OCS Report
BOEM 2016-024

Outer Continental Shelf

Estimated Oil and Gas Reserves Gulf of Mexico OCS Region December 31, 2014

U.S. Department of the Interior
Bureau of Ocean Energy Management
Gulf of Mexico OCS Region

ON COVER- In December 2014, Chevron Corporation announced that crude oil and natural gas production had begun at the Jack/St. Malo project in the Lower Tertiary trend, deepwater U.S. Gulf of Mexico. Photo courtesy youtube.com.

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ABBREVIATIONS AND ACRONYMS

AL	Alabama
Bbbl	Billion barrels
Bbl	barrels
BBO	billion barrels of oil
BBOE	billion barrels of oil equivalent
Bcf	billion cubic feet
BOE	barrels of oil equivalent
BOEM	Bureau of Ocean Energy Management
DOI	U.S. Department of the Interior
^{0}F	degrees Fahrenheit
FL	Florida
ft	feet
GOM	Gulf of Mexico
GOMR	Gulf of Mexico Region
GOR	gas oil ratio
LA	Louisiana
MMbbl	million barrels
MMBOE	million barrels of oil equivalent
MMcf	million cubic feet
MMS	Minerals Management Service
MS	Mississippi
N	north
OCS	Outer Continental Shelf
psia	pounds per square inch absolute
P/Z	pressure/gas compressibility factor
RE	Resource Evaluation
SCF/STB	standard cubic feet per stock tank barrel
SPE-PRMS	Society of Petroleum Engineers Petroleum Resources Management System
Tcf	trillion cubic feet
TX	Texas
U.S.	United States
USGS	United States Geological Survey

ABSTRACT

This publication presents the Bureau of Ocean Energy Management (BOEM) estimates of oil and gas reserves in the Gulf of Mexico Outer Continental Shelf. As of December 31, 2014, it is estimated that the *Original Reserves* are 22.37 billion barrels of oil and 193.4 trillion cubic feet of gas from 1,306 fields. *Original Reserves* are the total of the *Cumulative Production* and the *Reserves*. This number includes six fields that moved from *Resources* to *Reserves* during 2014 and one new field discovered in 2014. One additional field, after further study, was downgraded from *Reserves* to *Resources.* It also includes 686 fields that have produced and expired. C*umulative Production* from the fields accounts for 19.03 billion barrels of oil and 185.2 trillion cubic feet of gas.

Reserves are estimated to be 3.34 billion barrels of oil and 8.2 trillion cubic feet of gas. These reserves are recoverable from 620 active fields. *Reserves* in this report are proved plus probable (2P) reserves estimates. The reserves must be discovered, recoverable, commercial and remaining. *Reserves*, starting with the 2011 report, now include *Reserves Justified for Development.*

The estimates of reserves for this report represent the combined efforts of engineers, geoscientists, paleontologists, petrophysicists, and other personnel of the BOEM Gulf of Mexico Region, Office of Resource Evaluation, in New Orleans, Louisiana. Reserves estimates are derived for individual reservoirs from geologic and engineering calculations. For any field spanning State and Federal waters, reserves are estimated for the Federal portion only.

INTRODUCTION

This report supersedes the *Estimated Oil and Gas Reserves, Gulf of Mexico OCS Region, December 31, 2013* (Kazanis et al., 2015). It presents estimated Original Reserves, Cumulative Production, and Reserves as of December 31, 2014, for the Gulf of Mexico (GOM). **Figure 1** represents the percentages of Cumulative Production and Reserves in the GOM. Contingent and Undiscovered Resources are not included in this report.

As of December 31, 2014, the 1,306 oil and gas fields in the federally regulated part of the Gulf of Mexico Outer Continental Shelf (GOM OCS) contained Original Reserves estimated to be 22.37 billion barrels of oil (BBO) and 193.4 trillion cubic feet (Tcf) of gas. Cumulative Production from the fields accounts for 19.03 BBO and 185.2 Tcf of gas. Reserves are estimated to be 3.34 BBO and 8.2 Tcf of gas for the 620 active fields. Oil Reserves have decreased 9.0 percent and the gas Reserves have decreased 8.9 percent since the 2013 report.

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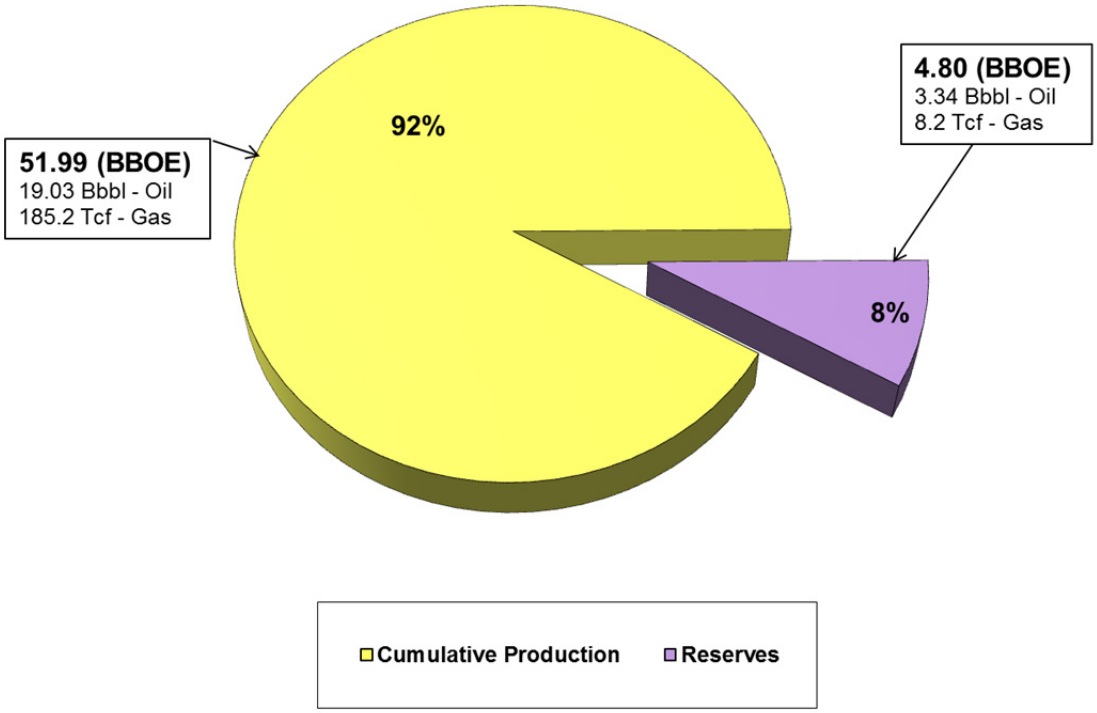

Figure 1. BOEM GOM Production and Reserves.

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BACKGROUND

Classification of Resources and Reserves

The BOEM resource classification framework is shown in **Figure 2**. Definitions for each resource class are presented in **Appendix A**. At the point in time a discovery is made, the identified accumulation of hydrocarbons is classified as a Contingent Resource, since a development project has not yet been identified. When the lessee makes a formal commitment to develop and produce the accumulation, it is classified as a Reserves Justified for Development. During the period when infrastructure is being constructed and installed, the accumulation is classified as Undeveloped Reserves. After the equipment is in place and production of the accumulation has begun, the status becomes Developed Producing Reserves. *Reserves* in this report are proved plus probable (2P) reserves estimates. The reserves must be discovered, recoverable, commercial and remaining. *Reserves*, starting with the 2011 report, now include *Reserves Justified for Development.* All hydrocarbons produced and sold are included in the Cumulative Production category. Should a project be abandoned, at any phase of development, any estimates of remaining hydrocarbon volumes could be re-classified to Contingent Resources.

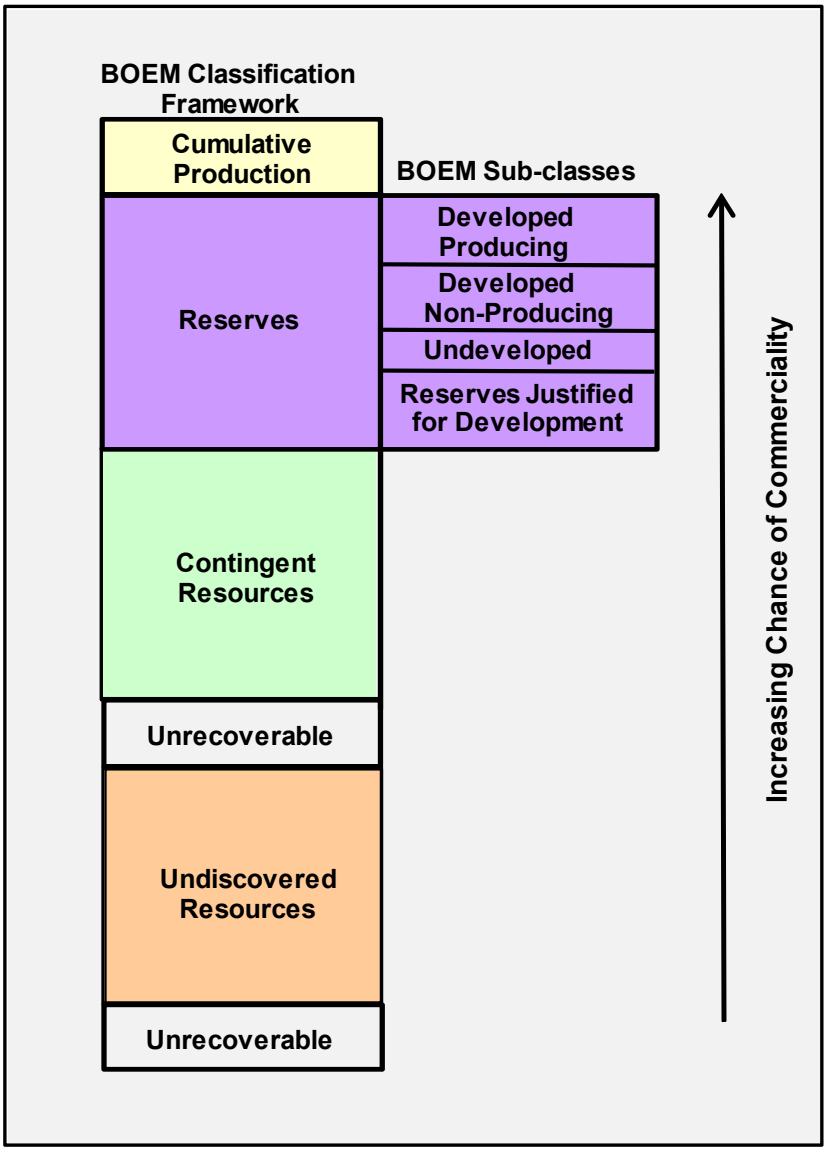

Figure 2. BOEM resource classification framework.

Methods Used for Estimating Reserves

The Reserves inventory component of the Resource Evaluation (RE) Program assigns new producible leases to fields and establishes field limits. The RE Program also develops independent estimates of natural gas and oil in discovered OCS fields by conducting field reserve studies and reviews of fields, sands, and reservoirs. The Program periodically revises the estimates of natural gas and oil volumes to reflect new discoveries, development, and annual production. This report, *Estimated Oil and Gas Reserves, Gulf of Mexico OCS Region, December 31, 2014*, is based on field studies completed at the reservoir and sand levels. All of the reservoir level data have been linked to the sand, pool, play, chronozone, and series level to support the Offshore Atlas Project (OAP).

Additional reports address GOM reserves. Minerals Management Service (MMS) OCS Report, *Atlas of Gulf of Mexico Gas and Oil Sands as of January 1, 1999* (Bascle et al., 2001) provides a detailed geologic reporting of oil and gas reserves. A brief summary of the Atlas is available on the BOEM's Web site at http://www.boem.gov/BOEM-Newsroom/Library/Publications/2001/2001-086.aspx. The MMS OCS Report, *2000 Assessment of Conventionally Recoverable Hydrocarbon Resources of the Gulf of Mexico and Atlantic Outer Continental Shelf as of January 1, 1999* (Lore et al., 2001) also known as the National Assessment, and its update, *Assessment of Undiscovered Technically Recoverable Oil and Gas Resources of the Nation's Outer Continental Shelf, 2006* (Lore, 2006*)* address reserves, reserves appreciation, and undiscovered resources. For more information visit BOEM's Web site at http://www.boem.gov/Oil-and-Gas-Energy-Program/Resource-Evaluation/Resource-Assessment/index.aspx

Reserve estimates from geological and engineering analyses have been completed for the 1,306 fields. The accuracy of the reserve estimate improves as additional reservoir data becomes available to geoscientists and engineers. Well logs, well file data, seismic data, and production data are periodically analyzed to improve the accuracy of the reserve estimate. As a field is depleted and/or abandoned, the Reserves of productive reservoirs are assigned a value equal to the amount produced and any unrecovered reserve volumes may be converted to Contingent Resources. Currently, there are 686 expired, depleted fields.

Methods used for estimating reserves can be categorized into three groups: analog, volumetric, and performance. Reserve estimates in this report are based primarily on volumetric and performance methods. Reserve estimates are reported deterministically, providing a single "best estimate" based on known geological, engineering, and economic data.

Production data are the metered volumes of raw liquids and gas reported to BOEM (from ONRR, Office of Natural Resources Revenue) by Federal unit and lease operators. Metered volumes from production platforms and/or leases are allocated to individual wells and reservoirs on the basis of periodic well test gauges. These procedures introduce approximations in both production and remaining reserves data.

Oil and gas volume measurements and reserves are corrected to reference standard conditions of 60°F and one atmosphere (14.73 pounds per square inch absolute [psia]). Prior to September 1998, gas was reported at 15.025 psia. BOEM has converted all historical gas production volumes to the 14.73 pressure base.

RESERVES AND RELATED DATA BY PLANNING AREA

The GOM OCS is divided into three planning areas for administrative purposes (**Figure 3**). Each planning area is subdivided into protractions, which in turn are divided into numbered blocks. Fields in the GOM are identified by the protraction area name and block number of discovery – for example, East Cameron Block 271 (EC 271) Field. As the field is developed, the limits may expand into adjacent blocks and planning areas. These adjacent blocks are then identified as part of the original field and are given that field name. Statistics in this report are presented as area totals compiled under each field name. All of the data associated with EC 271 Field are therefore included in the East Cameron totals, although part of the field extends into the adjacent area of Vermilion. There are four exceptions: Tiger Shoal and Lighthouse Point, included in South Marsh Island; Coon Point, included in Ship Shoal; and Bay Marchand, included in South Timbalier.

Through December 31, 2014, there were 620 fields active in the federally regulated part of the GOM. A list, updated quarterly, of the active and expired fields can be found in the *OCS Operations Field Directory*. Included are the 686 expired, depleted and/or abandoned fields that produced 14.4 percent barrels oil equivalent (BOE) of the total cumulative oil and gas production. One hundred twenty six fields expired, relinquished, or terminated without production. These fields may be included in the *Indicated Hydrocarbon List*. Reserves data are presented as area totals in **Table 1.**

Table 1. Estimated oil and gas reserves by area, December 31, 2014.

Area(s) (Fig. 3)	Number of fields				Original Reserves			Cumulative Production through 2014			Reserves		
	Active prod	Active nonprod	Expired depleted	Expired nonprod	Oil (MMbbl)	Gas (Bcf)	BOE (MMbbl)	Oil (MMbbl)	Gas (Bcf)	BOE (MMbbl)	Oil (MMbbl)	Gas (Bcf)	BOE (MMbbl)
Western Planning Area													
Alaminos Canyon	5	0	0	5	394	547	492	175	277	224	219	270	268
Brazos	5	1	32	3	10	3,726	673	10	3,696	668	0	30	5
East Breaks	12	2	7	5	273	2,235	671	254	2,117	631	19	118	40
Galveston	11	1	38	3	67	2,233	464	63	2,196	454	4	37	10
Garden Banks	1	0	6	2	42	337	102	35	321	92	7	16	10
High Island and Sabine Pass	37	7	85	10	424	15,506	3,183	413	15,404	3,154	11	102	29
Matagorda Island	5	3	21	2	24	5,281	964	24	5,253	958	0	28	6
Mustang Island	3	0	26	5	9	1,790	327	8	1,776	324	1	14	3
N.& S.Padre Island	2	0	17	0	0	627	112	0	625	112	0	2	0
Port Isabel	0	0	0	1	0	0	0	0	0	0	0	0	0
West Cameron and Sabine Pass	5	1	20	1	35	2,930	557	35	2,915	553	0	15	4
Western Planning Area Subtotal	***86***	***15***	***252***	***37***	***1,278***	***35,212***	***7,545***	***1,017***	***34,580***	***7,170***	***261***	***632***	***375***
Central Planning Area													
Atwater Valley	5	0	1	6	48	815	193	31	575	133	17	240	60
Chandeleur	1	1	12	0	0	383	68	0	383	68	0	0	0
Desoto Canyon	2	2	2	2	26	549	124	2	486	88	24	63	36
Destin Dome	0	0	0	1	0	0	0	0	0	0	0	0	0
East Cameron	25	1	41	0	362	11,075	2,332	349	10,941	2,296	13	134	36
Eugene Island	44	2	43	4	1,755	20,510	5,404	1,688	20,106	5,265	67	404	139
Ewing Bank	14	0	4	2	385	741	517	345	675	465	40	66	52
Garden Banks	18	1	13	4	789	4,272	1,550	713	3,900	1,407	76	372	143
Grand Isle	12	0	11	1	1,027	5,230	1,958	991	4,974	1,876	36	256	82
Green Canyon	33	2	9	27	2,895	4,061	3,618	1,969	3,174	2,534	926	887	1,084
Keathley Canyon	0	2	0	1	115	387	184	0	0	0	115	387	184
Lloyd Ridge	1	1	2	1	0	349	62	0	326	58	0	23	4
Main Pass and Breton Sound	43	6	43	4	1,188	7,111	2,453	1,149	6,898	2,377	39	213	76
Mississippi Canyon	35	8	12	11	3,884	10,852	5,815	2,783	8,634	4,319	1,101	2,218	1,496
Mobile	10	1	23	2	0	2,452	437	0	2,260	402	0	192	35
Pensacola	0	0	1	0	0	8	1	0	8	1	0	0	0
Ship Shoal	42	1	26	3	1,497	12,924	3,796	1,436	12,538	3,667	61	386	129
South Marsh Island	31	7	13	0	991	15,141	3,685	948	14,698	3,563	43	443	122
South Pass	8	0	5	1	1,119	4,568	1,932	1,095	4,479	1,892	24	89	40
South Pelto	6	0	3	0	162	1,186	373	157	1,166	365	5	20	8
South Timbalier	27	4	31	3	1,617	10,410	3,469	1,581	10,194	3,395	36	216	74
Vermilion	33	5	47	1	591	16,826	3,585	573	16,594	3,525	18	232	60
Viosca Knoll	20	1	31	8	649	3,702	1,308	583	3,513	1,208	66	189	100
Walker Ridge	4	3	0	3	359	85	374	19	3	19	340	82	355
West Cameron and Sabine Pass	34	4	56	0	197	18,731	3,530	193	18,439	3,474	4	292	56
West Delta	17	2	5	3	1,438	5,828	2,475	1,406	5,698	2,420	32	130	55
Central Planning Area Subtotal	***465***	***54***	***434***	***88***	***21,094***	***158,196***	***49,243***	***18,011***	***150,662***	***44,817***	***3,083***	***7,534***	***4,426***
Eastern Planning Area													
Destin Dome	0	0	0	1	0	0	0	0	0	0	0	0	0
Eastern Planning Area Subtotal*	***0***	***0***	***0***	***1***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
GOM Total:	***551***	***69***	***686***	***126***	***22,372***	***193,408***	***56,788***	***19,028***	***185,242***	***51,987***	***3,344***	***8,166***	***4,801***
		1,306											

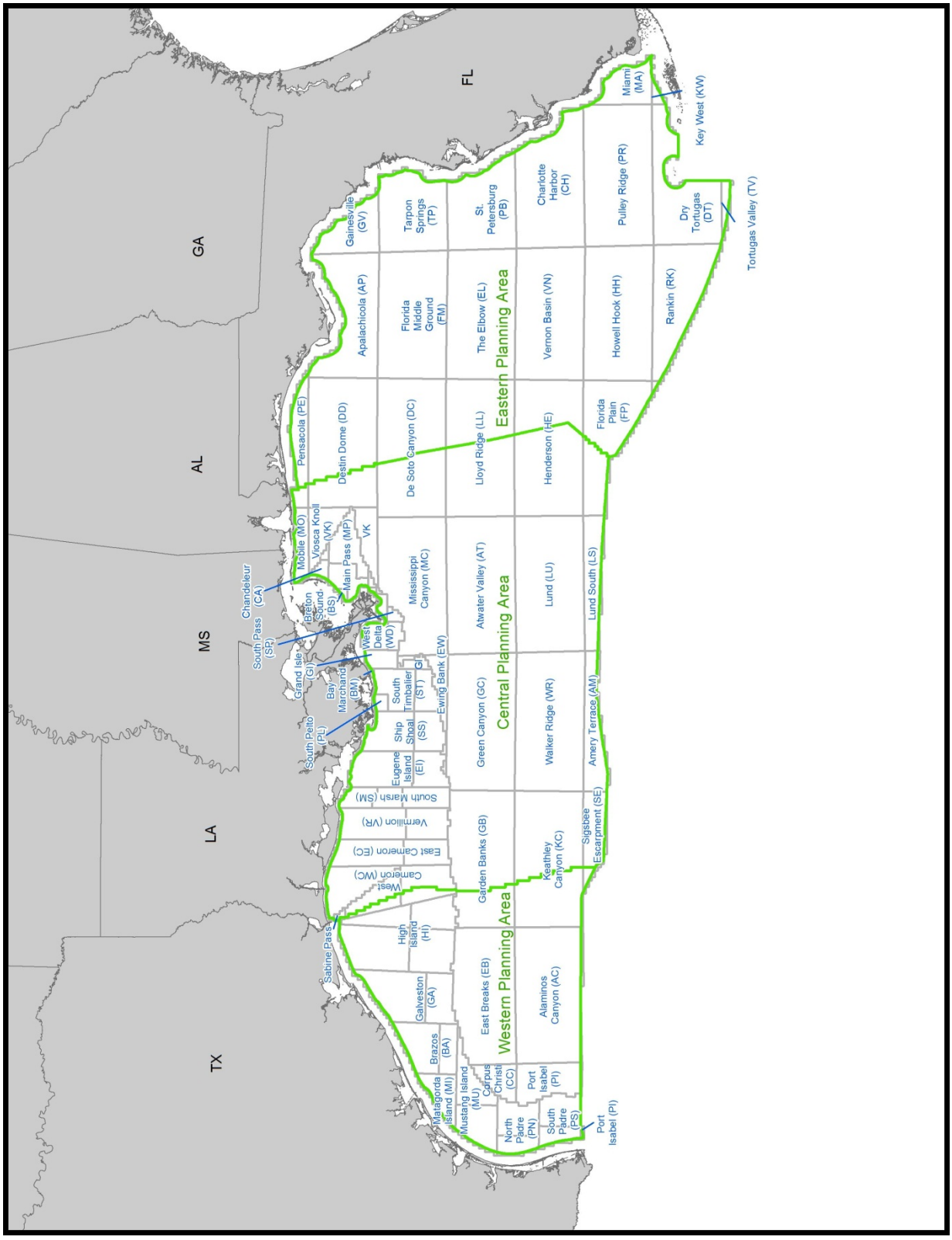

Figure 3. BOEM GOM OCS Planning Areas and Protraction Areas.

FIELD-SIZE DISTRIBUTION

Reserve sizes are expressed in terms of BOE. Gas reserves are converted to BOE and added to the liquid reserves for the convenience of comparison. The conversion factor of 5,620 standard cubic feet of gas equals 1 BOE is based on the average heating values of domestic hydrocarbons. A geometric progression, developed by the United States Geological Survey (USGS) (Attanasi, 1998), was selected for field-size (deposit-size) distribution ranges (**Table 2**).

In this report, fields are classified as either oil or gas; some fields do produce both products, making a field type determination difficult. Generally, fields with a gas/oil ratio (GOR) less than 9,700 standard cubic feet per stock tank barrel (SCF/STB) are classified as oil producers.

Table 2. Description of deposit-size classes.

Class	Deposit-size range*	Class	Deposit-size range*	Class	Deposit-size range*
1	0.031 - 0.062	10	16 - 32	18	4,096 - 8,192
2	0.062 - 0.125	11	32 -64	19	8,192 - 16,384
3	0.125 - 0.25	12	64 - 128	20	16,384 - 32,768
4	0.25 - 0.50	13	128 - 256	21	32,768 - 65,536
5	0.50 - 1.00	14	256 - 512	22	65,536 - 131,072
6	1 - 2	15	512 - 1,024	23	131,072 - 262,144
7	2 - 4	16	1,024 - 2,048	24	262,144 - 524,288
8	4 - 8	17	2,048 - 4,096	25	524,288 - 1,048,576
9	8 - 16	*Million Barrels of Oil Equivalent (MMBOE)			

The field-size distribution based on Original Reserves (in BOE) for 1,306 fields is shown in **Figure 4,** along with the planning area distributions. Of the 1,306 oil and gas fields, there are 257 oil fields represented in **Figure 5** and 1,049 gas fields shown in **Figure 6**. These figures also display the planning area distributions.

Analysis of the 1,306 oil and gas fields indicates that the GOM is historically a gas-prone basin. The GOR, based on original reserves of the 257 oil fields, is 2,535 SCF/STB. The yield (condensate divided by gas), based on original reserves for the 1,049 gas fields, is 25.2 barrels (Bbl) of condensate per million cubic feet (MMcf) of gas.

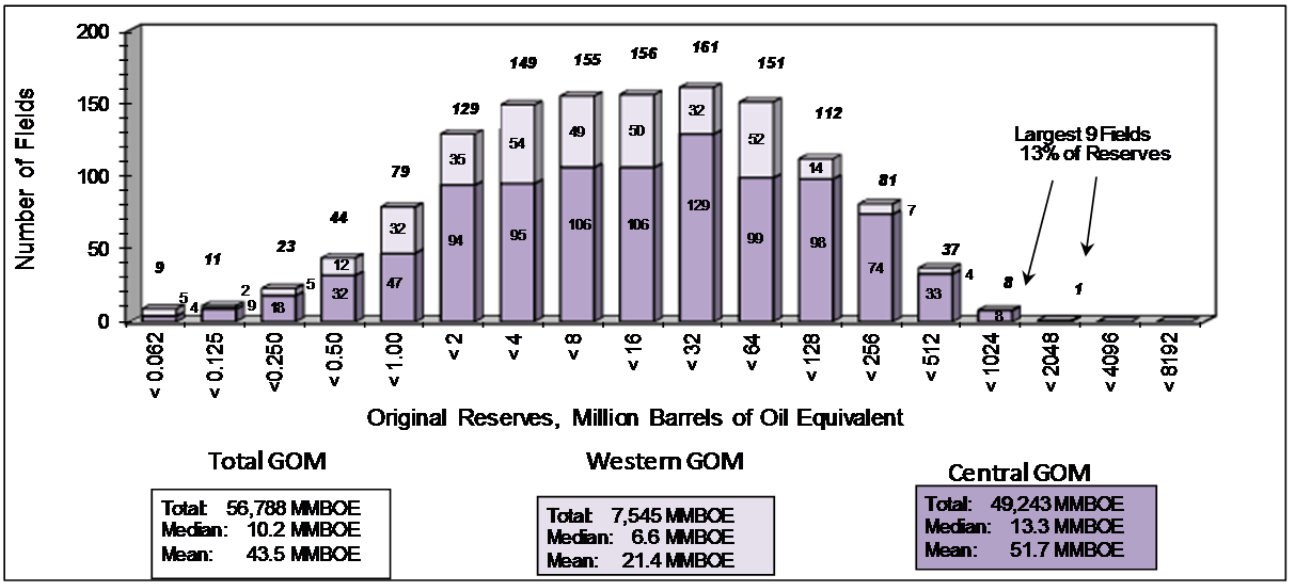

Figure 4. Field-size Distribution of all GOM Fields by Planning Area

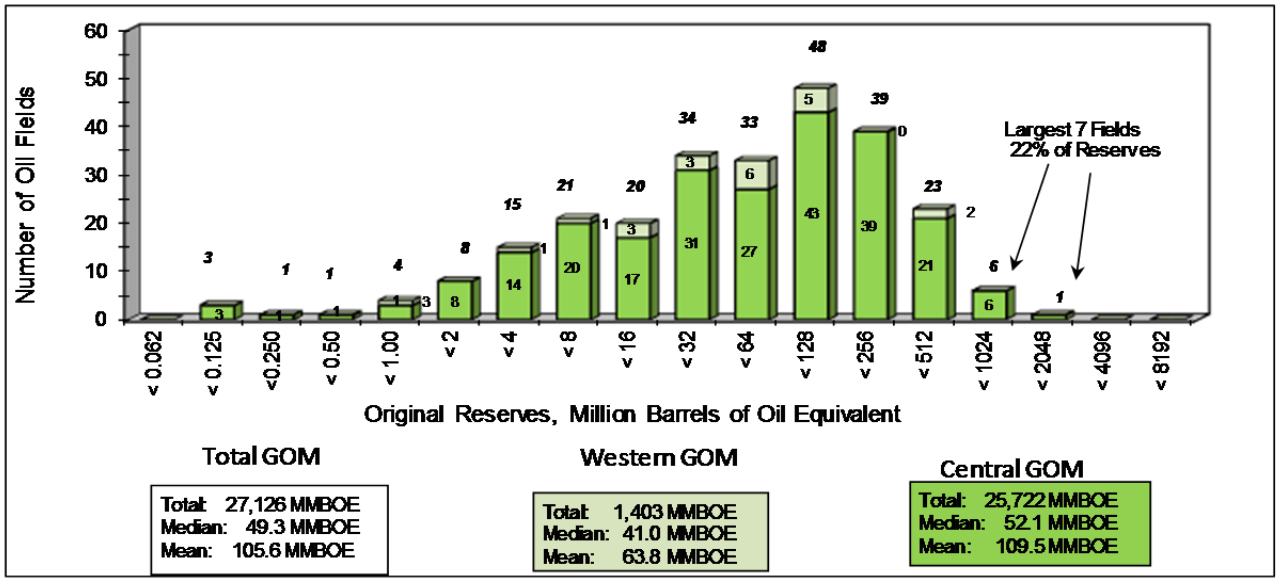

Figure 5. Field-size Distribution of GOM Oil Fields by Planning Area

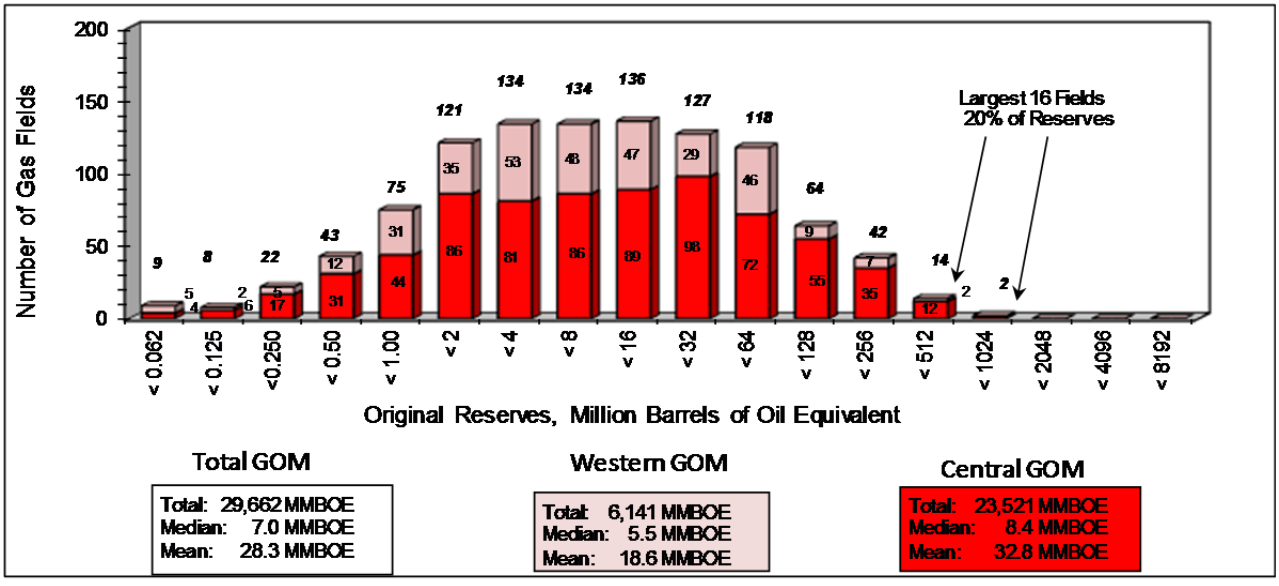

Figure 6. Field-size Distribution of GOM Gas Fields by Planning Area

Figure 7 shows the cumulative percent distribution of Original Reserves in billion barrels of oil equivalent (BBOE), by field size rank. All 1,306 fields in the GOM OCS are included in this figure. A phenomenon often observed in hydrocarbon-producing basins is a rapid drop-off in size from that of largest known field to smallest. Twenty-five percent of the Original Reserves are contained in the 28 largest fields. Fifty percent of the Original Reserves are contained in the 92 largest fields. Ninety percent of the Original Reserves are contained in the 437 largest fields.

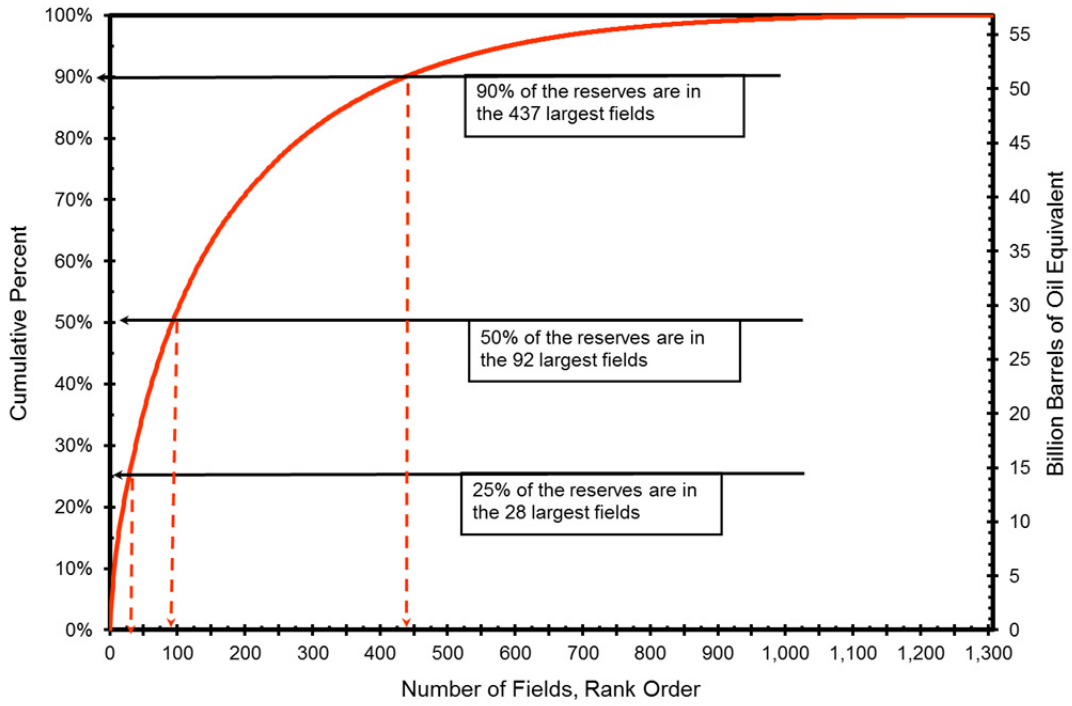

Figure 7. Cumulative percent total reserves versus rank order of field size.

Table 3 shows the distribution of the number of fields and reserves by water depth. A field's water depth is determined by averaging the water depth where the wells are drilled in the field. Reserves and production, reported in MMBOE, are associated with the 1,306 fields. Reserves located in greater than or equal to 1,500 ft of water accounts for 77 percent of the total GOM Reserves.

Table 3. Field and reserves distribution by water depth.

Water Depth Range (Feet)	Number of Fields	Cumulative Production (MMBOE)	Reserves (MMBOE)
< 500	1,081	41,152	987
500 - 999	54	1,253	40
1,000 - 1,499	25	1,358	71
1,500 - 4,999	95	6,121	2,014
5,000 - 7,499	33	1,686	1,258
>= 7,500	18	417	431
Totals:	1,306	51,987	4,801

Figure 8 shows the largest 20 fields ranked in order by Reserves. All 20 of the fields lie in water depths of greater than or equal to 1,500 ft and account for 57.0 percent of the Reserves in the GOM. Of the 225 fields in water depths greater than 500 ft, 142 are producing, 72 are depleted or expired, and 11 have yet to produce.

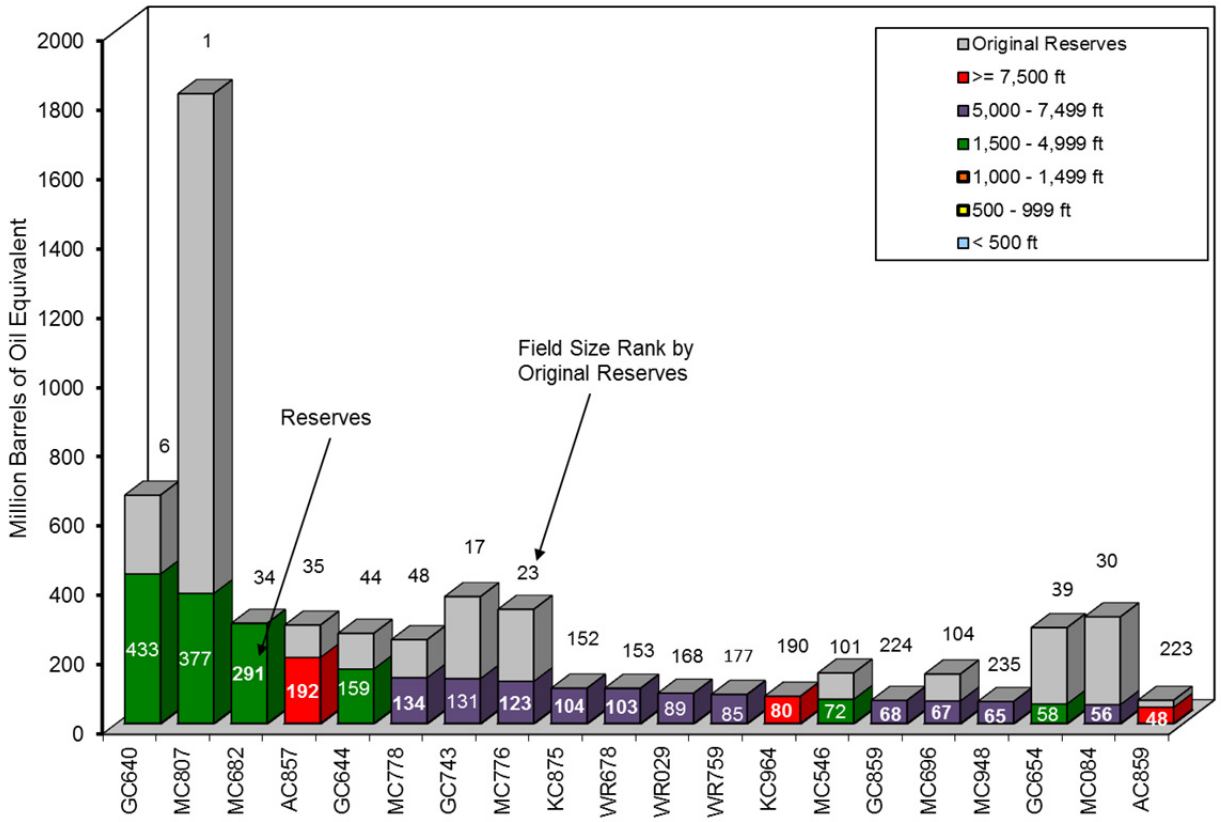

Figure 8. Largest 20 fields, with associated water depths, ranked by Reserves and compared to Original Reserves.

Table 4 ranks the 50 largest fields based on Original Reserves expressed in BOE. Rank, field name, field nickname, discovery year, water depth, field classification, field type, field GOR, Original Reserves, cumulative production through 2014, and Reserves are presented. A complete listing of all 1,306 fields is available on the BOEM Web site at: http://www.data.boem.gov/homepg/data_center/field/estimated2014.asp.

Table 4. Fields by rank order, based on Original BOE reserves, top 50 fields

Field class: P (PDP - Developed Producing, PDN - Developed Non-Producing and PU - Undeveloped) ; J (RJD- Reserves Justified for Development)
Field type: O - Oil; G - Gas

Rank	Field name	Field Nickname	Disc year	Water depth (feet)	Field class	Field type	Field GOR (SCF/STB)	Original Reserves			Cumulative Production through 2014			Reserves		
								Oil (MMbbl)	Gas (Bcf)	BOE (MMbbl)	Oil (MMbbl)	Gas (Bcf)	BOE (MMbbl)	Oil (MMbbl)	Gas (Bcf)	BOE (MMbbl)
1	MC807	MARS-URSA	1989	3,341	P	O	1,401	1456.1	2039.2	1818.9	1174.2	1506.3	1442.2	281.9	532.9	376.7
2	EI330		1971	248	P	O	4,170	455.2	1895.4	792.5	443.2	1872.8	776.5	12.0	22.6	16.0
3	WD030		1949	48	P	O	1,643	594.9	980.8	769.4	584.7	958.8	755.3	10.2	22.0	14.1
4	TS000		1958	13	P	G	78,924	47.3	3731.1	711.1	43.7	3543.5	674.2	3.6	187.6	36.9
5	GI043		1956	140	P	O	4,405	396.8	1737.0	705.9	375.2	1641.9	667.4	21.6	95.1	38.5
6	GC640	TAHITI/CAESER/TONGA	2002	4,326	P	O	542	602.4	326.6	660.5	205.2	124.8	227.4	397.2	201.8	433.1
7	BM002		1949	50	P	O	1,061	543.7	576.6	646.3	538.9	569.5	640.2	4.8	7.1	6.1
8	VR014		1956	26	P	G	65,255	47.9	3126.5	604.2	47.9	3126.5	604.2	0	0.0	0
9	MP041		1956	43	P	O	5,778	268.7	1552.9	545.1	266.9	1540.2	541.0	1.8	12.7	4.1
10	VR039		1948	38	P	G	80,605	32.3	2607.4	496.3	31.9	2603.4	495.2	0.4	4.0	1.1
11	SS208		1960	102	P	O	6,253	227.0	1424.5	480.5	222.6	1389.9	470.0	4.4	34.6	10.5
12	GB426	AUGER	1987	2,847	P	O	3,584	257.8	924.0	422.2	238.5	857.0	391.0	19.3	67.0	31.2
13	WD073		1962	177	P	O	2,484	278.5	696.6	402.4	271.3	678.1	391.9	7.2	18.5	10.5
14	EI238		1964	147	P	G	15,977	100.8	1570.7	380.3	93.5	1520.2	364.0	7.3	50.5	16.3
15	GI016		1948	54	P	O	1,299	308.1	399.8	379.2	305.3	393.9	375.4	2.8	5.9	3.8
16	SP061		1967	220	P	O	1,937	274.6	531.5	369.1	270.1	527.7	364.0	4.5	3.8	5.1
17	GC743	ATLANTIS	1998	6,285	P	O	654	325.1	239.4	367.8	212.4	136.4	236.7	112.7	103.0	131.1
18	SP089		1969	421	P	O	4,432	197.1	874.0	352.7	194.8	869.8	349.6	2.3	4.2	3.1
19	ST172		1962	98	P	G	158,375	12.0	1898.9	349.9	12.0	1898.9	349.9	0.0	0.0	0.0
20	WC180		1961	48	P	G	140,029	13.3	1861.8	344.6	13.2	1845.6	341.6	0.1	16.2	3.0
21	ST021		1957	46	P	O	1,646	259.3	427.0	335.3	257.4	424.6	332.9	1.9	2.4	2.4
22	SS169		1960	63	P	O	5,343	169.9	907.6	331.4	165.7	892.9	324.6	4.2	14.7	6.8
23	MC776	N.THUNDER HORSE	2000	5,668	P	O	968	282.4	273.2	331.0	177.9	168.6	207.9	104.5	104.6	123.1
24	ST176		1963	127	P	G	13,916	92.7	1289.1	322.1	89	1263	313	4.0	26.3	8.7
25	EI292		1964	214	P	G	70,046	23.6	1653.3	317.8	21.1	1646.1	314.0	2.5	7.2	3.8
26	MC194	COGNAC	1975	1,022	P	O	4,180	182.1	761.1	317.5	180.0	756.4	314.6	2.1	4.7	2.9
27	EC064		1957	50	P	G	55,518	29.0	1613.5	316.2	27.2	1603.1	312.5	1.8	10.4	3.7
28	EC271		1971	172	P	G	18,093	74.6	1349.9	314.8	70.1	1342.9	309.1	4.5	7.0	5.7
29	SM048		1961	100	P	G	52,947	30.1	1594.3	313.8	28.4	1553.6	304.8	1.7	40.7	9.0
30	MC084	KING/HORN MT.	1993	5,285	P	O	1,103	254.0	311.0	309.4	211.9	231.9	253.2	42.1	79.1	56.2
31	SS176		1956	101	P	G	19,381	68.6	1330.1	305.3	67.2	1313.8	301.0	1.4	16.3	4.3
32	WC587		1971	211	P	G	118,734	13.4	1586.3	295.6	13.4	1579.6	294.4	0.0	6.7	1.2
33	SP027	EAST BAY	1954	64	P	O	5,176	152.8	791.7	293.7	151.8	783.4	291.2	1.0	8.3	2.5
34	MC682	TUBULAR BELLS	2003	4,521	P	O	2,604	194.9	539.2	290.9	0.2	0.4	0.3	194.7	538.8	290.6
35	AC857	GREAT WHITE	2002	7,918	P	O	1,714	231.1	305.8	285.6	72.9	114.6	93.3	158.2	191.2	192.3
36	WD079		1966	123	P	O	3,872	168.4	648.9	283.9	164.6	637.3	278.0	3.8	11.6	5.9
37	ST135		1956	129	P	O	3,703	170.9	632.9	283.5	168.2	620.9	278.7	2.7	12.0	4.8
38	EI296		1971	214	P	G	71,304	20.6	1466.2	281.5	20.6	1464.0	281.1	0.0	2.2	0.4
39	GC654	SHENZI	2002	4,304	P	O	396	259.9	103.0	278.2	205.7	81.0	220.1	54.2	22.0	58.1
40	WC192		1954	57	P	G	60,168	23.7	1420.4	276.3	23.3	1415.5	275.1	0.4	4.9	1.2
41	HI573A		1973	341	P	O	7,446	118.0	879.0	274.5	114.2	874.2	269.8	3.8	4.8	4.7
42	MI623		1980	83	P	G	102,711	13.8	1418.1	266.2	13.7	1408.5	264.4	0.1	9.6	1.8
43	GI047		1955	88	P	O	3,830	156.8	601.2	263.8	152.0	584.5	256.0	4.8	16.7	7.8
44	GC644	HOLSTEIN	1999	4,341	P	O	1,182	216.2	255.6	261.7	87.5	86.5	102.9	128.7	169.1	158.8
45	GC244	TROIKA	1994	2,795	P	O	1,900	192.9	378.6	260.3	179.2	342.2	240.1	13.7	36.4	20.2
46	VK956	RAM-POWELL	1985	3,238	P	O	9,056	99.0	896.8	258.6	95.0	881.2	251.8	4.0	15.6	6.8
47	SP078		1972	202	P	G	11,172	82.9	929.4	248.2	80.5	919.3	244.0	2.4	10.1	4.2
48	MC778	THUNDER HORSE	1999	6,077	P	O	780	213.9	166.7	243.5	96.2	76.4	109.8	117.7	90.3	133.7
49	SM023		1960	82	P	G	39,519	29.8	1176.3	239.1	29.8	1176.3	239.1	0.0	0.0	0.0
50	SM130		1973	214	P	O	1,350	190.8	257.5	236.5	187.5	253.9	232.6	3.3	3.6	3.9

RESERVOIR-SIZE DISTRIBUTION

The size distributions of the reservoirs are shown in **Figures 9, 10, and 11**. The size ranges are based on Original Reserves and are presented on a geometrically progressing horizontal scale. These sizes correspond with the USGS deposit-size ranges shown in **Table 2,** with a modification to subdivide small reservoirs into finer distributions. For **Figure 9**, the Original Reserves are presented in million barrels of Oil Equivalent (MMBOE). For the combination reservoirs (saturated oil rims with associated gas caps), shown in **Figure 9**, gas is converted to BOE and added to the liquid reserves. **Figures 10 and 11** are presented in million barrels of Oil (MMBbl) and billion cubic feet (Bcf), respectively. The number of reservoirs in each size grouping, shown as percentages of the total, is presented on a linear vertical scale.

Figure 9 shows the reservoir-size distribution, on the basis of Original BOE, for 2,361 combination reservoirs. The median is 0.9 MMBOE and the mean is 3.0 MMBOE. The GOR, based on Original Reserves, for the oil portion of the reservoirs is 1,201 SCF/STB, and the yield, based on Original Reserves, for the gas cap is 20.7 Bbl of condensate per MMcf of gas.

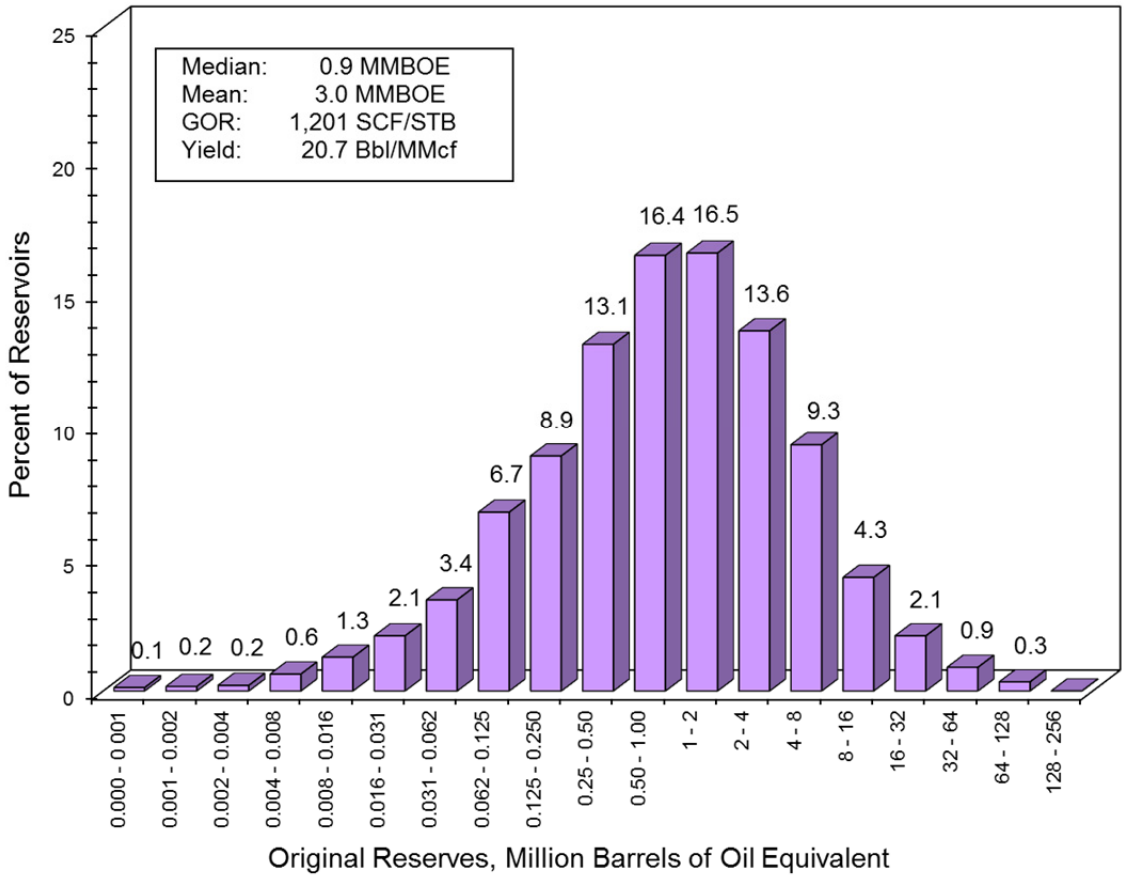

Figure 9. Reservoir-size distribution, combination reservoirs.

Figure 10 shows the reservoir-size distribution, on the basis of Original Oil reserves, for 8,852 undersaturated oil reservoirs. The median is 0.3 MMbbl, the mean is 1.8 MMbbl, and the GOR, based on Original Oil reserves, is 1,248 SCF/STB. **Figure 11** shows the reservoir-size distribution, on the basis of Original Gas reserves, for 18,766 gas reservoirs. The median is 2.0 Bcf of gas, the mean is 8.3 Bcf, and the yield, based on Original Reserves, is 12.3 Bbl of condensate per MMcf of gas.

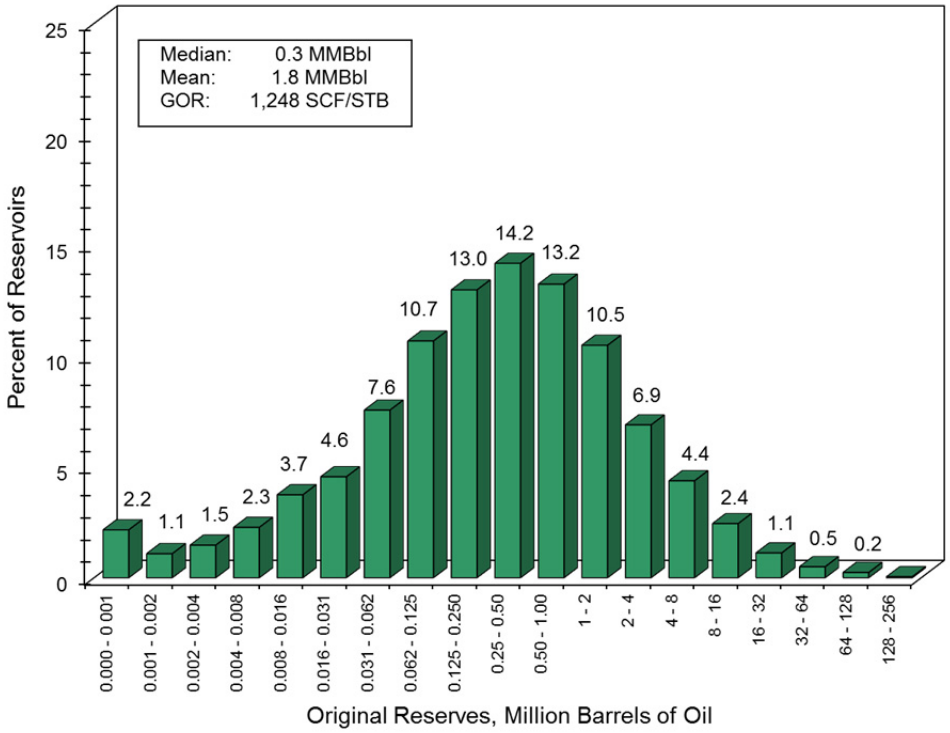

Figure 10. Reservoir-size distribution, oil reservoirs.

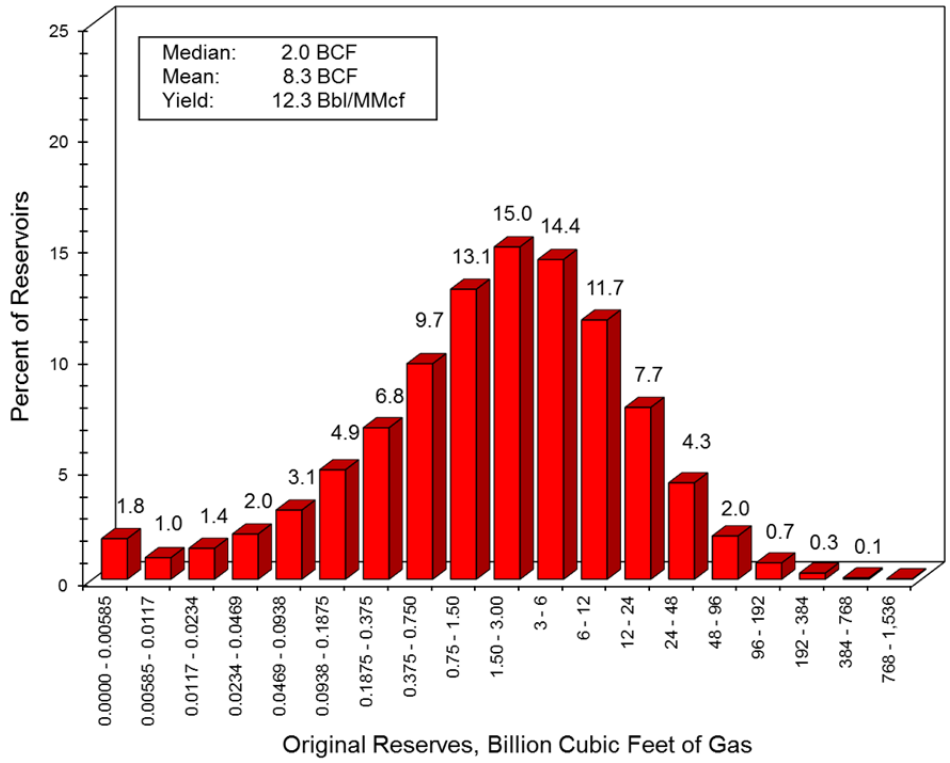

Figure 11. Reservoir-size distribution, gas reservoirs.

DRILLING AND PRODUCTION TRENDS

Figure 12 presents the number of exploratory wells drilled each year by water depth category. The total footage drilled in 2014 was 2.19 million feet, compared to 2.13 million feet in 2013.

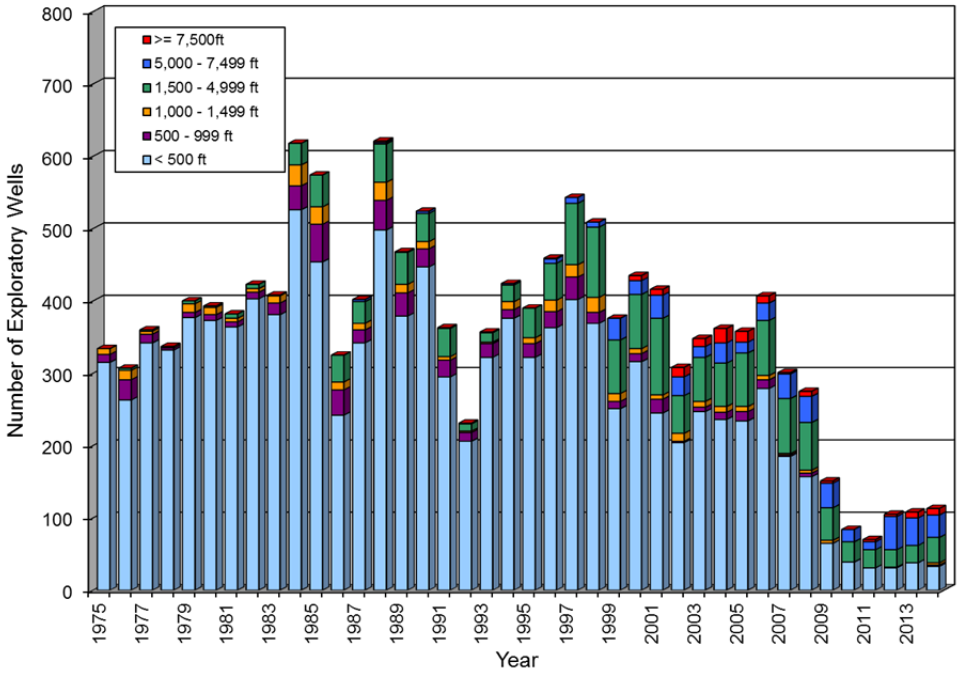

Figure 12. Number of exploratory wells drilled by water depth.

Figure 13 presents the number of development wells drilled each year by water depth category. The total footage drilled in 2014 was 2.64 million feet, compared to 3.01 million feet in 2013.

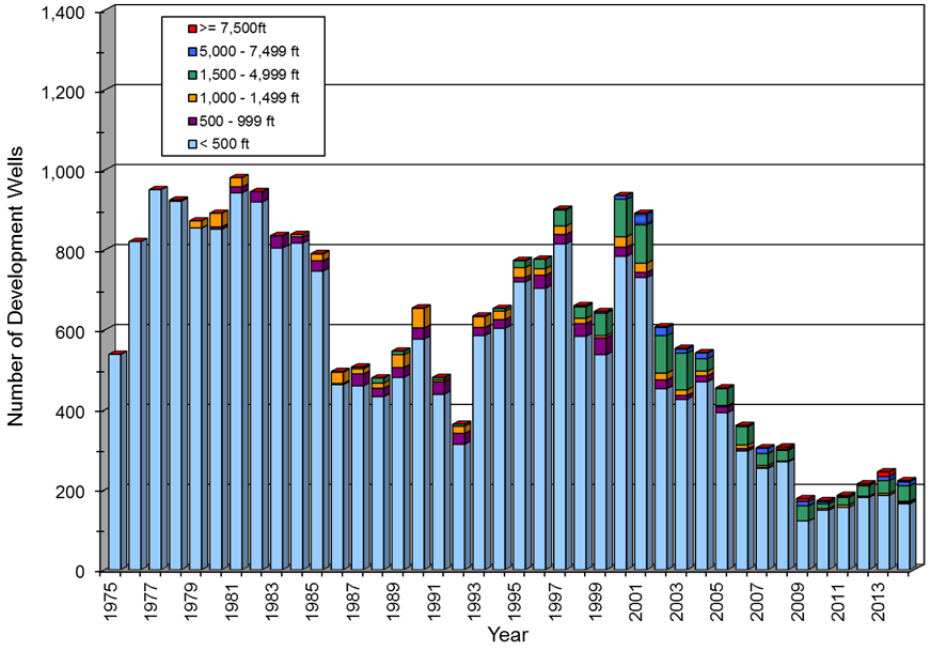

Figure 13. Number of development wells drilled by water depth.

Original Reserves in BBOE for water depth categories by reservoir discovery year are presented in **Figure 14**.

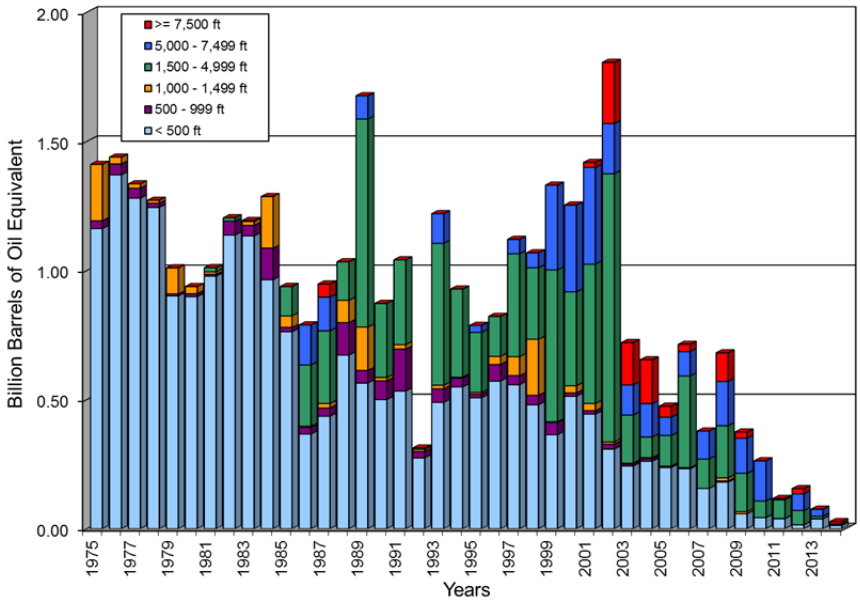

Figure 14. Original Reserves categorized by water depth and reservoir discovery year.

Annual production in the GOM is shown in **Figure 15**. The oil plot includes condensate and the gas plot includes casinghead gas. Annual production for oil and gas is presented as a total, in shallow water (less than 1,000 ft), and in deepwater (greater than 1,000 ft). From 2013 to 2014, annual oil production increased 11.2 percent to 510 MMbbl and annual gas production decreased 3.9 percent to 1.3 Tcf. The mean daily production in the GOM during 2014 was 1.27 MMbbl of crude oil, 0.12 MMbbl of gas condensate, 1.42 Bcf of casinghead gas, and 2.08 Bcf of gas-well gas. The mean GOR of oil wells was 1,114 SCF/STB, and the mean yield from gas wells was 59.6 Bbl of condensate per MMcf of gas.

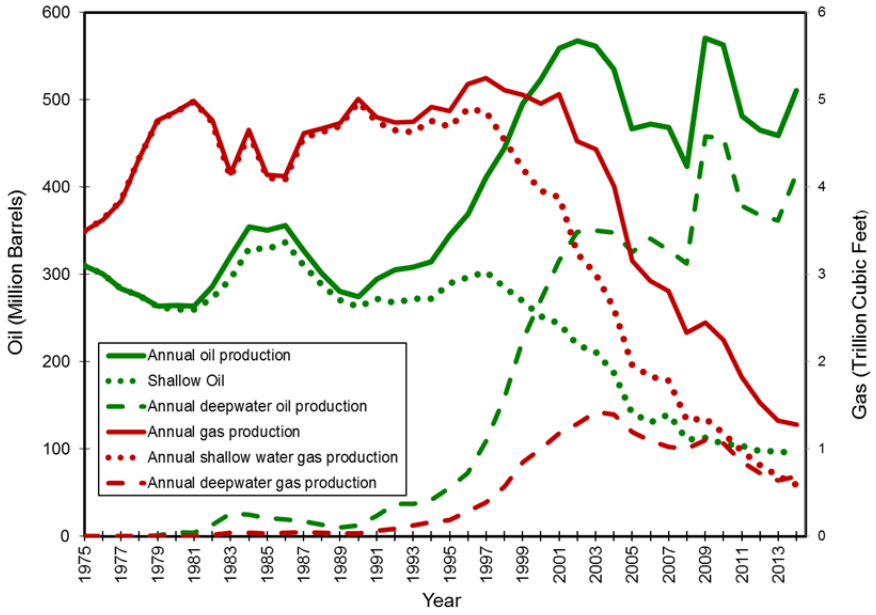

Figure 15. Annual oil and gas production.

SUMMARY AND CONCLUSIONS

A summary of the Reserve estimates for 2014 and a comparison with estimates from the previous year's report (December 31, 2013) are shown in **Table 5**. Seven fields were added for this report (5 oil fields and 2 gas field), which are tabulated and summarized as increases to Original Reserves. Two of the fields added were discovered in 2013, two were discovered in 2012 and one each in 2007, 2008 and 2009. One field was downgraded from Reserves to Resources after additional study.

Comparison of Reserves

A net change in the reserve estimates is a result of combining the discoveries and the revisions. Reserve estimates may increase or decrease with additional information (e.g., additional wells are drilled, leases are added or expire, and/or reservoirs are depleted). Re-evaluations of existing field studies are conducted using field development and/or production history to capture the changes in reserve estimates. Revisions of Original Reserves are presented as changes in **Table 5**. Based on periodic reviews and revisions of field studies conducted since the 2013 report, the reserves revisions have resulted in a slight increase in Original Reserves.

The table also demonstrates that the volumes added in 2014 and the field revisions did not exceed production, resulting in a net decrease in Reserves. The Reserves decreased 9.0 percent for oil and 8.9 percent for gas, since the 2013 report.

Table 5. Summary and comparison of GOM oil and gas reserves as of December 31, 2013 and December 31, 2014.

	Oil (Bbbl)	Gas (Tcf)	BOE (Bbbl)
Original Reserves:			
Previous estimate, as of 12/31/2013*	**22.19**	**193.0**	**56.53**
Fields Added in 2014	0.15	0.2	0.18
Revisions	0.03	0.2	0.08
Estimate, as of 12/31/2014 (this report)	**22.37**	**193.4**	**56.79**
Cumulative production:			
Previous estimate, as of 12/31/2013*	**18.52**	**184.0**	**51.25**
Revisions	0.00	-0.1	0.00
Production during 2014	0.51	1.3	0.74
Estimate, as of 12/31/2014 (this report)	**19.03**	**185.2**	**51.99**
Reserves:			
Previous estimate, as of 12/31/2013*	**3.67**	**9.0**	**5.28**
Fields Added in 2014	0.15	0.2	0.18
Revisions	0.03	0.3	0.08
Production during 2014	-0.51	-1.3	-0.74
Estimate, as of 12/31/2014 (this report)	**3.34**	**8.2**	**4.80**

Table 6 presents all previous reserve estimates by year. Because of adjustments and corrections to production data submitted by Gulf of Mexico OCS operators, the difference between historical cumulative production for successive years does not always equal the annual production for the latter year.

Table 6. Oil and gas reserves and cumulative production at end of year, 1975-2014.

"Oil" includes crude oil and condensate; "gas" includes associated and nonassociated gas. Reserves estimated as of December 31 each year.

Year	Number of fields included	Original Reserves			Historical Cumulative Production			Reserves		
		Oil (Bbbl)	Gas (Tcf)	BOE (Bbbl)	Oil (Bbbl)	Gas (Tcf)	BOE (Bbbl)	Oil (Bbbl)	Gas (Tcf)	BOE (Bbbl)
1975	255	6.61	59.9	17.27	3.82	27.2	8.66	2.79	32.7	8.61
1976	306	6.86	65.5	18.51	4.12	30.8	9.60	2.74	34.7	8.91
1977	334	7.18	69.2	19.49	4.47	35.0	10.70	2.71	34.2	8.80
1978	385	7.52	76.2	21.08	4.76	39.0	11.70	2.76	37.2	9.38
1979 (1)	417	7.71	82.2	22.34	4.83	44.2	12.69	2.88	38.0	9.64
1980	435	8.04	88.9	23.86	4.99	48.7	13.66	3.05	40.2	10.20
1981	461	8.17	93.4	24.79	5.27	53.6	14.81	2.90	39.8	9.98
1982	484	8.56	98.1	26.02	5.58	58.3	15.95	2.98	39.8	10.06
1983	521	9.31	106.2	28.21	5.90	62.5	17.02	3.41	43.7	11.19
1984	551	9.91	111.6	29.77	6.24	67.1	18.18	3.67	44.5	11.59
1985	575	10.63	116.7	31.40	6.58	71.1	19.23	4.05	45.6	12.16
1986	645	10.81	121.0	32.34	6.93	75.2	20.31	3.88	45.8	12.03
1987	704	10.76	122.1	32.49	7.26	79.7	21.44	3.50	42.4	11.04
1988 (2)	678	10.95	126.7	33.49	7.56	84.3	22.56	3.39	42.4	10.93
1989	739	10.87	129.1	33.84	7.84	88.9	23.66	3.03	40.2	10.18
1990	782	10.64	129.9	33.75	8.11	93.8	24.80	2.53	36.1	8.95
1991	819	10.74	130.5	33.96	8.41	98.5	25.94	2.33	32.0	8.02
1992	835	11.08	132.7	34.69	8.71	103.2	27.07	2.37	29.5	7.62
1993	849	11.15	136.8	35.49	9.01	107.7	28.17	2.14	29.1	7.32
1994	876	11.86	141.9	37.11	9.34	112.6	29.38	2.52	29.3	7.73
1995	899	12.01	144.9	37.79	9.68	117.4	30.57	2.33	27.5	7.22
1996	920	12.79	151.9	39.82	10.05	122.5	31.85	2.74	29.4	7.97
1997	957	13.67	158.4	41.86	10.46	127.6	33.17	3.21	30.8	8.69
1998	984	14.27	162.7	43.22	10.91	132.7	34.52	3.36	30.0	8.70
1999	1,003	14.38	161.3	43.08	11.40	137.7	35.90	2.98	23.6	7.18
2000	1,050	14.93	167.3	44.70	11.93	142.7	37.32	3.00	24.6	7.38
2001	1,086	16.51	172.0	47.11	12.48	147.7	38.77	4.03	24.3	8.35
2002	1,112	18.75	176.8	50.21	13.05	152.3	40.15	5.71	24.6	10.09
2003	1,141	18.48	178.2	50.19	13.61	156.7	41.49	4.87	21.5	8.70
2004	1,172	18.96	178.4	50.70	14.14	160.7	42.73	4.82	17.7	7.97
2005	1,196	19.80	181.8	52.15	14.61	163.9	43.77	5.19	17.9	8.38
2006	1,229	20.30	183.6	52.97	15.08	166.7	44.74	5.22	16.9	8.23
2007	1,251	20.43	184.6	53.28	15.55	169.5	45.71	4.88	15.1	7.57
2008	1,270	21.24	188.4	54.76	15.96	171.8	46.53	5.28	16.6	8.23
2009 (3)	1,278	21.20	190.2	55.03	16.53	176.8	47.99	4.67	13.3	7.04
2010	1,282	21.50	191.1	55.50	17.11	179.3	49.01	4.39	11.8	6.49
2011 (4)	1,292	21.91	192.4	56.15	17.59	181.1	49.81	4.32	11.3	6.34
2012	1,297	22.11	193.0	56.46	18.06	182.6	50.56	4.05	10.4	5.90
2013	1,300	22.19	193.0	56.53	18.52	184.0	51.25	3.67	9.0	5.28
2014	1,306	22.37	193.4	56.79	19.03	185.2	51.99	3.34	8.2	4.80

(1) Gas plant liquids dropped from system
(2) Basis of reserves changed from demonstrated to SPE proved.
(3) Conversion of historical gas production to 14.73 pressure base.
(4) Includes Reserves Justified for Development

Conclusions

As of December 31, 2014, the 1,306 oil and gas fields in the federally regulated part of the Gulf of Mexico Outer Continental Shelf (GOM OCS) contained Original Reserves estimated to be 22.37 billion barrels of oil (BBO) and 193.4 trillion cubic feet (Tcf) of gas. Cumulative Production from the fields accounts for 19.03 BBO and 185.2 Tcf of gas. Reserves are estimated to be 3.34 BBO and 8.2 Tcf of gas for the 620 active fields. Oil Reserves have decreased 9.0 percent and the gas Reserves have decreased 8.9 percent since the 2013 report.

CONTRIBUTING PERSONNEL

This report includes contributions from the following Gulf of Mexico Region, Office of Resource Evaluation, personnel.

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APPENDIX A: Definitions of Field, Resource and Reserves Terms

The following definitions as used in this report have been modified from SPE-PRMS and other sources where necessary to conform to requirements of the BOEM Reserves Inventory Program.

Field

A *Field* is an area consisting of a single reservoir or multiple reservoirs all grouped on, or related to, the same general geologic structural feature and/or stratigraphic trapping condition. There may be two or more reservoirs in a field that are separated vertically by impervious strata, laterally by local geologic barriers, or by both. The area may include one OCS lease, a portion of an OCS lease, or a group of OCS leases with one or more wells that have been approved as producible by BOEM pursuant to the requirements of Title 30 Code of Federal Regulations (CFR) 550.115/116, Determination of Well Producibility (*Federal Register, 2012*). A field is usually named after the area and block on which the discovery well is located. Field names and/or field boundaries may be changed when additional geologic and/or production data initiate such a change. Using geological criteria, BOEM designates a new producible lease as a new field or assigns it to an existing field. http://www.boem.gov/BOEM-Newsroom/Offshore-Stats-and-Facts/Gulf-of-Mexico-Region/Field-Naming-Handbook---March-1996.aspx.

Project

A *Project* represents the link between the petroleum accumulation and the decision-making process, including budget allocation. A project, for BOEM's classification of Resources and Reserves, is the Field (see also Field).

Resources

Resources encompass all quantities of petroleum (recoverable and unrecoverable) naturally occurring on or within the Earth's crust, discovered and undiscovered, plus those quantities already produced. Further, it includes all types of petroleum whether currently considered conventional or unconventional.

Undiscovered Resources

Resources postulated, on the basis of geologic knowledge and theory, to exist outside of known fields or accumulations. Included also are resources from undiscovered pools within known fields to the extent that they occur within separate plays. BOEM assesses two types of undiscovered resources, *Undiscovered Technically Recoverable Resources (UTRR)* and *Undiscovered Economically Recoverable Resources (UERR)*.

Discovered Resources

Hydrocarbons whose location and quantity are known or estimated from specific geologic evidence are *Discovered Resources*. Included are *Contingent Resources* and *Reserves* depending upon economic, technical, contractual, or regulatory criteria.

Contingent Resources

Those quantities of petroleum estimated, as of a given date, to be potentially recoverable from known accumulations by application of development projects but which are not currently considered to be commercially recoverable due to one or more contingencies.

Reserves

Reserves are those quantities of petroleum anticipated to be commercially recoverable by application of development projects to known accumulations from a given date forward under defined conditions. *Reserves* must further satisfy four criteria: They must be discovered, recoverable, commercial, and remaining (as of a given date) based on the development project(s) applied. *Reserves* are further sub-classified based on economic certainty.

Original Reserves	*Original Reserves* are the total of the *Cumulative Production* and *Reserves*, as of a specified date.
Proved plus Probable Reserves (2P)	The sum of the estimated proved reserves and any additional probable reserves (2P). *Proved Reserves* are commonly defined as those quantities of petroleum which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be commercially recoverable, from a given date forward, from known reservoirs and under defined economic conditions, operating methods, and government regulations. *Probable Reserves* are commonly defined as those additional reserves which analysis of geoscience and engineering data indicate are less likely to be recovered than proved reserves but more certain to be recovered than possible reserves.
Reserves Justified for Development	The lowest level of reserves certainty. Implementation of the development project is justified on the basis of reasonable forecast commercial conditions at the time of reporting and that there are reasonable expectations that all necessary approvals/contracts will be obtained.
Undeveloped Reserves	*Undeveloped Reserves* are those *Reserves* that are expected to be recovered from future wells and facilities, including future improved recovery projects which are anticipated with a high degree of certainty in reservoirs which have previously shown favorable response to improved recovery projects.
Developed Reserves	*Developed Reserves* can be expected to be recovered through existing wells and facilities and by existing operating methods. Improved recovery reserves can be considered as *Developed Reserves* only after an improved recovery project has been installed and favorable response has occurred or is expected with a reasonable degree of certainty. Developed reserves are expected to be recovered from existing wells, including reserves behind pipe. Improved recovery reserves are considered developed only after the necessary equipment has been installed, or when the costs to do so are relatively minor. *Proved Developed Reserves* may be sub-categorized as *Producing* or *Non-producing*.
Developed Non-producing Reserves	*Developed Non-producing Reserves* are precluded from producing due to being *shut-in* or *behind-pipe*. *Shut-in* includes (1) completion intervals which are open at the time of the estimate, but which have not started producing, (2) wells which were shut-in for market conditions or pipeline connections, or (3) wells not capable of production for mechanical reasons. *Behind-pipe* refers to zones in existing wells which will require additional completion work or future re-completion prior to the start of production. In both cases, production can be initiated or restored with relatively low expenditure compared to the cost of drilling a new well.
Developed Producing Reserves	*Developed Producing Reserves* are expected to be recovered from completion intervals that are open and producing at the time of the estimate. Improved recovery reserves are considered producing only after the improved recovery project is in operation.
Cumulative Production	*Cumulative Production* is the sum of all produced volumes of oil and gas prior to a specified date.
Un-recoverable	The portion of discovered or undiscovered petroleum-initially-in-place quantities which are estimated, as of a given date, not to be recoverable. A portion of these quantities may become recoverable in the future as commercial circumstances change, technological developments occur, or additional data are acquired.

Notice

This report, *Estimated Oil and Gas Reserves, Gulf of Mexico OCS Region, December 31, 2014,* has undergone numerous changes over the last few years. We are continually striving to provide meaningful information to the users of this document. Suggested changes, additions, or deletions to our data or statistical presentations are encouraged so that we can publish the most useful report possible. Please contact the Reserves Section Chief, Grant L. Burgess, at (504) 736-2948 at the Bureau of Ocean Energy Management, 1201 Elmwood Park Boulevard, MS GM773E, New Orleans, Louisiana 70123-2394, to communicate your ideas for consideration in our next report. An overview of the Reserves Inventory Program is available on BOEM's Website.

For free publication and digital data, visit the Gulf of Mexico Web site. The report can be accessed as an Acrobat .pdf (portable document format) file, which allows you to view, print, navigate, and search the document with the free downloadable Acrobat Reader. Digital data used to create the tables and figures presented in the document are also accessible as Excel 2010 spreadsheet files (.xlsx; using Microsoft's Excel spreadsheet viewer, a free file viewer for users without access to Excel). These files are made available in a zipped format, which can be unzipped with the downloadable WinZip program.

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The Department of the Interior Mission

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island communities.

The Bureau of Ocean Energy Management

The Bureau of Ocean Energy Management (BOEM) works to manage the exploration and development of the nation's offshore resources in a way that appropriately balances economic development, energy independence, and environmental protection through oil and gas leases, renewable energy development and environmental reviews and studies.