

Executive Summary: U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves 2000 Annual Report

U.S. crude oil, natural gas, and natural gas liquids proved reserves estimates increased in 2000. Exploratory and development drilling was focused on natural gas in 2000. Natural gas proved reserves additions replaced 152 percent of gas production. Such unusually large increases should not be expected very often in the future, because the number of frontier areas is diminishing. In addition, the combination of a large increase in the number of exploratory wells and a large increase in the total discoveries per exploratory well is, in itself, quite unusual.

The majority of natural gas proved reserves additions came from Texas and New Mexico in the Southwest, and from States with large increases in coalbed methane reserves like Wyoming, Colorado, and Utah. Natural gas liquids reserves increased in proportion with natural gas reserves.

As of December 31, 2000 proved reserves were:

Crude Oil (million barrels)	
1999	21,765
2000	22,045
Increase	1.3%
Dry Natural Gas (billion cubic feet)	
1999	167,406
2000	177,427
Increase	6.0%
Natural Gas Liquids (million barrels)	
1999	7,906
2000	8,345
Increase	5.6%

U.S. crude oil proved reserves increased by 1.3 percent, replacing 115 percent of oil production. The majority of crude oil proved reserves additions came from the deepwater Gulf of Mexico Federal Offshore frontier area.

Proved reserves are the estimated quantities, which geological and engineering data demonstrate with

reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions. Petroleum engineering and geological judgment are required in estimating proved reserves, therefore the results are not precise measurements. This report of 2000 U.S. proved reserves of crude oil, natural gas, and natural gas liquids is the 24th in an annual series prepared by the Energy Information Administration.

Crude Oil

Total discoveries of crude oil in 2000 resulted mainly from exploration in the deepwater Gulf of Mexico Federal Offshore and the Alaskan North Slope.

Total discoveries are those reserves attributable to field extensions, new field discoveries, and new reservoir discoveries in old fields. They result from the drilling of exploratory wells. Total discoveries of crude oil were 1,291 million barrels in 2000, about 72 percent more than the prior 10-year average and 78 percent more than those in 1999.

Most crude oil total discoveries in 2000 were from extensions to existing fields, which accounted for 766 million barrels of crude oil reserves additions. This was a 96 percent increase over 1999 extensions.

New field discoveries of 276 million barrels were 14 percent lower than those of 1999 and 34 percent higher than the prior 10-year average.

New reservoir discoveries in old fields were 249 million barrels, 72 percent more than in 1999 and 78 percent more than the prior 10-year average.

Reserves additions are the sum of total discoveries, revisions and adjustments, and sales and acquisitions. The net of revisions and adjustments were 889 million barrels, about 41 percent of crude oil reserves additions.

This report is the first to separately account for sales and acquisitions of proved reserves. The availability of sales and acquisitions volumes provide more insight into why proved reserves change. The sales component of the crude oil reserves changes (5,328 million barrels) was larger than the revision

decreases component, and acquisitions were larger than revision increases. While sales and acquisitions of crude oil proved reserves were both large, the net of sales and acquisitions of crude oil proved reserves was only a negative 20 million barrels.

Other 2000 crude oil events of note:

- The annual average domestic first purchase price for crude oil increased 71 percent from the 1999 level to \$26.73 per barrel.
- Exploratory and development oil completions were up 14 percent from 1999, but total oil well completions remain below the levels of 2 years ago (7,064 in 1998).
- Total discoveries per exploratory oil well were much higher in 2000 because of the large total discoveries in the less maturely explored Gulf of Mexico and Alaskan North Slope where fewer wells can provide larger discoveries. Higher oil prices in December 2000 also brought back some of the oil reserves that remained uneconomic in 1999.

Natural Gas

Operators added 6 percent to proved reserves of dry natural gas in 2000, by far the largest increase since EIA has been estimating the Nation's proved gas reserves. Reserves additions replaced 152 percent of U.S. dry natural gas production. U.S. natural gas proved reserves have increased in six of the last seven years.

Most of the reserve increases were in Texas, New Mexico, Colorado, Wyoming, and Utah. Oklahoma and the Gulf of Mexico, which had significant gas reserve declines in 1999, rebounded in 2000.

Natural gas prices were up 66 percent in 2000 to an average of \$3.60 per thousand cubic feet at the wellhead, as compared to \$2.17 per thousand cubic feet in 1999. Year-end average prices were an exceptionally high \$6.35 per thousand cubic feet.

U.S. total discoveries of dry gas reserves were 19,138 billion cubic feet in 2000. This was 75 percent more than the prior 10-year average and 77 percent more than in 1999.

New field discoveries were 1,983 billion cubic feet, 27 percent more than the volume discovered in 1999 and 35 percent more than the prior 10-year average.

Field extensions were 14,787 billion cubic feet, more than twice the extensions in 1999 and also more than

twice the prior 10-year average of 7,119 billion cubic feet.

New reservoir discoveries in old fields were 2,368 billion cubic feet, up 8 percent from 1999 and 1 percent more than the prior 10-year average.

Natural gas net revisions and adjustments were 6,071 billion cubic feet. The net of sales and acquisitions of dry natural gas proved reserves was 4,031 billion cubic feet.

Coalbed methane proved reserves and production continued to grow in 2000. Coalbed methane accounted for 9 percent of proved dry gas reserves. Coalbed methane production in 2000 was 7 percent of total U.S. dry gas production.

Other 2000 natural gas events of note:

- Exploratory gas well completions increased 34 percent in 2000 and development well drilling was up 45 percent.
- The average of total discoveries per exploratory gas well was up 30 percent in 2000. This average was increased by exploratory extension wells in relatively new coalbed methane fields and recent improvements in drilling and completion technology.
- U.S. gas production increased by over 1 percent in 2000.

Natural Gas Liquids

U.S. natural gas liquids proved reserves increased 6 percent to 8,345 million barrels in 2000. Natural gas liquids reserves are the sum of natural gas plant liquids and lease condensate reserves.

Total proved reserves of liquid hydrocarbons (crude oil plus natural gas liquids) were 30,390 million barrels in 2000, a 2 percent increase from the 1999 level. Natural gas liquids represented 27 percent of total liquid hydrocarbon proved reserves in 2000.

Data

These estimates are based upon analysis of data from Form EIA-23, Annual Survey of Domestic Oil and Gas Reserves, filed by 2,101 operators of oil and gas wells, and Form EIA-64A, Annual Report of the Origin of Natural Gas Liquids Production, filed by operators of 524 active natural gas processing plants. The U.S. proved reserves estimates for crude oil and natural gas are associated with sampling errors of less than 1 percent.