006.

- **Wattenberg Field:** Anadarko Petroleum Corporation accelerated its infill drilling program at its Wattenberg Field in northeast Colorado in 2006 following the approval of down-spacing which created a significant increase in drill sites. {41} Although Wattenberg Field is primarily a tight nonassociated natural gas field (the 8th largest gas field in the U.S. in 2006, ranked by proved reserves), it produces significant crude oil -- Wattenberg Field was the 16th largest oil field in the U.S. in 2006, ranked by proved reserves. For a listing of the Top 100 U.S. oil and gas fields, see Appendix B.

New Mexico

New Mexico reported a net increase of 15 million barrels of crude oil proved reserves in 2006. Extensions and the net of sales and acquisitions provided the majority of reserves additions. New Mexico's production declined from 58 million barrels in 2005 to 56 million barrels in 2006.

- **Monument Field:** On January 17, 2006 Apache Corporation completed its purchase of Amerada-Hess Corporation's interest in eight fields in the Permian Basin of west Texas and New Mexico. Apache estimated the acquired interests had proved reserves of 27 million barrels of liquid hydrocarbons and 27 billion cubic feet of natural gas equivalent at year-end 2005. {42}

Other Gain Areas

Pennsylvania: Pennsylvania reported a net increase of 6 million barrels of crude oil proved reserves in 2006.

Ohio: Ohio reported a net increase of 3 million barrels of crude oil proved reserves in 2006.

Areas of Note: Large Reserves Declines

The following areas had large declines in crude oil proved reserves due to downward revisions or unreplaced production.

Gulf of Mexico Federal Offshore

The Gulf of Mexico Federal Offshore crude oil proved reserves declined 10 percent (-387 million barrels) in 2006. Crude oil production declined 1 percent from 409 million barrels in 2005 to 405 million barrels in 2006.

Alaska

Alaskan crude oil proved reserves declined 7 percent (-292 million barrels) in 2006. Despite 100 million barrels of extensions, net downward revisions exceeded reserves additions. Alaska's estimated 2006 production of 242 million barrels decreased 22 percent from the 2005 level (312 million barrels). Part of the decline resulted from an August 2006 shut-in of producing wells in half of Alaska's Prudhoe Bay Field (still the largest producing U.S. oil field) for inspection and repair of corrosion in the gathering system.

Oklahoma

There was a 10 percent decline (-61 million barrels) in the crude oil proved reserves of Oklahoma in 2006. Crude oil production from this area declined 4 percent from its 2005 level.

Other Decline Areas

Discovery and development of new or existing oil fields was also outpaced by crude oil production in the following areas of the United States:

Texas: Proved oil reserves decreased by 1 percent (-48 million barrels).

California: Proved oil reserves decreased by 1 percent (-46 million barrels).

Table 7. Reported Reserves in Nonproducing Status for Crude Oil, 2006^a
(Million Barrels of 42 U.S. Gallons)

State and Subdivision	Nonproducing Crude Oil Reserves	State and Subdivision	Nonproducing Crude Oil Reserves
Alaska	442	Ohio	8
Lower 48 States	4,732	Oklahoma	90
Alabama	0	Pennsylvania	0
Arkansas	1	Texas	1,077
California	496	RRC District 1	26
Coastal Region Onshore	85	RRC District 2 Onshore	16
Los Angeles Basin Onshore	149	RRC District 3 Onshore	18
San Joaquin Basin Onshore	228	RRC District 4 Onshore	4
State Offshore	34	RRC District 5	1
Colorado	102	RRC District 6	17
Florida	1	RRC District 7B	5
Kansas	17	RRC District 7C	120
Kentucky	0	RRC District 8	466
Louisiana	198	RRC District 8A	386
North	14	RRC District 9	9
South Onshore	162	RRC District 10	9
State Offshore	22	State Offshore	0
Michigan	15	Utah	164
Mississippi	79	Virginia	0
Montana	91	West Virginia	0
New Mexico	159	Wyoming	258
East	159	Federal Offshore	1,921
West	0	Pacific (California)	37
New York	0	Gulf of Mexico (Louisiana) ^c	1,816
North Dakota	53	Gulf of Mexico (Texas)	68
		Miscellaneous ^d	2
		U.S. Total	5,174

^aIncludes only those operators who produced 400,000 barrels of crude oil or 2 billion cubic feet of natural gas, or both, during the report year (Category I or Category II operators).

^bIncludes Arizona, Illinois, Indiana, Maryland, Missouri, Nebraska, Nevada, Oregon, South Dakota, and Tennessee.

^cIncludes Federal Offshore Alabama.

Source: Form EIA-23, "Annual Survey of Domestic Oil and Gas Reserves," 2006.

Reserves in Nonproducing Status

Not all proved reserves of crude oil reported in 2006 were producing. Operators reported 5,174 million barrels of proved reserves in nonproducing status in 2006, 9 percent less than in 2005 (5,691 million barrels). Nonproducing crude oil reserves (not including lease condensate) are listed in **Table 7**.

Nonproducing reserves are those awaiting well workovers, the drilling of extensions or additional development wells, installation of production or pipeline facilities, and depletion of other zones or reservoirs before recompletion in reservoirs not currently open to production.

