OCS Report
MMS 2005-023

Deepwater Gulf of Mexico 2005: Interim Report of 2004 Highlights

MMS U. S. Department of the Interior
Minerals Management Service
Gulf of Mexico OCS Region

ERRATA

Deepwater Gulf of Mexico 2005: Interim Report of 2004 Highlights OCS Report MMS 2005-023

P. ix, line 5: "111" should read "107." Of the 111 deepwater projects that have come on line, four are no longer producing.

P. 1, line 15: Conoco-Phillips' Magnolia, installed in December 2004 in Garden Banks Block 783, is now the deepest TLP in the world in 4,674 ft (1,425 m) water depth.

P. 2, table 1: "MC 247"should read "MC 427" for La Femme. "Dominion" should read "Murphy" for Thunder Hawk. "Murphy" should read "Anadarko" for South Dachshund. "Unocal" should read "Shell" for Tobago. The name of the partner which announced the discovery was inadvertently substituted for the operator.

P. 3, line 8: "111" should read "107," and "94" should read "90." Of the 111 deepwater projects that have come on line, 107 are still producing, up from 90 that were producing at the end of 2003.

P. 16, line 37: Magnolia in Garden Banks Block 783 now holds the record for the deepest TLP in the world in 4,674 ft (1,425 m) water depth. Production from the facility is expected to be 35 MBOPD by the end of 2005.

P. 31, line 5: "Marco Polo" should read "Magnolia."

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ON COVER — The Thunder Horse facility (2004 photo courtesy of BP/Marc Morrison).

TABLE OF CONTENTS

FIGURES

Page

TABLES

Page

PREFACE

This publication is the sixth that the Minerals Management Service (MMS) has released chronicling the resounding levels of deepwater exploration and development activity in the Gulf of Mexico (GOM). The GOM is in its eleventh year of sustained expansion in deepwater.

Since the first major deepwater leasing boom in 1995-1996, we have entered into a sustained, robust expansion of activity. As of March 2005, there were 111 deepwater hydrocarbon production projects on line. Production from deepwater grew to an estimated 922 thousand barrels of oil per day and 3.9 billion cubic feet of natural gas per day by the end of 2004. This was a meteoric rise of 510 percent and 680 percent for oil and gas, respectively, since 1995. The increase would have been even greater if not for shut-in production caused by Hurricane Ivan.

More than 900 exploration wells have been drilled in the deepwater Gulf since 1995. At least 115 deepwater discoveries have been announced since then. Significantly, in the last six years, there have been 20 industry-announced discoveries in water depths greater than 7,000 feet (2,134 meters), seven in 2004 alone.

The state-of-the-art technology that has been developed to drill and produce the Gulf of Mexico deepwater resources is at the leading edge of the world's engineering feats. This year will mark the expected installation of BP's Thunder Horse facility, the largest semisubmersible in the world at 59,500 tons. Historically, there is a strong reliance on subsea production tiebacks in deepwater with as many as 79 projects on production. The importance of this technology for deepwater development is exemplified by the Na Kika floating production system (FPS), installed in 2003, which now supports six separate subsea tieback projects – East Anstey, Fourier, Herschel, Ariel, Coulomb, and Kepler. Subsea production has expanded from a water depth of 1,462 ft (446 m) with Placid Oil Company's Green Canyon Block 29 project in 1988 to 5,318 ft (1,621 m) with Shell's Mensa in 1997, and to 7,591 ft (2,314 m) with Shell's Coulomb/Na Kika project in 2004.

Production from spars has now accelerated so that thirteen spars were in production as of early 2005. Most of the spars are either classic spars or truss spars; however, the world's first cell spar was installed by Kerr-McGee in 2004.

The MMS plays a critical role in this energy expansion by ensuring the receipt of fair market value for the sale of leases, evaluating and approving new technology, and facing new challenges regulating the drilling and production of prospects in ever deepening water depths. The MMS's development of new environmental review procedures to ensure timely but thorough review of projects while continuing to protect the environment has been innovative and critical to keep deepwater project timelines minimized.

Chris C. Oynes

Regional Director

Minerals Management Service

INTRODUCTION

This Deepwater Gulf of Mexico 2005 report is a condensed and updated edition of the biennial deepwater report published by Minerals Management Service (MMS). This new report provides an up-to-date review of the deepwater frontier and presents highlights of 2004. However, this report contains fewer trend analyses, since only one year has elapsed since the last report.

It was an exciting year for exploration in the deepwater Gulf of Mexico (GOM). Deepwater exploratory drilling rebounded in 2004 with 94 wells drilled compared with 74 wells drilled in 2003. The number of ultra-deepwater exploratory wells drilled in 2004 matched the record set in 2001, during which 36 ultra-deepwater wells were drilled. Furthermore, 2004 set a record for the number of exploratory wells drilled in water depths greater than 7,500 feet (ft). Exploration also saw the drilling of 15 deepwater discoveries (table 1). Seven of these discoveries were drilled in water depths greater than 7,000 ft (2,133 meters (m)), a record number of discoveries.

Significant milestones also occurred in deepwater development in 2004. These include the installation of the world's largest spar at Holstein in Green Canyon Block 644 and the world's first cell spar at Red Hawk in Garden Banks Block 877. Another exciting development was the installation of the deepest tension-leg platform (TLP) in the world at Marco Polo (Green Canyon Block 608) in 4,320 ft (1,317 m) of water. In another industry first, several independent exploration and production companies formed a consortium known as the Atwater Valley Producers Group to facilitate the development of multiple ultra-deepwater discoveries in the previously untapped Eastern Gulf of Mexico through the development of the "Independence Hub." In addition, encouraging results from important appraisal wells in Green Canyon and Walker Ridge have fortified the possible future development of projects in those areas.

This report is divided into five sections.

The **Background** section discusses

- highlights of current deepwater GOM activity and
- new discoveries and geologic plays.

The **Leasing and Environment** section discusses

- historical water-depth and bidding trends in deepwater leasing,
- future deepwater lease activity, and
- ocean current monitoring.

The **Drilling and Development** section discusses

- deepwater rig activity,
- appraisal activity,
- deepwater development systems, and
- the Independence Hub facility.

The **Reserves and Production** section discusses

- discoveries in new, lightly tested plays with large potential,
- Hurricane Ivan's impact on production, and

- high deepwater production rates.

The **Summary and Conclusions** section discusses

- increasing deepwater oil and gas production and anticipated new fields and
- difficulties evaluating deepwater leases before their terms expire.

Table 1
List of 2004 Deepwater Discoveries

Project Name	Area/Block	Water Depth (ft)	Operator
Atlas NW	LL 5	8,810	Anadarko
Cheyenne	LL 399	8,987	Anadarko
Crested Butte	GC 242	2,846	Nexen
Dawson Deep	GB 625	2,900	Kerr-McGee
Goldfinger	MC 771	5,423	Dominion
Jack	WR 759	6,965	ChevronTexaco
La Femme	MC 247	5,800	Newfield
Puma	GC 823	4,130	BP
Thunder Hawk	MC 734	5,724	Dominion
Ticonderoga	GC 768	5,250	Kerr-McGee
Tiger	AC 818	9,004	ChevronTexaco
Tobago	AC 859	9,627	Unocal
San Jacinto	DC 618	7,850	Dominion
Silvertip	AC 815	9,226	ChevronTexaco
South Dachshund	LL 2	8,340	Murphy

AC = Alaminos Canyon
DC = DeSoto Canyon
GB = Garden Banks
GC = Green Canyon
LL = Lloyd Ridge
MC = Mississippi Canyon
WR = Walker Ridge

BACKGROUND

Definitions

For purposes of this report, deepwater is defined as water depths greater than or equal to 1,000 ft (305 m) and ultra-deepwater is defined as water depths greater than or equal to 5,000 ft (1,524 m). More detailed definitions may be found in the annual *Estimated Oil and Gas Reserves, Gulf of Mexico, December 31, 2001* report (Crawford et al., 2004).

This report refers to deepwater developments both by field names and operator-designated project names. Appendix A provides locations and additional information regarding these fields and projects. All production volumes and rates reflect data through June 2004 unless otherwise noted.

Expanding Frontier

At the end of 2004, there were 111 producing projects in the deepwater GOM, up from 94 at the end of 2003. Historically, deepwater production rates rose by well over 100 thousand barrels of oil per day (MBOPD) and 400 million cubic ft of gas per day (MMCFPD), respectively, each year from 1997 through 2002. The year 2003 marked the first time that production rates experienced a minimal increase.

Over the last 13 years, there has been an expansion in many phases of deepwater activity. There are approximately 8,150 active leases in the Gulf of Mexico OCS, 53 percent of which are in deepwater. (Note that lease statuses may change daily, so the current number of active leases is an approximation.) Contrast this to approximately 5,600 active Gulf of Mexico leases in 1992, only 27 percent of which were in deepwater. On average, there were 29 rigs drilling in deepwater in 2004 (same as in 2003), compared with only 3 rigs in 1992.

Exploration Activity

Exploration drilling in the deepwater GOM has found over 2.5 billion barrels of oil equivalent (BOE) since 2002. Recent discoveries in new deepwater plays continue to expand the exploration potential of the deepwater GOM. Several recently announced deepwater discoveries encountered large potential reservoirs in sands of Paleogene age (Oligocene, Eocene, and Paleocene). This older portion of the geologic section has been lightly tested in the GOM, and the discovery of reservoirs of this geologic age has opened wide areas of the GOM to further drilling. Figure 1 illustrates two frontier deepwater plays in the GOM, the Mississippi Fan Foldbelt and the Perdido Foldbelt, which include reservoirs of Paleogene age. Announced discoveries in 2003 and 2004 in the Alaminos Canyon area (Trident, Great White, Tobago, Tiger, and Silvertip) and in the Walker Ridge area (St. Malo, Cascade, Chinook, and Jack) provide evidence of productive Paleogene reservoirs in a wide area of the deepwater GOM.

Figure 1 also shows a composite outline of numerous plays in the Eastern GOM; these range in age from Pleistocene through Jurassic. Successful exploration has occurred in the Eastern GOM with announced discoveries in DeSoto Canyon (Spiderman/Amazon and San Jacinto) and in Lloyd Ridge (Atlas, Atlas NW, Cheyenne, and South Dachshund).

Although not a geologic play, the ultra-deepwater areas of the GOM can also be considered “frontier territory.” During the last six years there have been 20 industry-announced discoveries in water depths greater than 7,000 ft (2,134 m) (see table 2). Announced volumes for these discoveries are more than 1.8 billion BOE.

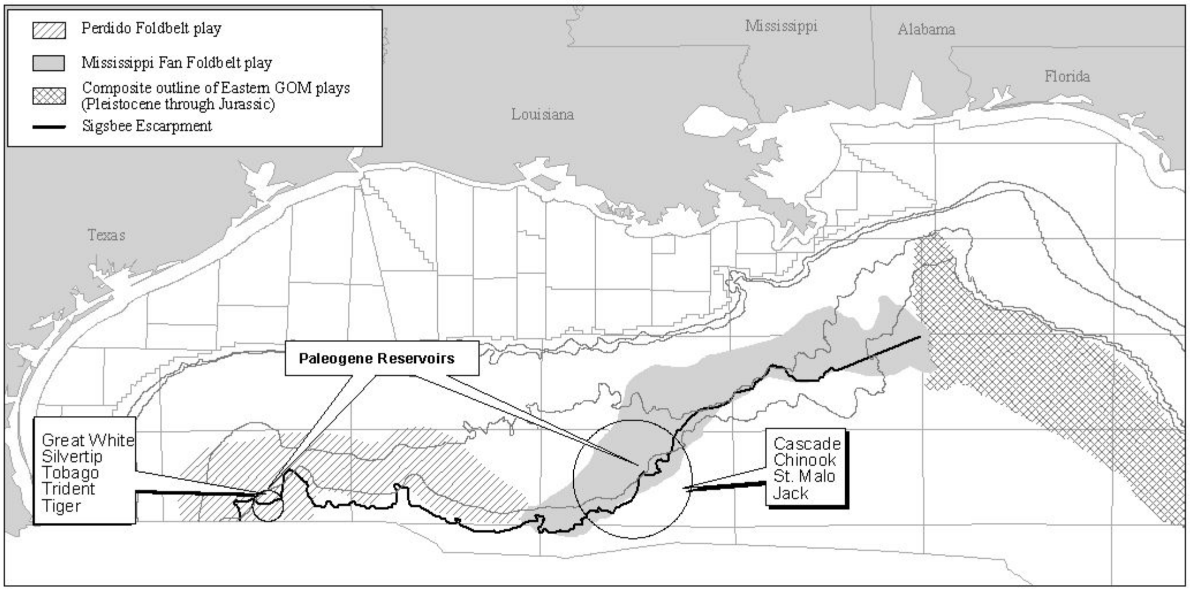

Figure 1. Frontier plays in the deepwater Gulf of Mexico.

In summary, the presence of pre-Miocene reservoirs, successes in the Eastern GOM sale area, and significant discoveries in the ultra-deepwater demonstrate the continuing exploration potential in the deepwater GOM. These new plays are large in areal extent, have multiple opportunities, and contain potentially huge traps with the possibility of billions of barrels of hydrocarbons.

CHALLENGES AND REWARDS

Significant challenges in addition to environmental considerations exist in deepwater. Deepwater operations are very expensive and often require significant amounts of time between the initial exploration and first production. Despite these challenges, deepwater operators often reap great rewards. Figure 2 shows the history of discoveries in the deepwater GOM. There has been a shift toward deeper water over time, and the number of deepwater discoveries continues at a steady pace.

In addition to the significant number of deepwater discoveries, the flow rates of deepwater wells and the field sizes of deepwater discoveries are often quite large. These factors are critical to the economic success of deepwater development. In addition to their large sizes, deepwater fields have a wide geographic distribution and range in geologic age from Pleistocene through Paleocene. The number of discoveries older than Miocene continues to increase.

Offshore liquefied natural gas (LNG) terminals may bring significant additional gas into the GOM and may vie for pipeline capacity with future deepwater developments. In February 2005, the buoy system for the Gulf Gateway Energy Bridge LNG project was successfully installed in the GOM. The world's first offshore offload of an LNG carrier was expected to take place mid-March 2005. Table 3 shows proposed LNG terminals in the GOM.

Table 2
List of Deepwater Discoveries in Water Depths Greater than 7,000 ft (2,134 m)

Project Name	Area/Block	Water Depth (ft)	Discovery Year
Aconcagua	MC 305	7,379	1999
Camden Hills	MC 348	7,530	1999
Blind Faith	MC 696	7,116	2001
Merganser	AT 37	8,064	2001
St. Malo	WR 678	7,326	2001
Trident	AC 903	9,816	2001
Cascade	WR 206	8,143	2002
Great White	AC 857	7,425	2002
Vortex	AT 261	8,422	2002
Atlas	LL 50	9,180	2003
Chinook	WR 469	9,104	2003
Jubilee	AT 349	8,891	2003
Spiderman/Amazon	DC 621	8,100	2003
Atlas NW	LL 5	8,810	2004
Cheyenne	LL 399	8,987	2004
San Jacinto	DC 618	7,850	2004
Silvertip	AC 815	9,226	2004
South Dachshund	LL 2	8,340	2004
Tiger	AC 818	9,004	2004
Tobago	AC 859	9,627	2004

AC = Alaminos Canyon
AT = Atwater Valley
DC = DeSoto Canyon
LL = Lloyd Ridge
MC = Mississippi Canyon
WR = Walker Ridge

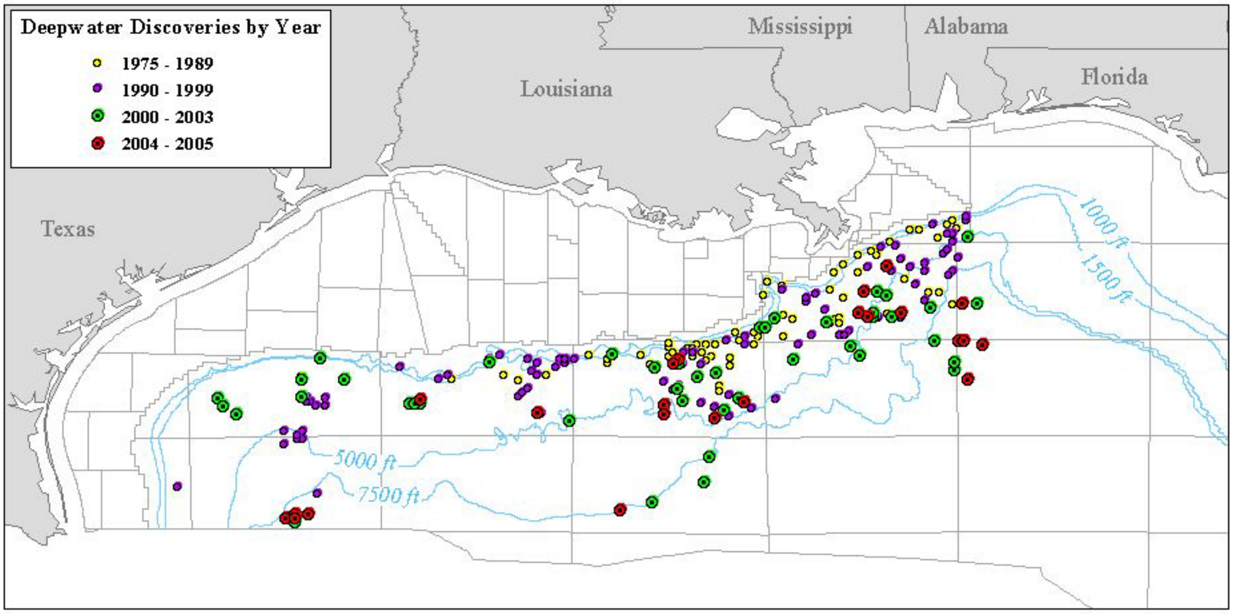

Figure 2. Deepwater discoveries in the Gulf of Mexico.

Table 3
LNG Projects Proposed in the Gulf of Mexico

Project Name	Company	Area and Block	Facility Type
Port Pelican	Port Pelican, LLC (affiliate of ChevronTexaco)	Vermilion 140	Gravity-Based Structures
Gulf Gateway Energy Bridge	Excelerate Energy	West Cameron 603	Submerged Turret Buoy
Gulf Landing	Gulf Landing, LLC (subsidiary of Shell US Gas & Power)	West Cameron 213	Gravity-Based Structures
Main Pass Energy Hub	Freeport-McMoRan Energy, LLC	Main Pass 299	New and Existing Structures
Pearl Crossing	Pearl Crossing LNG Terminal, LLC (affiliate of ExxonMobil)	West Cameron 220	Gravity-Based Structures
Compass Port	Compass Port, LLC (subsidiary of ConocoPhillips)	Mobile 910	Gravity-Based Structures
Beacon Port	Beacon Port, LLC (subsidiary of ConocoPhillips)	West Cameron 167	Gravity-Based Structures

LEASING AND ENVIRONMENT

LEASING ACTIVITY

Figure 3 shows all active leases at the end of 2004 and the great extent of deepwater leasing in the GOM. The inset highlights the relative percent of active leases in each water-depth category. The limited number of active leases in the Eastern GOM is related to leasing restrictions. In 2001 and 2003, sales were held offshore of Alabama, approximately 100 miles from the coastline, which added 109 active leases to the total. The approximate number of active leases for certain water-depth ranges is shown in table 4.

After enactment of the Deep Water Royalty Relief Act (DWRRA), deepwater leasing activity exploded. Other factors contributing to the increased activity included several key deepwater discoveries, the recognition of high deepwater production rates, the evolution of deepwater development technologies, and the general rise in oil and gas prices. Leasing activity in the deepwater GOM has remained fairly level since 2001.

Table 4
Number of Active Leases by Water-Depth Interval

Number of Active Leases	Water Depth ft	m
3,783	<1,000	<305
165	1,000-1,499	305-457
1,890	1,500-4,999	457-1,524
1,584	5,000-7,499	1,524-2,286
718	>7,500	>2,286

LEASING TRENDS

The water-depth categories depicted in figure 4 reflect the divisions used in the DWRRA. In 2004, two lease sales were held—Sale 190 (Central GOM) and Sale 192 (Western GOM). Figure 4 shows that 889 leases were issued from these sales.

Two water-depth ranges in figure 4 are worthy of discussion. The first is the less than 200-m (656-ft) interval. From 2000 through 2001, industry interest was rekindled in the traditional shelf blocks. Since 2002, leasing activity at this water depth has leveled off. The second trend of note involves the greater than 800-m (2,625-ft) interval. From 2000 to 2003, a steady increase in the number of leases issued has occurred in this water-depth interval. The peak in 2001 was the result of the addition of Eastern GOM leases to those from the annual Central GOM and Western GOM sales. For 2004, there appears to be a leveling off of interest for the greater than 800-m (2,625-ft) water-depth interval.

Figure 5 was derived from the data in figure 4 but displays the deepwater categories used elsewhere in this report (shallow-water data are excluded from figure 5). These deepwater data show the rapid increase in leasing activity that began in 1995. Although GOM leasing activity plummeted in 1999, there

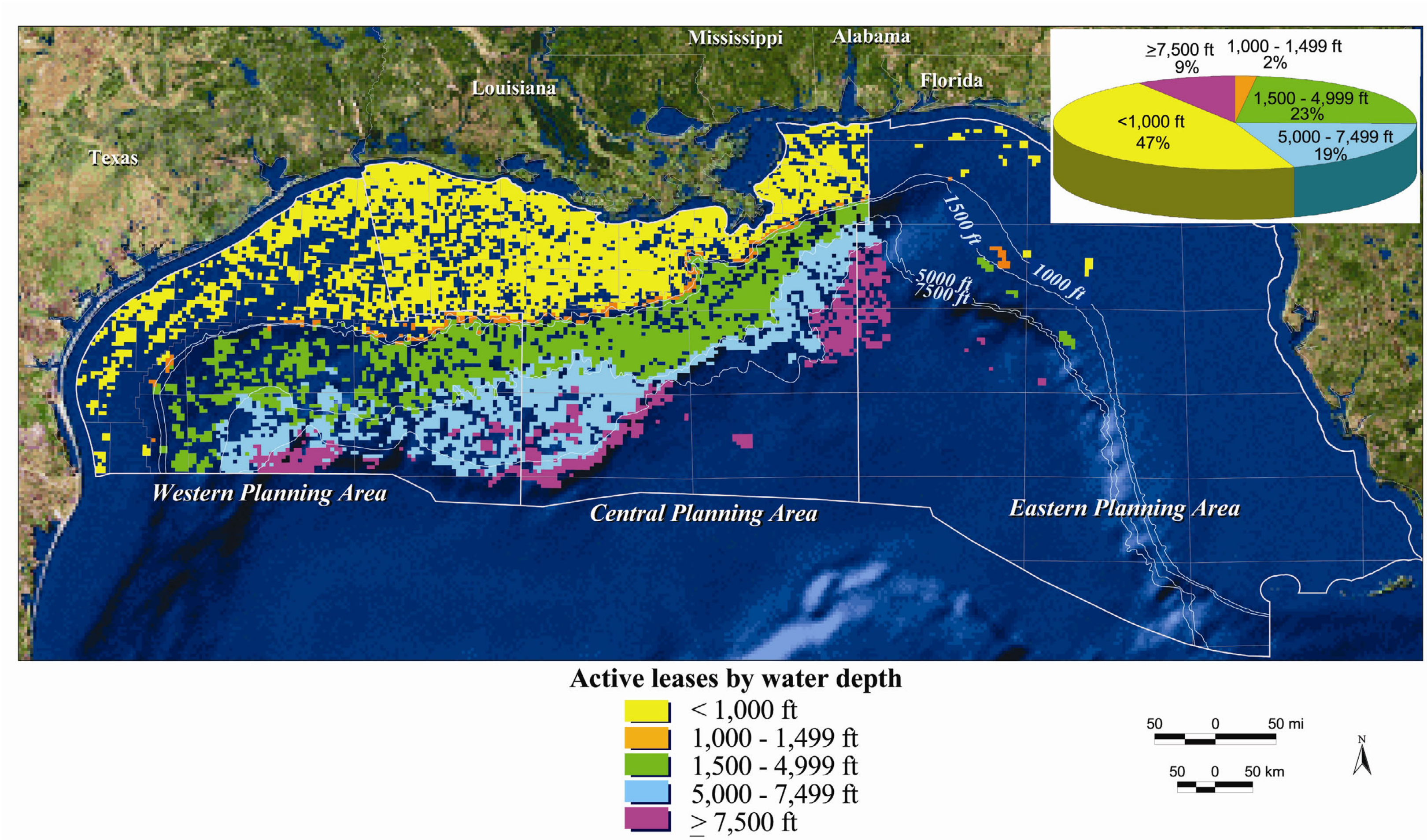

Figure 3. Active leases in the Gulf of Mexico.

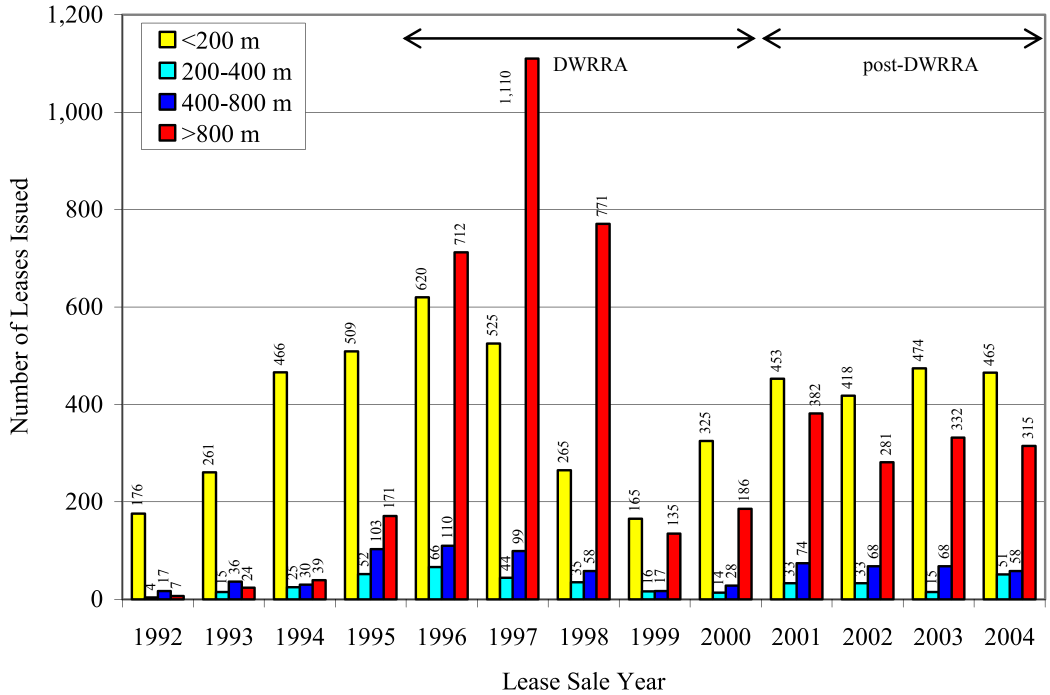

Figure 4. Number of leases issued each year, subdivided by DWRRA water-depth categories.

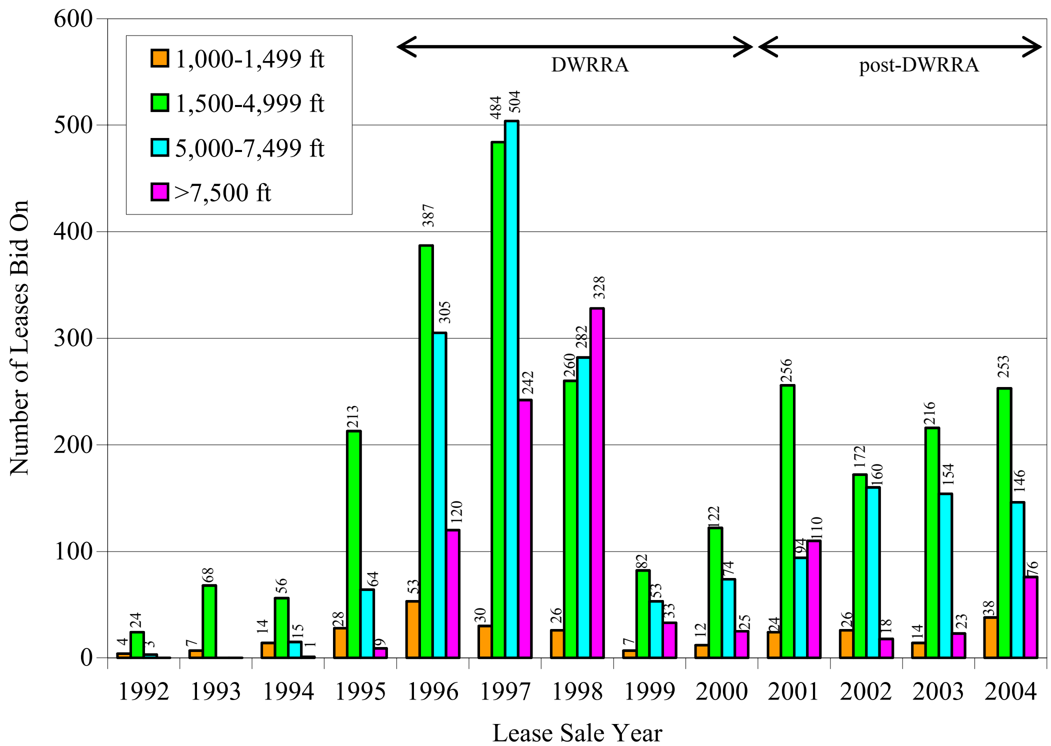

Figure 5. Number of leases bid on for each deepwater interval.

has since been a steady increase in leases awarded in the 1,500-4,999-ft (457-1,524-m) interval, subtracting the Eastern GOM leasing in 2001. Since 1998, leasing in the >7,500-ft (>2,286-m) interval has remained relatively flat until a notable increase in activity in 2004.

FUTURE LEASE ACTIVITY

Since the deepwater arena is already heavily leased, the number of leases that will be relinquished or expire will influence activity in future lease sales. Given the fact that most companies can drill only a small percentage of their active leases, it is likely that many high-quality leases will expire without being tested. The impending turnover of these leases often results in "farm-outs" to nonmajors, opportunities for different companies to gain a lease position and, potentially, a more rapid exploration and development of the acreage. Ultimately, an untested and undeveloped lease will expire and possibly be leased again.

Figure 6 shows leases that will expire in 2006-2007, 2008-2009, and 2010-2011, assuming each lease expires at the end of its primary lease term (without a lease-term extension). Note that lease terms vary according to water depth. Primary lease terms are five years for blocks in less than 400 m (1,312 ft), eight years for blocks in 400-799 m (1,312-2,621 ft), and ten years for blocks in 800 m (2,625 ft) or greater. The availability of previously leased blocks is expected to increase dramatically in 2006-2007 as a result of the leasing boom that began in 1996 and continued through 1998. The lease expiration projections will pressure leaseholders to drill and evaluate their holdings and will provide opportunities for other companies to enter an active play by acquiring leases as they expire or by obtaining "farm-outs" from companies with untested acreage.

OCEAN CURRENT MONITORING

The most energetic currents in the Gulf of Mexico affect the ocean from its surface down to approximately the 3,000-ft (914-m) water-depth level with varying speeds. Currents as high as 4 knots (kn) have been observed from the surface to 1,000-ft (305-m) water depths. These upper currents (known as loop currents) taper off between 1,000- and 3,000-ft (305- and 914-m) depths.

Beneath the 3,000-ft (914-m) water-depth level, other currents migrate around the deep waters of the GOM. These deep currents were once thought to be minimal and were not a major consideration in most structure designs. In 1999, industry reported significant currents below 3,000 ft (914 m). This information led to a Safety Alert (Notice No. 180) and a subsequent study of deep currents by MMS (Hamilton et al., 2003). This study revealed significant deep currents of up to 2 kn at some locations.

Incidents have occurred that demonstrate the need for more accurate data in hindcasting and forecasting events and in daily operations. The MMS initially issued an NTL (2004-G21) in November 2004, which was superseded by NTL 2005-G02 (issued in January 2005 and effective in March 2005) titled "Deepwater Ocean Current Monitoring on Floating Facilities." The NTL implemented a program where operators of deepwater offshore production facilities and mobile offshore drilling units (MODU's) collect data on ocean currents and submit them for publication on an industry-sponsored Internet website. Data collected on currents may improve fatigue forecast models and help establish responsible design criteria, resulting in increased reliability of deepwater structures, thereby reducing risk to human lives, offshore facilities, and the ocean environment.

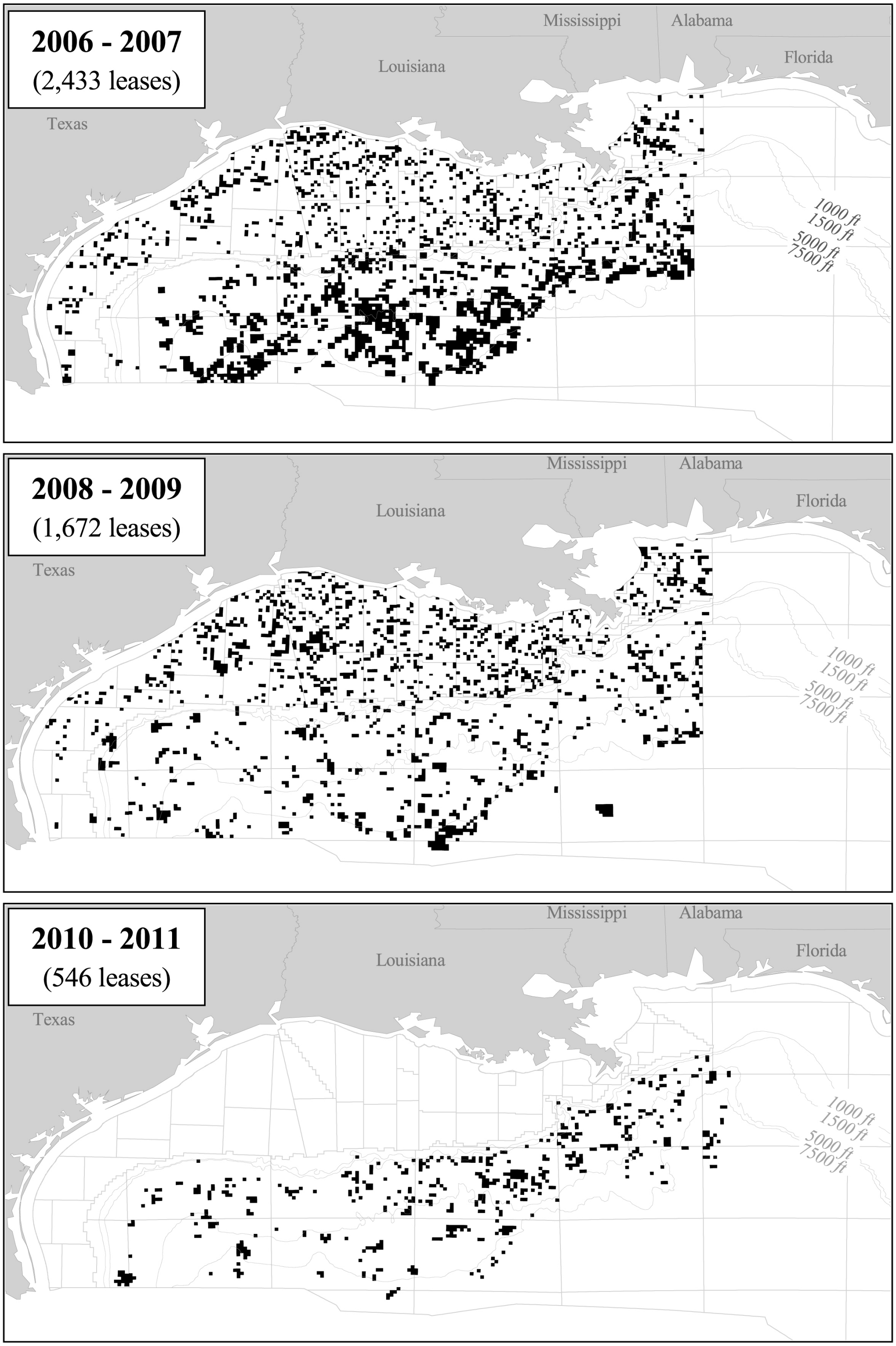

Figure 6. Anticipated lease expirations in 2006-2007, 2008-2009, and 2010-2011 in the GOM.

DRILLING AND DEVELOPMENT

The average number of deepwater rigs operating in the GOM remained steady at 29 from 2003 to 2004 but rose in the early part of 2005. Numerous deepwater prospects will go undrilled as the primary lease terms expire due, in part, to industry decisions to drill higher grade prospects as well as the limited number of rigs available for deepwater drilling in the GOM. While many deepwater-capable drilling rigs are under long-term contractual agreements, efforts began in early 2005 to move rigs from other parts of the world to the GOM and to recommission cold-stacked rigs.

DRILLING ACTIVITY

The number of deepwater wells drilled generally increased from 1992 through 2001, decreased in 2002 and 2003, and increased in 2004. Only original boreholes and sidetracks are included in the well counts used in this report. Wells defined as "by-passes" are specifically excluded. A "by-pass" is a section of well that does not seek a new objective; it is intended to drill around a section of the wellbore made unusable by stuck pipe or equipment left in the wellbore. Figure 7 shows that drilling increased significantly in water depths greater than 5,000 ft (1,524 m) in 2004.

Figures 8 and 9 further break down the deepwater well counts into exploratory and development wells, respectively. This report uses the designation of exploratory and development wells provided by the operators. The data reflect the variations among operators in classifying wells as either development or exploratory. After a decrease in 2002 and 2003, there was a significant increase in the number of exploratory wells drilled in 2004. Exploratory drilling in all water depths increased and, in 2004, 36 wells were drilled in the ultra-deepwater, matching the record set in 2001. There were 16 exploratory wells drilled in the >7,500-ft (>2,286-m) water depth, setting a record for that water depth. There has been an overall decrease in the number of development wells drilled in the last year; however, development drilling increased dramatically in the 5,000- to 7,499-ft (1,524- to 2,286-m) water depths.

APPRAISAL ACTIVITY

Several significant appraisal wells were drilled in 2004, supporting the development of a project in Green Canyon and the potential development of discoveries in Walker Ridge. Unocal drilled a successful appraisal well at St. Malo in Walker Ridge Block 678, encountering more than 400 net ft (122 net m) of oil pay at depths greater than were encountered in the discovery well. The operator indicates that the field may be larger than previously suggested by the discovery well.

BHP Billiton drilled their second appraisal well at Shenzi in Green Canyon Block 653 and encountered hydrocarbons in lower Miocene-aged reservoirs with approximately 330 ft (100 m) of net oil pay, which supports previous drilling. Further appraisal drilling to delineate the reservoir is ongoing.

Additional appraisal activity in 2004 included a production test of ChevronTexaco's Tahiti discovery well in Green Canyon Block 640. The well produced at a restricted rate of 15 MBOPD. Rate and pressure analyses indicate that the well may be capable of sustained flow of as much as 30 MBOPD.

One indicator that MMS has found useful in projecting activity levels is the number of plans received. Figure 10 shows the number of deepwater Exploration Plans (EP), deepwater Development Operations Coordination Documents (DOCD), and Conceptual Deep Water Operations Plans (DWOP) received each year since 1992 (DWOP's were not required until 1995). The count of EP's and DOCD's includes initial, supplemental, and revised plans; only the initial submittals (Conceptual Part) of the DWOP's are shown. Some shallow-water activities are included in the DWOP data because DWOP's must be filed and approved for developments in greater than 1,000-ft (305-m) water depths and for all subsea developments regardless of water depth.

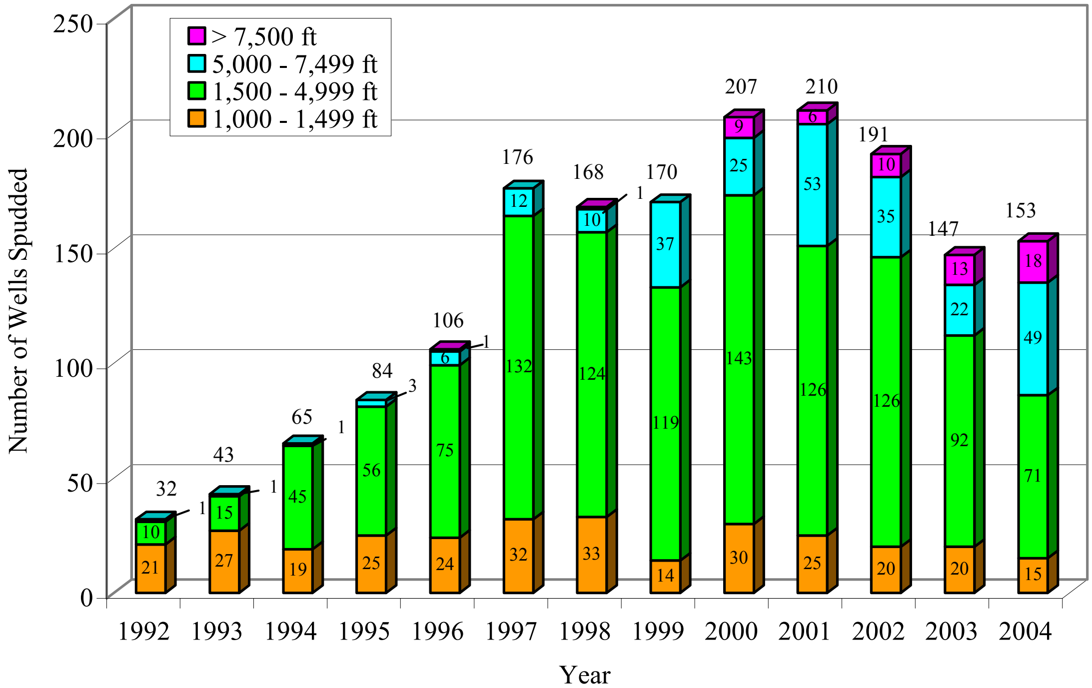

Figure 7. All deepwater wells drilled in the GOM, subdivided by water depth.

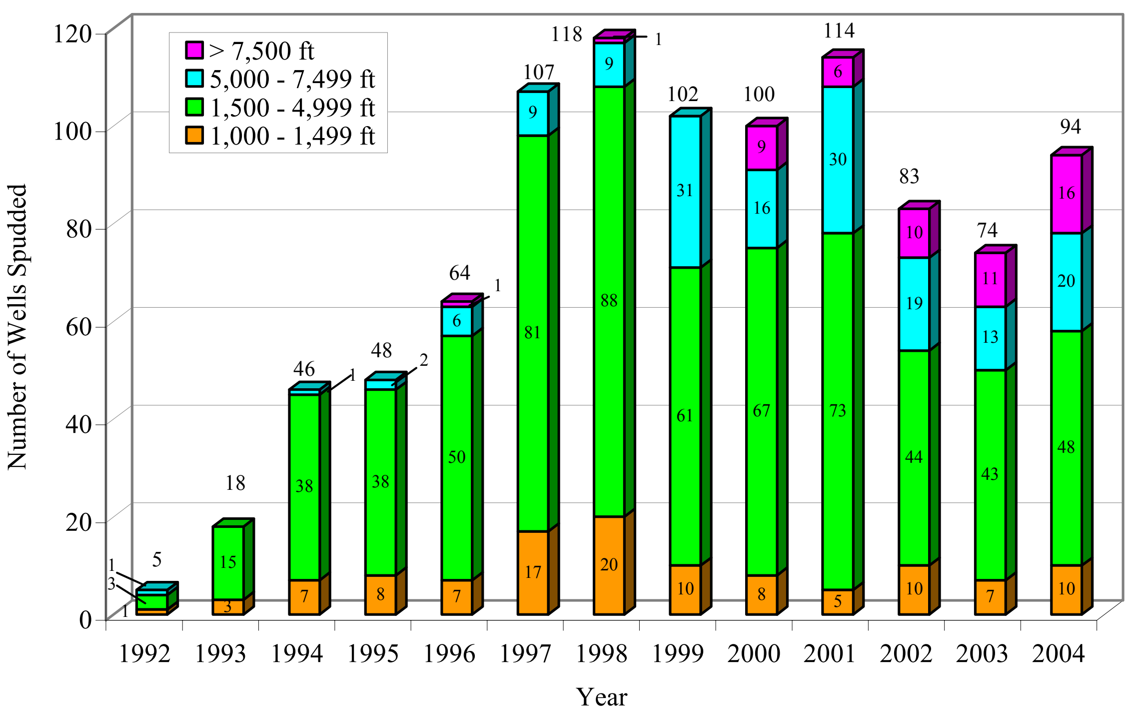

Figure 8. Deepwater exploratory wells drilled in the GOM, subdivided by water depth.

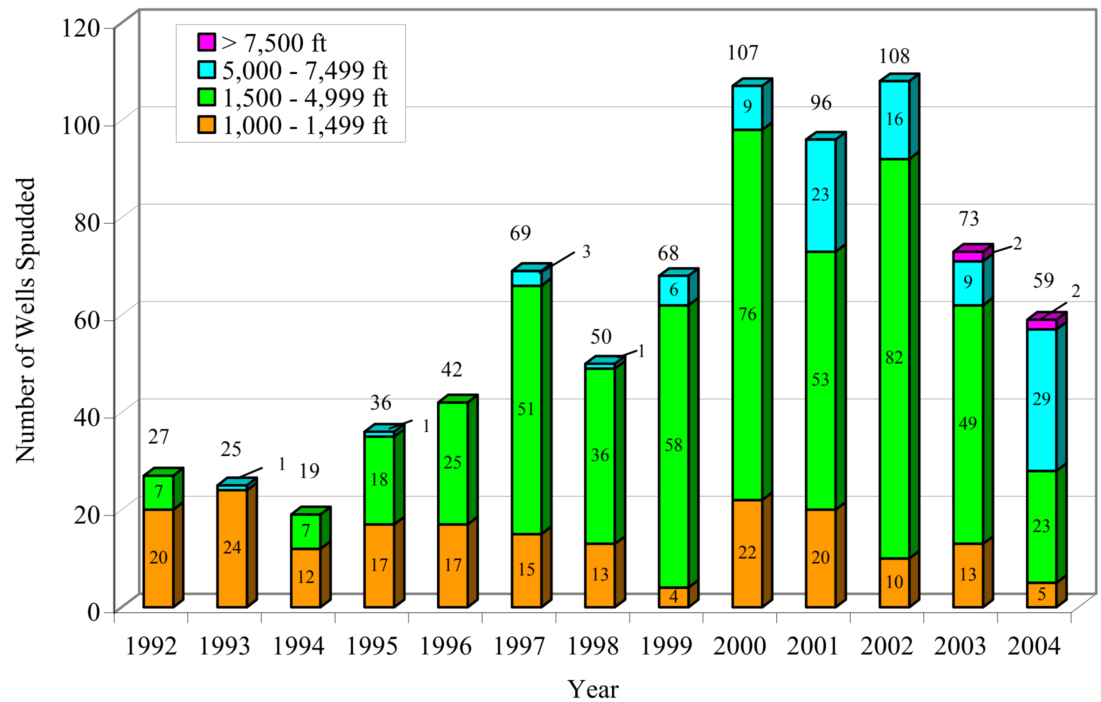

Figure 9 . Deepwater development wells drilled in the GOM, subdivided by water depth.

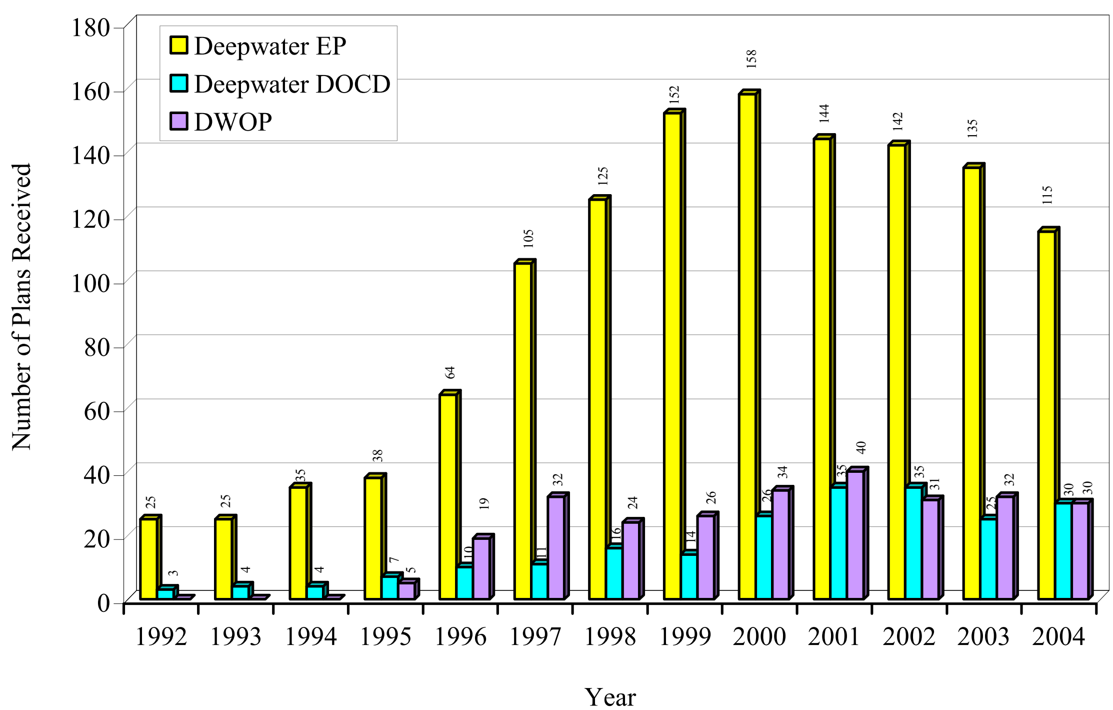

Figure 10. Deepwater EP's, DOCD's, and DWOP's received in the Gulf of Mexico since 1992.

There was a marked increase in EP's, DOCD's, and DWOP's beginning in 1996. In recent years, however, there has been a moderate decrease in the number of these plans.

DEVELOPMENT SYSTEMS

Development strategies vary for deepwater depending on reserve size, proximity to infrastructure, operating considerations (such as well interventions), economic considerations, and an operator's interest in establishing a production hub for the area. Table 5 lists the systems that have begun production. Fixed platforms (e.g., Bullwinkle) have economic water-depth limits of about 1,400 ft (427 m). Compliant towers (e.g., Petronius) may be considered for water depths of approximately 1,000-3,000 ft (305-914 m). Tension-leg platforms (TLP's) (e.g., Brutus and Marco Polo) are frequently used in 1,000- to 5,000-ft (305- to 1,524-m) water depths. Spars (e.g., Genesis), semisubmersible production units (e.g., Na Kika), and floating production, storage, and offloading (FPSO) systems (none in GOM) may be used in water depths ranging up to and beyond 10,000 ft (3,048 m).

One of the development workhorses of the GOM is the spar and, in many ways, 2004 was the year of the spar. Four deepwater projects began production using spar development systems in the GOM: Front Runner (GC 338/339), Devil's Tower (MC 773), Red Hawk (GB 877), and Holstein (GC 645). In early 2005, Mad Dog (GC 782) went on production using a truss spar development system. Currently, there are three competing versions of spars used in the GOM: classic spar, truss spar, and cell spar (figure 11).

In 2004, the world's deepest dry-tree spar was installed over Devil's Tower in 5,610 ft (1,710 m) of water. It is designed to produce as much as 60 MBOPD and 110 MMCFPD. Another notable installation occurred in 2004 when BP began production from the world's largest spar at Holstein in December 2004. Holstein has a hull diameter of 149 ft (45.5 m) and slot dimensions of 75 ft by 75 ft (22.9 m x 22.9 m). The hull diameter is twice that of Neptune, the first spar installed in the GOM. Holstein is expected to produce more than 100 MBOPD and 90 MMCFPD.

In July 2004, Kerr-McGee began production from the world's first cell spar at Red Hawk (GB 877) in 5,334 ft (1,626 m) of water. The cell spar's hull is made up of several identically sized cylinders surrounding a center cylinder (figure 12). The main advantages of the cell spar design are reduced fabrication and transportation costs. Red Hawk is capable of producing 120 MMCFPD, with the flexibility to expand to 300 MMCFPD.

The world's largest semisubmersible production unit, the 59,500-ton Thunder Horse production, drilling, and quarters (PDQ) unit, recently arrived in the GOM following an eight-week journey from Korea. The topside modules, fabricated in Morgan City, Louisiana, were to be installed in Ingleside, Texas. Installation at Thunder Horse (MC 778) was slated for the end of the first quarter of 2005. The Thunder Horse project has garnered worldwide interest because of its sheer massiveness. The distance from the base of the hull to top of the drill rig is just over 450 ft (137 m). The immense deck area is approximately three acres in area. The Thunder Horse unit was nearly four years in the making and will develop the largest discovery ever made in the GOM. When fully operational, the unit will be capable of producing an astounding 250 MBOPD and 200 MMCFPD.

Another exciting development was Anadarko's successful installation of the deepest TLP in the world at Marco Polo (GC 608) in January 2004 in 4,320 ft (1,317 m) of water. Production capacity is 120 MBOPD and 300 MMCFPD.

Table 5
Development Systems of Productive Deepwater GOM Projects

Year of First Production	Project Name[2]	Operator	Block	Water Depth (ft)	System Type	DWRR[3]
1979	Cognac	Shell	MC 194	1,023	Fixed Platform	
1984	Lena	ExxonMobil	MC 280	1,000	Compliant Tower	
1988[1]	GC 29	Placid	GC 29	1,554	Semisubmersible/ Subsea	
1988[1]	GC 31	Placid	GC 31	2,243	Subsea	
1989	Bullwinkle	Shell	GC 65	1,353	Fixed Platform	
1989	Jolliet	ConocoPhillips	GC 184	1,760	TLP	
1991	Amberjack	BP	MC 109	1,100	Fixed Platform	
1992	Alabaster	ExxonMobil	MC 485	1,438	Subsea	
1993[1]	Diamond	Kerr-McGee	MC 445	2,095	Subsea	
1993	Zinc	ExxonMobil	MC 354	1,478	Subsea	
1994	Auger	Shell	GB 426	2,860	TLP	
1994	Pompano/ Pompano II	BP	VK 989	1,290	Fixed Platform/ Subsea	
1994	Tahoe/SE Tahoe	Shell	VK 783	1,500	Subsea	
1995[1]	Cooper	Newfield	GB 388	2,600	Semisubmersible	
1995	Shasta	ChevronTexaco	GC 136	1,048	Subsea	
1995	VK 862	Walter	VK 862	1,043	Subsea	
1996	Mars	Shell	MC 807	2,933	TLP/Subsea	
1996	Popeye	Shell	GC 116	2,000	Subsea	
1996	Rocky	Shell	GC 110	1,785	Subsea	
1997	Mensa	Shell	MC 731	5,318	Subsea	
1997	Neptune	Kerr-McGee	VK 826	1,930	Spar/Subsea	
1997	Ram-Powell	Shell	VK 956	3,216	TLP	
1997	Troika	BP	GC 200	2,721	Subsea	
1998	Arnold	Marathon	EW 963	1,800	Subsea	
1998	Baldpate	Amerada Hess	GB 260	1,648	Compliant Tower	
1998	Morpeth	Eni	EW 921	1,696	TLP/Subsea	
1998	Oyster	Marathon	EW 917	1,195	Subsea	
1999	Allegheny	Eni	GC 254	3,294	TLP	
1999	Angus	Shell	GC 113	2,045	Subsea	
1999	Dulcimer	Mariner	GB 367	1,120	Subsea	Yes

Table 5
Development Systems of Productive Deepwater GOM Projects

Year of First Production	Project Name[2]	Operator	Block	Water Depth (ft)	System Type	DWRR[3]
1999	EW 1006	Walter	EW 1006	1,884	Subsea	
1999	Gemini	ChevronTexaco	MC 292	3,393	Subsea	
1999	Genesis	ChevronTexaco	GC 205	2,590	Spar	
1999	Macaroni	Shell	GB 602	3,600	Subsea	
1999	Penn State	Amerada Hess	GB 216	1,450	Subsea	
1999	Pluto	Mariner	MC 674	2,828	Subsea	Yes
1999	Ursa	Shell	MC 809	3,800	TLP	
1999	Virgo	TotalFinaElf	VK 823	1,130	Fixed Platform	Yes
2000	Black Widow	Mariner	EW 966	1,850	Subsea	Yes
2000	Conger	Amerada Hess	GB 215	1,500	Subsea	
2000	Diana	ExxonMobil	EB 945	4,500	Subsea	
2000	Europa	Shell	MC 935	3,870	Subsea	
2000	Hoover	ExxonMobil	AC 25	4,825	Spar	
2000	King	Shell	MC 764	3,250	Subsea	
2000	Marlin	BP	VK 915	3,236	TLP	
2000	Northwestern	Amerada Hess	GB 200	1,736	Subsea	Yes
2000	Petronius	ChevronTexaco	VK 786	1,753	Compliant Tower	
2001	Brutus	Shell	GC 158	3,300	TLP	
2001	Crosby	Shell	MC 899	4,400	Subsea	
2001	Einset	Shell	VK 872	3,500	Subsea	Yes
2001	EW 878	Walter	EW 878	1,585	Subsea	Yes
2001	Ladybug	ATP	GB 409	1,355	Subsea	
2001	Marshall	ExxonMobil	EB 949	4,376	Subsea	
2001	MC 68	Walter	MC 68	1,360	Subsea	
2001	Mica	ExxonMobil	MC 211	4,580	Subsea	
2001	Nile	BP	VK 914	3,535	Subsea	
2001	Oregano	Shell	GB 559	3,400	Subsea	
2001	Pilsner	Unocal	EB 205	1,108	Subsea	Yes
2001	Prince	El Paso	EW 1003	1,500	TLP	Yes
2001	Serrano	Shell	GB 516	3,153	Subsea	
2001	Typhoon	ChevronTexaco	GC 237	2,679	TLP	Yes

Table 5
Development Systems of Productive Deepwater GOM Projects

Year of First Production	Project Name[2]	Operator	Block	Water Depth (ft)	System Type	DWRR[3]
2002	Aconcagua	TotalFinaElf	MC 305	7,100	Subsea	Yes
2002	Aspen	BP	GC 243	3,065	Subsea	Yes
2002	Boomvang North	Kerr-McGee	EB 643	3,650	Truss Spar	Yes
2002	Camden Hills	Marathon	MC 348	7,216	Subsea	Yes
2002	Horn Mountain	BP	MC 127	5,400	Truss Spar	Yes
2002	King	BP	MC 84	5,000	Subsea	
2002	King Kong	Mariner	GC 472	3,980	Subsea	Yes
2002	King's Peak	BP	DC 133	6,845	Subsea	Yes
2002	Lost Ark	Samedan	EB 421	2,960	Subsea	Yes
2002	Madison	ExxonMobil	AC 24	4,856	Subsea	
2002	Manatee	Shell	GC 155	1,939	Subsea	Yes
2002	Nansen	Kerr-McGee	EB 602	3,675	Truss Spar	Yes
2002	Navajo	Kerr-McGee	EB 690	4,210	Subsea	Yes
2002	Princess	Shell	MC 765	3,600	Subsea	
2002	Sangria	Spinnaker	GC 177	1,487	Subsea	Yes
2002	Tulane	Amerada Hess	GB 158	1,054	Subsea	Yes
2002	Yosemite	Mariner	GC 516	4,150	Subsea	Yes
2003	Boomvang East	Kerr-McGee	EB 668	3,795	Subsea	
2003	Boomvang West	Kerr-McGee	EB 642	3,678	Subsea	
2003	Boris	BHP	GC 282	2,378	Subsea	Yes
2003	Dawson	Kerr-McGee	GB 669	3,152	Subsea	
2003	Durango	Kerr-McGee	GB 667	3,105	Subsea	
2003	East Anstey/ Na Kika	Shell	MC 607	6,590	FPS/Subsea[4]	
2003	Falcon	Pioneer	EB 579	3,638	Subsea	Yes
2003	Fourier/Na Kika	Shell	MC 522	6,950	FPS/Subsea[4]	
2003	Gunnison	Kerr-McGee	GB 668	3,100	Truss Spar	Yes
2003	Habanero	Shell	GB 341	2,015	Subsea	
2003	Herschel/Na Kika	Shell	MC 520	6,739	FPS/Subsea[4]	
2003	Matterhorn	TotalFinaElf	MC 243	2,850	TLP	Yes
2003	Medusa	Murphy	MC 582	2,223	Spar	Yes

Table 5
Development Systems of Productive Deepwater GOM Projects

Year of First Production	Project Name[2]	Operator	Block	Water Depth (ft)	System Type	DWRR[3]
2003	Pardner	Anadarko	MC 401	1,139	Subsea	
2003	Tomahawk	Pioneer	GB 623	3,412	Subsea	
2003	Zia	Devon	MC 496	1,804	Subsea	
2004	Ariel/Na Kika	BP	MC 429	6,274	Subsea[4]	
2004	Coulomb/Na Kika	Shell	MC 657	7,591	Subsea[4]	
2004	Devil's Tower	Dominion	MC 773	5,610	Truss Spar	Yes
2004	Diana South	ExxonMobil	AC 65	4,852	Subsea	
2004	EB 598/599	Kerr-McGee	EB 598	3,650	Subsea	
2004	Front Runner	Murphy	GC 338	3,330	Truss Spar	
2004	Glider	Shell	GC 248	3,440	Subsea	
2004	Harrier	Pioneer	EB 759	4,114	Subsea	
2004	Holstein	BP	GC 645	4,344	Truss Spar	
2004	Kepler/Na Kika	BP	MC 383	5,759	Subsea[4]	
2004	Llano	Shell	GB 386	2,663	Subsea	
2004	Magnolia	Conoco-Phillips	GB 783	4,674	TLP	
2004	Marco Polo	Anadarko	GC 608	4,320	TLP	Yes
2004	Medusa North	Murphy	MC 538	2,223	Subsea	
2004	Raptor	Pioneer	EB 668	3,710	Subsea	
2004	Red Hawk	Kerr-McGee	GB 877	5,334	Cell Spar	Yes
2005	Mad Dog	BP	GC 782	4,428	Truss Spar	

[1] Indicates projects that are no longer on production.
[2] Editions of this report prior to 2004 listed deepwater fields rather than projects.
[3] Indicates projects with one or more leases approved to receive DWRR.
[4] Na Kika FPS is located in Mississippi Canyon Block 474 in 6,340 ft (1,932 m) of water.

AC = Alaminos Canyon
DC = DeSoto Canyon
EB = East Breaks
EW = Ewing Bank
GB = Garden Banks
GC = Green Canyon
MC = Mississippi Canyon
VK = Viosca Knoll

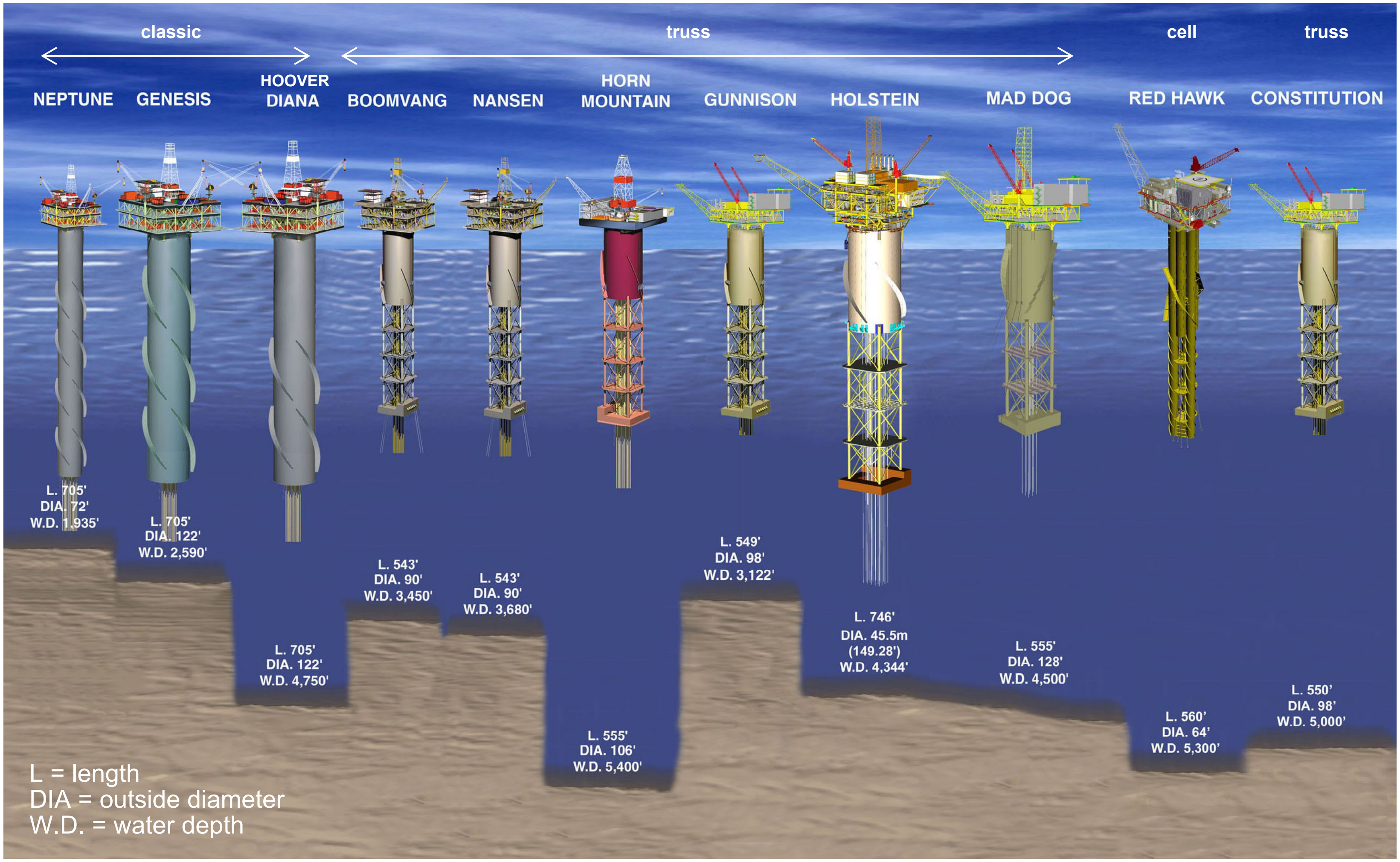

Figure 11. Progression of spar deepwater development systems (courtesy of Technip-Coflexip).

Figure 12. Cylinders of Red Hawk cell spar (photo courtesy of Kerr-McGee).

INDEPENDENCE HUB

Independence Hub, LLC, an affiliate of Enterprise Products Partners L.P., has entered into agreements with the Atwater Valley Producers Group to gather natural gas from seven fields in the deepwater GOM. Atwater Valley Producers Group includes Anadarko Petroleum Corporation, Dominion Exploration & Production, Inc., Kerr-McGee Oil & Gas Corporation, Spinnaker Exploration Company, and Devon Energy Corporation. Enterprise Products Partners will design, construct, install, and own the Independence Hub, and Anadarko will operate it.

Independence Hub will be located on unleased Mississippi Canyon Block 920 in a water depth of approximately 8,000 ft (2,438 m). The selection of the location for the permanently moored host facility was based on seafloor conditions and proximity to the anchor fields: Atlas (LL 050), Atlas NW (LL 005), Jubilee (AT 349), Merganser (AT 037), San Jacinto (DC 618), Spiderman (DC 621) and Vortex (AT 261). Murphy Oil's South Dachshund (LL 002) discovery is also expected to be tied back to the Independence Hub. The 105-ft (32-m) deep-draft, semi-submersible platform will have excess payload capacity that will allow the tie-back of additional fields from other deepwater projects. The facility will have capacity to produce 850 MMCFPD. Installation is slated for late 2006 and first production is expected in mid-2007.

RESERVES AND PRODUCTION

DISCOVERIES

Figure 13 shows the number of deepwater fields discovered each year since 1995, according to MMS criteria. (See appendix A for listings of deepwater projects and discoveries.) In an attempt to capture the impact of the deepwater exploratory successes, figure 13 includes industry-announced discoveries as well as MMS-known proved reserves, unproved reserves, and resource estimates. The industry-announced discovery volumes contain considerable uncertainty, are based on limited drilling, include numerous assumptions, and have not been confirmed by independent MMS analyses. They do, however, illustrate recent activity better than using only MMS-proved reserve numbers. The apparent decline of proved reserve additions in recent years is caused by the lag between discovery and development.

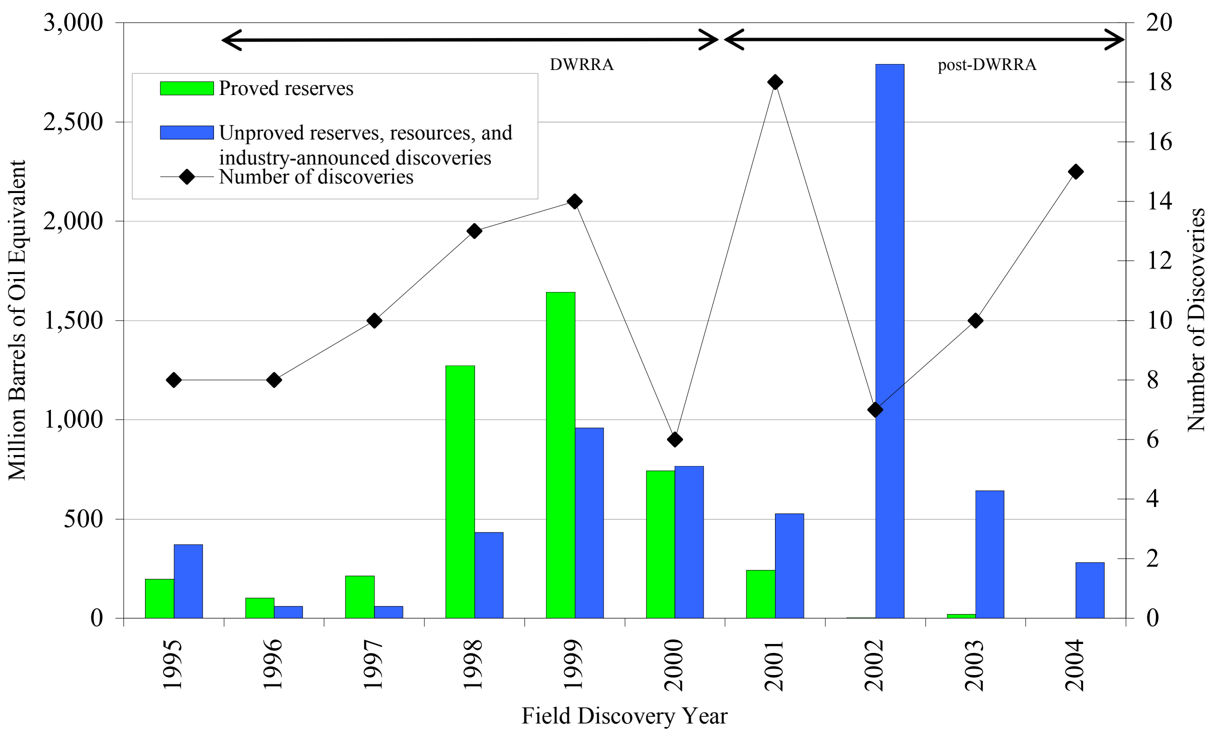

Figure 13. Number of deepwater field discoveries and new hydrocarbons found (MMS reserves, MMS resources, and industry-announced discoveries).

RESERVE POTENTIAL

A geologic-based estimate of future discoveries in the GOM is the 2000 Assessment (Lore et al., 2001). According to this document, the deepwater is expected to have ultimate reserves of approximately 71 billion barrels of oil equivalent (BOE), of which 56.2 billion BOE remain to be discovered.[1] These estimates compare favorably with the shallow-water ultimate reserves of approximately 65 billion BOE, of which 15.2 billion BOE remain to be discovered. Note that the 2000 Assessment uses the DWRRA

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[1] The forecasts were based on the MMS report *Atlas of Gulf of Mexico Gas and Oil Sands* (Bascle et al., 2001).

criteria, i.e., less than 200 m water depth is shallow water and greater than or equal to 200 m is deepwater. The 2005 Assessment is currently being compiled.

PRODUCTION TRENDS

Table 6 shows that the most prolific blocks (on a BOE basis) are currently located in deepwater.

Table 6
Top 20 Producing Blocks in GOM

Block	Project Name	Owner	Water Depth (ft)[1]	Production (BOE)*
MC 807	Mars	Shell	2,933	93,999,260
MC 809	Ursa	Shell	3,800	55,773,378
MC 763	Mars	Shell	2,933	34,864,752
VK 786	Petronius	ChevronTexaco	1,753	34,738,265
GC 202	Brutus	Shell	3,300	34,180,995
GB 215	Conger	Amerada Hess	1,500	32,197,439
MC 127	Horn Mountain	BP	5,400	32,165,643
VK 915	Marlin	BP	3,236	26,234,588
EB 602	Nansen	Kerr-McGee	3,675	23,926,942
MC 899	Crosby	Shell	4,259	23,481,239
EB 643	Boomvang	Kerr-McGee	3,650	22,375,260
EB 945	Diana	ExxonMobil	4,500	22,161,444
MC 687	Mensa	Shell	5,280	21,502,138
GC 200	Troika	BP	2,679	20,185,900
MC 305	Aconcagua	Total	7,100	19,513,422
MC 85	King	BP	5,000	19,484,242
VK 956	Ram-Powell	Shell	3,216	19,423,177
MC 765	Princess	Shell	3,600	18,930,562
GB 426	Auger	Shell	2,860	17,401,758
ST 204	Unnamed	El Paso	157	17,124,043

[1] represents the water depth of the facility
*cumulative production from July 2002 through June 2004

Figure 14 illustrates the importance of the GOM to the Nation's energy supply. The GOM supplies approximately 27 percent of the Nation's domestic oil and 22 percent of the Nation's domestic gas production. A significant portion of these volumes comes from deepwater.

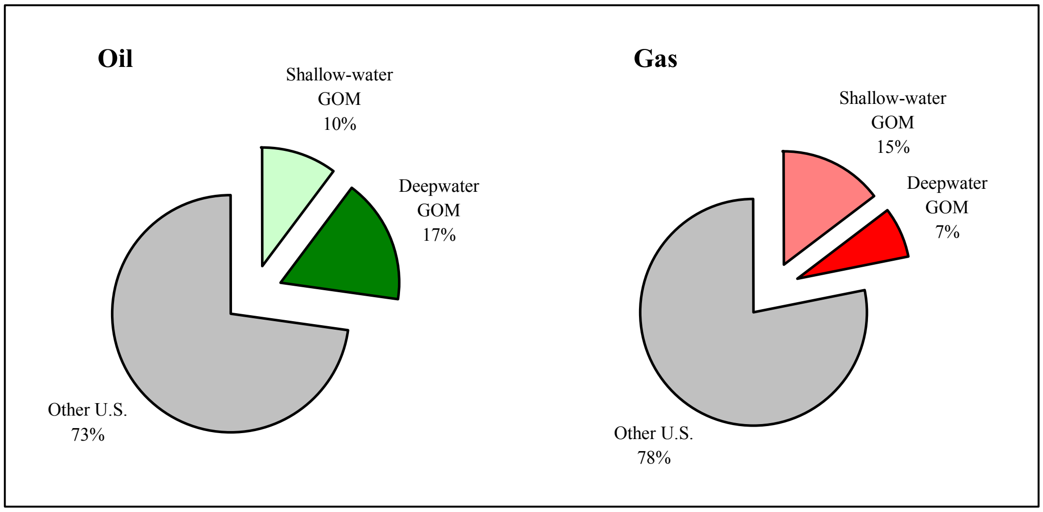

Figure 14. Estimated U.S. oil and gas production in 2003.

PRODUCTION RATES

High well production rates have been a driving force behind the success of deepwater operations. Figure 15a shows that the average deepwater oil completion currently produces at 20 times the rate of the average shallow-water (less than 1,000-ft [305-m]) oil completion. The average deepwater gas completion currently produces at 8 times the rate of the average shallow-water gas completion (figure 15b). Deepwater oil production rates increased rapidly from 1996 through 2000 and have remained steady since that time. Deepwater gas production rates rose from 1996 to mid-1997 and then stabilized at the current high rates.

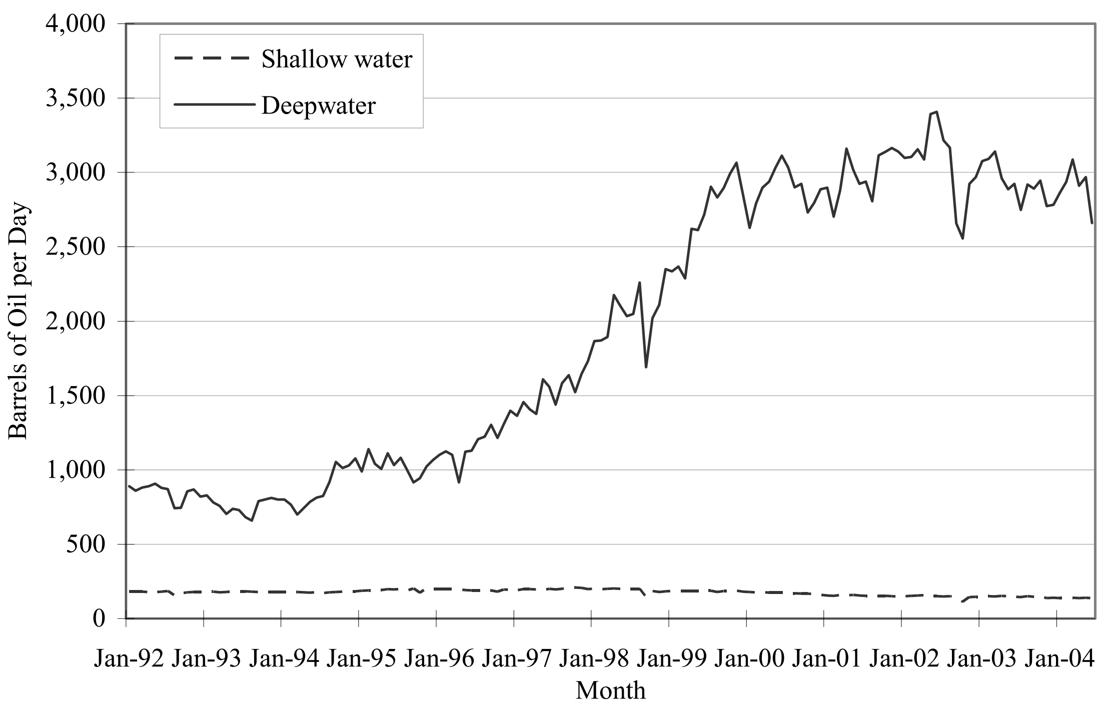

Figure 15a. Average production rates for shallow-water and deepwater oil well completions.

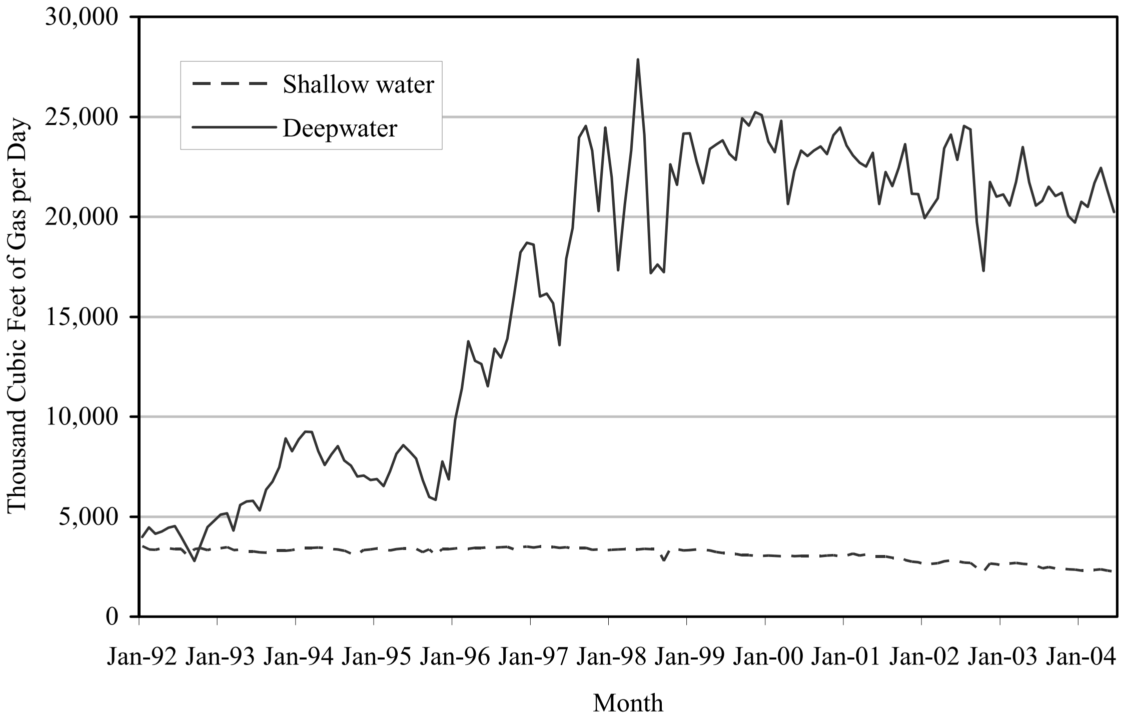

Figure 15b. Average production rates for shallow-water and deepwater gas well completions.

HURRICANE IVAN

On Monday, September 13, 2004, Hurricane Ivan entered the GOM after crossing the western tip of Cuba. It was projected to make landfall on the southern Gulf coast early Thursday, September 16, 2004, with sustained winds up to 130 miles per hour (mph). In anticipation of its arrival, 69 rigs (~60% of the rigs currently drilling in the GOM) and 575 manned platforms (~75% of the Gulf's manned platforms) were evacuated. All evacuations were completed without injury to personnel. By Thursday afternoon, over 70 percent of the GOM's daily oil production and about 60 percent of its daily gas production were shut in. Figure 16 shows Ivan's path in the GOM and the platforms within the storm track.

Hurricane Ivan produced a significant wave height of 52 ft (equivalent to a theoretical maximum wave height of 90 ft), the highest reported in the Gulf of Mexico according to records of the National Oceanic and Atmospheric Administration's National Data Buoy Center. Undoubtedly, Hurricane Ivan produced waves higher than 52 ft that went unmeasured. Buoys measure the average of the highest third of the waves sampled during a 20-minute period (the single highest wave is typically 50 to 80 percent higher). Furthermore, the eye of the hurricane passed east of the buoy, keeping the highest waves and winds even farther to the east. Damage to some platforms suggests that wave crests reached at least 60 to 65 ft (equivalent to a wave height of at least 90 ft) above sea level.

Approximately 150 platforms and 10,000 mi of pipeline were in the projected path of Hurricane Ivan. As of January 31, 2005, Hurricane Ivan was responsible for shutting in more than 42 MMBO and 164 BCFG, the largest amount of cumulative shut-in production in the history of the GOM. Ivan also accounted for the destruction of 7 platforms (all in shallow water) by mudslides and significant damage to another 24 major platforms (shallow and deepwater). In addition, 102 pipelines have been reported for repairs.

As Hurricane Ivan approached the Alabama Gulf Coast, its eye passed almost directly over the Petronius facility (VK 786). Significant damage occurred to the rig crew quarters, production equipment, and deck structures. The facility was back online by mid-March and was expected to be producing at pre-Ivan rates by the end of March.

The moorings of the deepwater production facilities withstood the hurricane with only minor damage. These facilities have an extended life expectancy and, therefore, use state-of-the-art mooring techniques.

Of the total shut-in GOM production, deepwater represented the greater percent (figures 17a-b). On September 16, 2004, approximately 685 MBOPD and 1,500 MMCFPD of gas were shut-in within deepwater area alone. By the end of January 2005, approximately 72 MBOPD and 133 MMCFPD of gas remained shut in either because of facility damage or exporting pipeline problems. The remaining deepwater facilities were expected to be back online by April 2005.

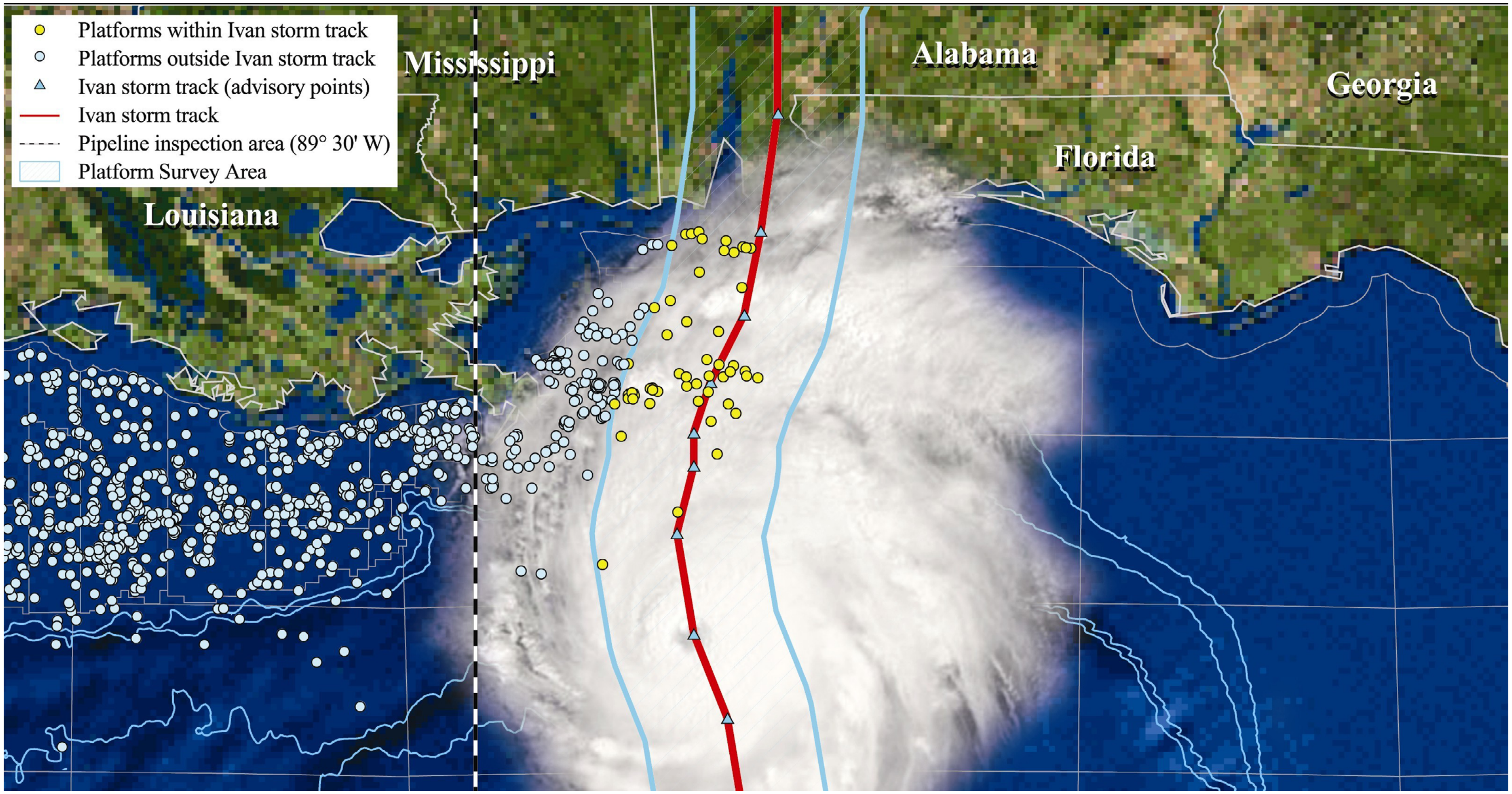

Figure 16. Platforms within the path of Hurricane Ivan in the Gulf of Mexico.

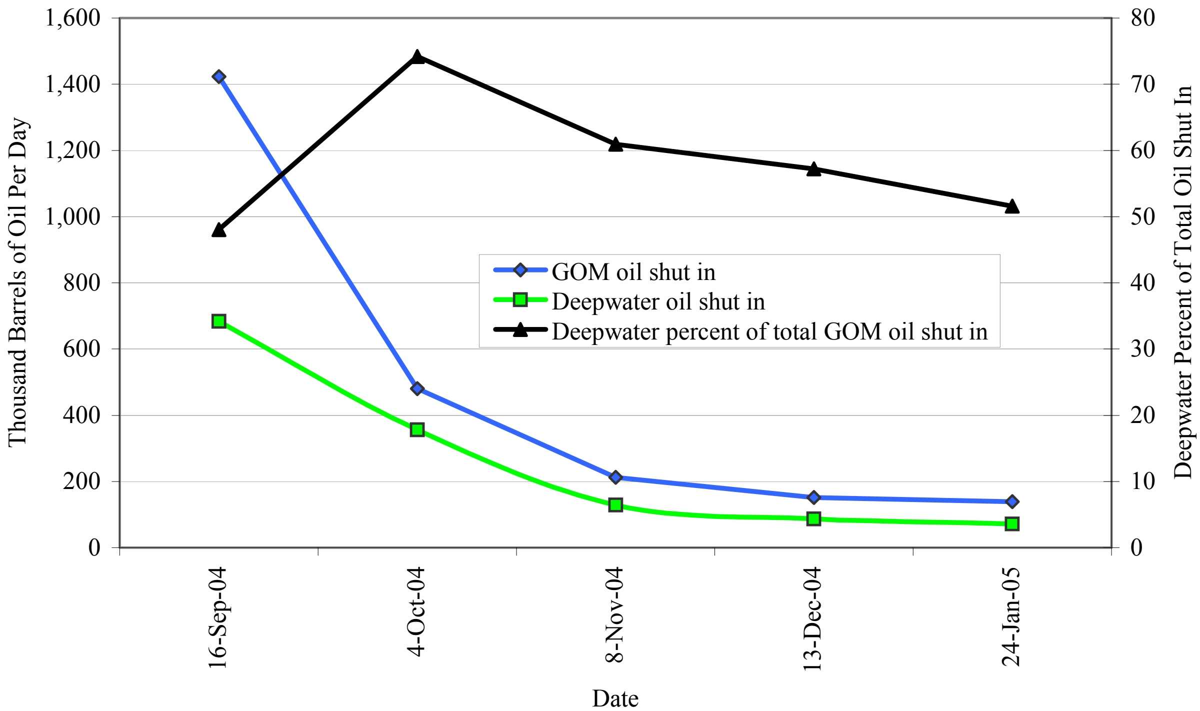

Figure 17a. Comparison of total GOM oil shut in and GOM deepwater oil shut in.

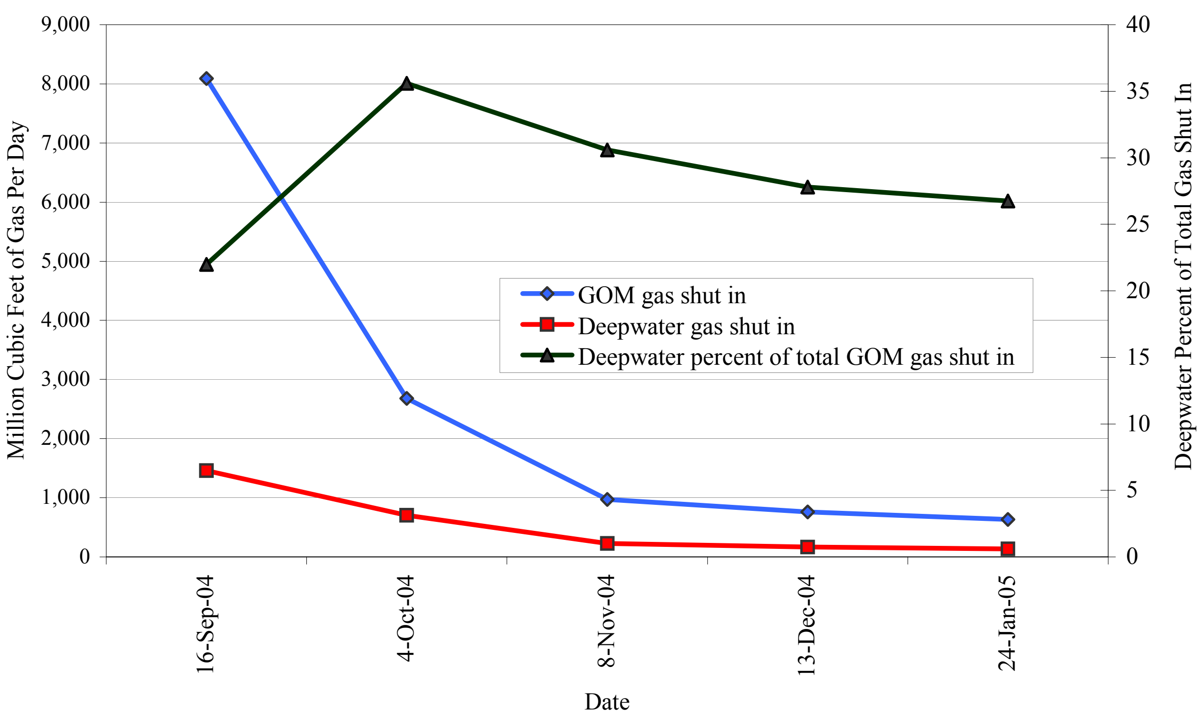

Figure 17b. Comparison of total GOM gas shut in and GOM deepwater gas shut in.

SUMMARY AND CONCLUSIONS

This report has discussed

- highlights of 2004 including
    - record number of exploratory wells drilled in water depths greater than 7,500 ft,
    - record number of discoveries in water depths greater than 7,000 ft,
    - deepest TLP installed (Marco Polo),
    - largest spar installed (Holstein),
    - first cell spar installed (Red Hawk),
    - Independence Hub consortium,
    - Hurricane Ivan's effect on production in the GOM;
- significant new discoveries that open large new geologic plays;
- future deepwater lease availability and anticipated lease expirations;
- discoveries in the ultra-deep frontier; and
- production rates of deepwater wells exceeding those of shallow-water wells by 800 to 2,000 percent.

The remainder of this report summarizes the development cycle and the challenges and rewards of the expanding deepwater frontier.

Figure 18 illustrates deepwater projects that began production in 2004 and those expected to commence production in the next three years. Sixteen deepwater projects began production in 2004, another 9 are expected to begin in 2005, and many more are expected in the following years. The concentration of projects expected to come online in 2007 at the border between the Central and Eastern GOM is associated with the Independence Hub mentioned earlier. In addition to the projects shown in figure 18, many more are likely to come online in the next few years, but are not shown because operators have not yet announced their plans.

DEVELOPMENT CYCLE

Historic deepwater leasing shows no clear relation to average oil or gas prices (figure 19). There was considerable lease activity in the late 1980's. The lag between leasing and first production is not unusual with complex deepwater developments. However, cycle times are shortening as a result of an accessible infrastructure and the use of proven development technologies.

Deepwater leasing activity accelerated in the late 1990's after Congress enacted the DWRRA. The 3,000 leases that were issued during the record sales from 1996 to 1998 are nearing the end of their primary terms and, therefore, operators are facing key decisions about which leases to relinquish untested. Drilling activities are just beginning to prove the potential of these leases.

The available deepwater rig fleet will challenge industry's ability to evaluate their lease inventory, both current and future additions. Other factors play a significant role in the industry's ability to evaluate their GOM lease inventory, including alternative deepwater exploration and development targets throughout the world, capital limitations, and limited qualified personnel.

EXPANDING FRONTIER

The future of deepwater GOM exploration and production remains very promising. Traditional deepwater minibasin plays are far from mature, as several recent discoveries attest, and new deepwater plays near and even beyond the Sigsbee Escarpment, beneath thick salt canopies, and in lightly explored Paleogene reservoirs show that the deepwater GOM is an expanding frontier. The 2000 Assessment indicates that more than 50 billion recoverable BOE remains to be discovered (Lore et al., 2001).

The deepwater arena has made great strides in the last few years, establishing itself as an expanding frontier. Since the start of 2000, new deepwater drilling added over 4.5 billion BOE, a 58-percent increase over the total deepwater BOE discovered from 1974 to 1999.

The deepwater GOM continues to increase in its importance to the Nation's energy supply. The large number of active deepwater leases, the drilling of important new discoveries, the growing deepwater infrastructure, and the increasing deepwater production are all indicators of the expanding frontier. This ensures that the deepwater GOM will remain as one of the world's premier oil and gas basins.

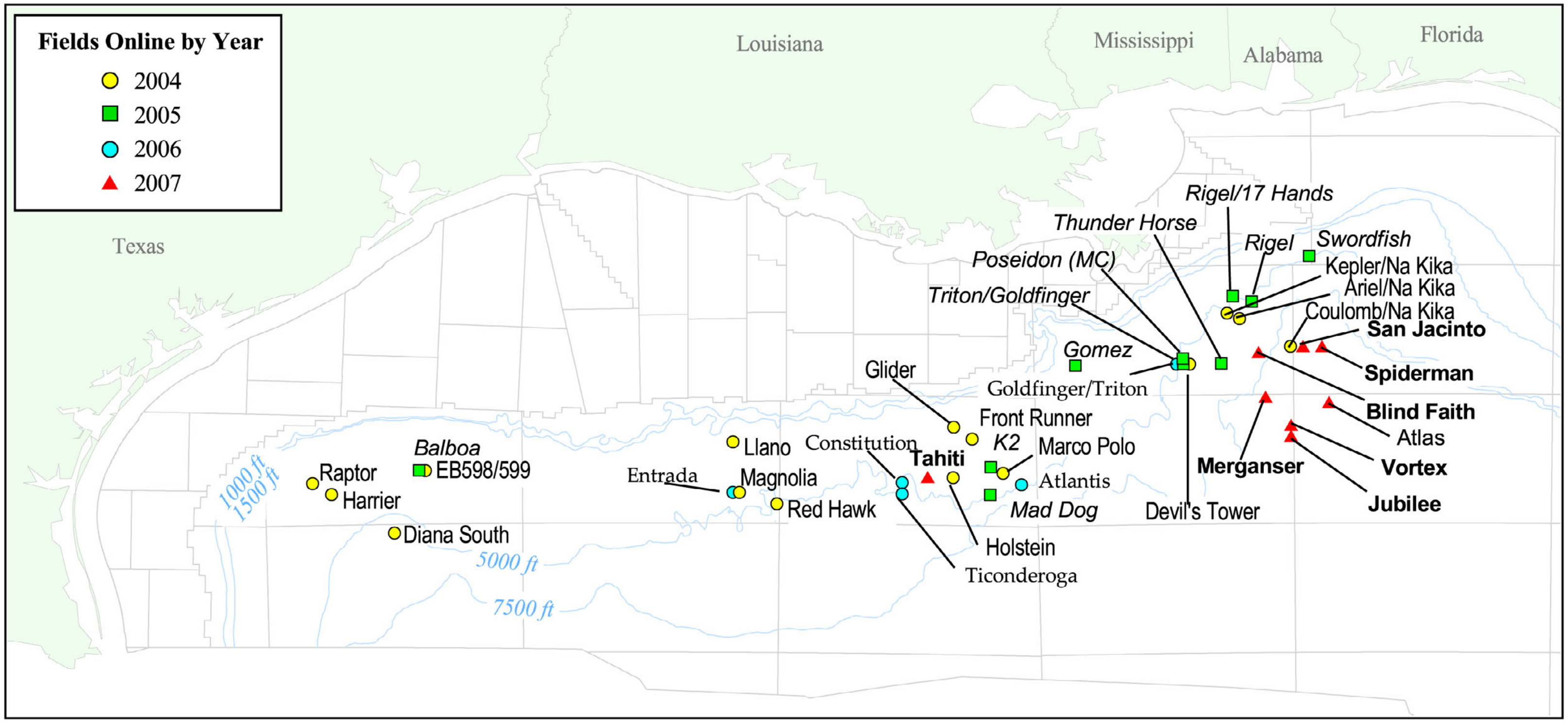

Figure 18. Deepwater projects that began production in 2004 and those expected to begin production by yearend 2007.

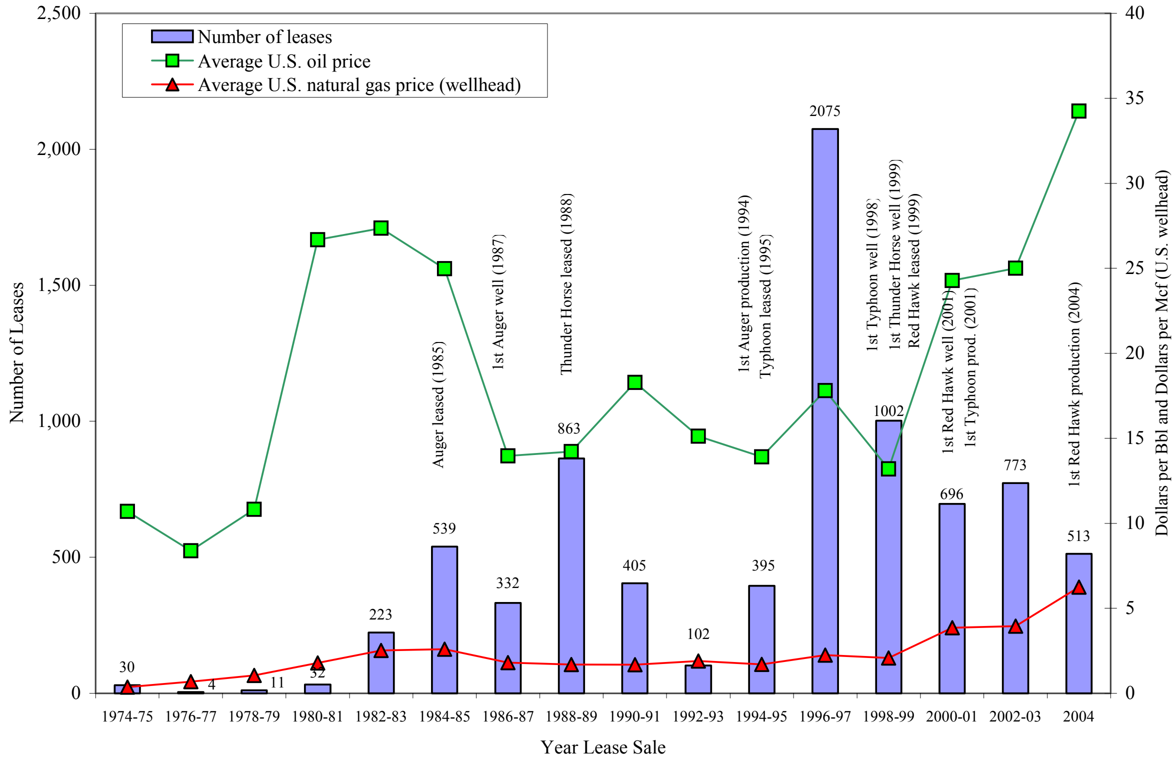

Figure 19. Deepwater lease activity and oil/natural gas prices (prices from U.S. Energy Information Administration: oil through January 15, 2005, and natural gas through December 4, 2004).

CONTRIBUTING PERSONNEL

This report includes contributions from the following individuals:

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APPENDICES

Appendix A. Announced Deepwater Discoveries (Sorted by Project Name[1]).

Project Name	Area/Block	Water Depth (ft)[2]	Field	Field Discovery Date[3]	Year of First Production	Year of Last Production
Aconcagua	MC 305	7,100	MC 305	2/21/1999	2002	
Alabaster	MC 485	1,438	MC 397	8/27/1982	1992	
Allegheny	GC 254	3,294	GC 254	1/01/1985	1999	
Amberjack	MC 109	1,100	MC 109	11/13/1983	1991	
Anduin	MC 755	2,904				
Angus	GC 112	2,045	GC 112	6/08/1997	1999	
Ariel/Na Kika	MC 429	6,240	MC 429	11/20/1995	2004	
Arnold	EW 963	1,800	EW 963	6/12/1996	1998	
Aspen	GC 243	3,065	GC 243	1/27/2001	2002	
Atlantis	GC 699	6,133		5/12/1998		
Atlas	LL 50	8,934				
Atlas NW	LL 5	8,810				
Auger	GB 426	2,860	GB 426	5/01/1987	1994	
Baha	AC 600	7,620	AC 600	5/23/1996		
Balboa	EB 597	3,352	EB 597	7/2/2001		
Baldpate	GB 260	1,648	GB 260	11/01/1991	1998	
Bison	GC 166	2,381	GC 166	3/01/1986		
Black Widow	EW 966	1,850	EW 921	5/01/1986	2000	
Blind Faith	MC 696	6,989				
Boomvang East	EB 668	3,650	EB 668	9/12/2003	2003	
Boomvang North	EB 643	3,650	EB 643	12/13/1997	2002	
Boomvang West	EB 643	3,650	EB 643	12/13/1997	2003	
Boris	GC 282	2,378	GC 282	9/29/2001	2003	
Brutus	GC 158	3,300	GC 158	3/01/1989	2001	
Bullwinkle	GC 65	1,353	GC 065	10/01/1983	1989	
Camden Hills	MC 348	7,216	MC 348	8/4/1999	2002	
Cascade	WR 206	8,143				
Champlain	AT 63	4,457	AT 063	2/11/2000		
Cheyenne	LL 399	8,987				
Chinook	WR 469	8,831				
Cognac	MC 195	1,023	MC 194	7/01/1975	1979	
Conger	GB 215	1,500	GB 260	11/01/1991	2000	
Constitution	GC 680	5,071				
Cooper	GB 388	2,600	GB 388	3/16/1989	1995	1999

Project Name	Area/Block	Water Depth (ft)[2]	Field	Field Discovery Date[3]	Year of First Production	Year of Last Production
Coulomb/Na Kika	MC 657	7,591	MC 657	11/01/1987	2004	
Crested Butte	GC 242	2,846				
Crosby	MC 899	4,400	MC 899	1/04/1998	2001	
Cyclops	AT 8	3,135	AT 008	4/26/1997		
Dawson	GB 669	3,152	GB 668	5/22/2000	2003	
Dawson Deep	GB 625	2,900				
Devil's Tower	MC 773	5,610	MC 773	12/13/1999	2004	
Diamond	MC 445	2,095	MC 445	12/05/1992	1993	1999
Diana	EB 945	4,500	EB 945	8/01/1990	2000	
Diana South	AC 65	4,852	AC 065	3/24/1997	2004	
Dionysus	VK 864	1,508	VK 864	10/01/1981		
Dulcimer	GB 367	1,120	GB 367	2/09/1998	1999	
Durango	GB 667	3,105	GB 668	5/22/2000	2003	
East Anstey/ Na Kika	MC 607	6,590	MC 607	11/12/1997	2003	
EB 377	EB 377	2,450	EB 377	10/01/1985		
EB598/599	EB 598	3,650	EB 643	12/13/1997	2004	
Einset	VK 872	3,500	VK 873	3/01/1988	2001	
El Toro	GC 69	1,465	GC 069	9/13/1984		
Entrada	GB 782	4,690	GB 783	5/03/1999		
Europa	MC 935	3,870	MC 935	4/22/1994	2000	
EW 1006	EW 1006	1,884	EW 1006	1/26/1988	1999	
EW 878	EW 878	1,585	EW 878	7/03/2000	2001	
Falcon	EB 579	3,638	EB 579	9/29/2002	2003	
Fourier/Na Kika	MC 522	6,950	MC 522	7/01/1989	2003	
Front Runner	GC 338	3,330	GC 339	6/08/2001	2004	
Fuji	GC 506	4,262	GC 506	1/30/1995		
GB 208	GB 208	1,275	GB 208	9/01/1991		
GB 244	GB 244	2,130	GB 244	8/15/2001		
GB 302	GB 302	2,411	GB 302	2/01/1991		
GB 379	GB 379	2,076	GB 379	7/01/1985		
GC 147	GC 147	1,275	GC 147	5/01/1988		
GC 162	GC 162	2,616	GC 162	7/01/1989		
GC 21	GC 21	1,296	GC 021	10/01/1984		
GC 228	GC 228	1,950	GC 228	7/01/1985		
GC 27	GC 27	1,593	GC 027	7/01/1989		
GC 29	GC 29	1,554	GC 029	1/01/1984	1988	1990

Project Name	Area/Block	Water Depth (ft)[2]	Field	Field Discovery Date[3]	Year of First Production	Year of Last Production
GC 31	GC 31	2,243	GC 075	5/01/1985	1988	1989
GC 39	GC 39	2,068	GC 039	4/01/1984		
GC 463	GC 463	4,032	GC 463	12/01/1998		
GC 70	GC 70	1,618	GC 070	6/01/1984		
Gemini	MC 292	3,393	MC 292	9/07/1995	1999	
Genesis	GC 205	2,590	GC 205	9/01/1988	1999	
Glider	GC 248	3,440		12/19/1996	2004	
Goldfinger	MC 771	5,423				
Gomez	MC 711	3,098	MC 755	3/19/1986		
Goose	MC 751	1,624	MC 751	12/15/2002		
Grand Canyon	GC 141	1,720				
Great White	AC 857	8,717				
Gretchen	GC 114	2,685	GC 114	12/18/1999		
Gunnison	GB 668	3,100	GB 668	5/22/2000	2003	
Habanero	GB 341	2,015	GB 387	10/03/1994	2003	
Harrier	EB 759	4,114	EB 759	1/28/2003		
Hawkes	MC 509	4,174	MC 509	11/20/2001		
Herschel/Na Kika	MC 520	6,739	MC 522	7/01/1989	2003	
Holstein	GC 645	4,344	GC 644	2/11/1999	2004	
Hoover	AC 25	4,825	AC 025	1/30/1997	2000	
Horn Mountain	MC 127	5,400	MC 084	1/01/1993	2002	
Hornet	GC 379	2,076	GC 379	12/14/2001		
Ida/Fastball	VK 1003	4,942				
Jack	WR 759	6,965				
Jolliet	GC 184	1,760	GC 184	7/01/1981	1989	
Jubilee	AT 349	8,825				
K2	GC 562	4,006	GC 562	8/14/1999		
Kepler/Na Kika	MC 383	5,759	MC 383	8/31/1997	2004	
King (MC-BP)	MC 84	5,000	MC 084	1/01/1993	2002	
King (MC-Shell)	MC 764	3,250	MC 807	4/01/1989	2000	
King Kong	GC 472	3,980	GC 472	2/01/1989	2002	
King's Peak	DC 133	6,845	DC 133	3/01/1993	2002	
Ladybug	GB 409	1,355	GB 409	5/13/1997	2001	
La Femme	MC 427	5,800				
Lena	MC 280	1,000	MC 281	5/01/1976	1984	
Leo	MC 546	2,505	MC 546	2/01/1986		
Llano	GB 386	2,663	GB 387	10/03/1994	2004	

Project Name	Area/Block	Water Depth (ft)[2]	Field	Field Discovery Date[3]	Year of First Production	Year of Last Production
Lorien	GC 199	2,315				
Lost Ark	EB 421	2,960	EB 421	1/31/2001	2002	
Macaroni	GB 602	3,600	GB 602	1/21/1996	1999	
Mad Dog	GC 782	4,428	GC 826	11/24/1998	2005	
Madison	AC 24	4,856	AC 024	6/25/1998	2002	
Magnolia	GB 783	4,674	GB 783	5/03/1999	2004	
Manatee	GC 155	1,939	GC 110	8/07/1987	2002	
Marathon	GC 153	1,618	GC 153	4/01/1984		
Marco Polo	GC 608	4,320	GC 608	4/21/2000	2004	
Marlin	VK 915	3,236	VK 915	6/01/1993	2000	
Mars	MC 807	2,933	MC 807	4/01/1989	1996	
Marshall	EB 949	4,376	EB 949	7/30/1998	2001	
Matterhorn	MC 243	2,850	MC 243	9/01/1990	2003	
MC 113	MC 113	1,986	MC 113	1/01/1976		
MC 285	MC 285	3,161	MC 285	9/01/1987		
MC 455	MC 455	1,400	MC 455	2/01/1986		
MC 68	MC 68	1,360	MC 068	12/09/1975	2001	
MC 709	MC 709	2,599	MC 709	2/01/1987		
MC 837	MC 837	1,524	EW 878	7/03/2000		
MC 929	MC 929	2,250	MC 929	11/01/1987		
McKinley	GC 416	4,019	GC 416	7/14/1998		
Medusa	MC 582	2,223	MC 582	10/10/1998	2003	
Medusa North	MC 538	2,223	MC 582	10/10/1998	2004	
Mensa	MC 731	5,318	MC 731	12/01/1986	1997	
Merganser	AT 37	8,015	AT 037	11/28/2001		
Mica	MC 211	4,580	MC 211	5/01/1990	2001	
Mighty Joe Young	GC 737	4,415				
Mirage	MC 941	3,927	MC 899	1/04/1998		
Moccasin	GB 254	1,920	GB 254	7/23/1993		
Morgus	MC 942	3,960	MC 899	1/04/1998		
Morpeth	EW 921	1,696	EW 921	5/01/1986	1998	
Mosquito Hawk	GB 269	1,102	GB 269	3/06/1996		
Nansen	EB 602	3,675	EB 602	9/25/1999	2002	
Navajo	EB 690	4,210	EB 602	9/25/1999	2002	
Navarro	GC 37	2,019				
Neptune(AT-BHP)	AT 575	6,220	AT 575	9/26/1995		

Project Name	Area/Block	Water Depth (ft)[2]	Field	Field Discovery Date[3]	Year of First Production	Year of Last Production
Neptune (VK-Kerr-McGee)	VK 826	1,930	VK 825	11/01/1987	1997	
Ness	GC 507	3,947	GC 507	12/27/2001		
Nile	VK 914	3,535	VK 914	4/30/1997	2001	
Nirvana	MC 162	3,724	MC 162	11/30/1994		
Northwestern	GB 200	1,736	GB 200	5/14/1998	2000	
Oregano	GB 559	3,400	GB 559	3/27/1999	2001	
Oyster	EW 917	1,195	EW 873	12/01/1985	1998	
Pardner	MC 401	1,139	WD 152	10/01/1968[4]	2003	
Penn State	GB 216	1,450	GB 260	11/01/1991	1999	
Petronius	VK 786	1,753	VK 786	7/14/1995	2000	
PI 525	PI 525	3,430	PI 525	4/30/1996		
Pilsner	EB 205	1,108	EB 205	5/02/2001	2001	
Pluto	MC 674	2,828	MC 718	10/20/1995	1999	
Pompano	VK 990	1,290	VK 990	5/01/1981	1994	
Popeye	GC 116	2,000	GC 116	2/01/1985	1996	
Poseidon (GC)	GC 691	4,489	GC 691	2/27/1996		
Poseidon (MC)	MC 772	5,567	MC 728	6/30/2002		
Prince	EW 1003	1,500	EW 958	7/20/1994	2001	
Princess	MC 765	3,600	MC 807	4/01/1989	2002	
Ptolemy	GB 412	1,322	GB 412	7/01/1984		
Puma	GC 823	4,129				
Ram-Powell	VK 956	3,216	VK 956	5/01/1985	1997	
Raptor	EB 668	3,710	EB 668	9/13/2003	2004	
Red Hawk	GB 877	5,334	GB 877	10/18/2001	2004	
Rigel	MC 252	5,225	MC 252	11/29/1999		
Rockefeller	EB 992	4,872	EB 992	11/28/1995		
Rocky	GC 110	1,785	GC 110	8/07/1987	1996	
San Jacinto	DC 618	7,850				
San Patricio	AT 153	4,785	AT 153	8/09/2001		
Sangria	GC 177	1,487	GC 177	8/22/1999	2002	
Serrano	GB 516	3,153	GB 516	7/23/1996	2001	
Shasta	GC 136	1,048	GC 136	7/01/1981	1995	
Shenzi	GC 653	4,238				
Silvertip	AC 815	9,226				
South Dachshund	LL 2	8,340				
Spiderman	DC 621	8,087				

Project Name	Area/Block	Water Depth (ft)[2]	Field	Field Discovery Date[3]	Year of First Production	Year of Last Production
St. Malo	WR 678	7,036				
Sturgis	AT 183	3,710				
Supertramp	MC 26	1,272	MC 026	5/27/1994		
SW Horseshoe	EB 430	2,285	EB 430	5/03/2000		
Swordfish	VK 962	4,677	VK962	11/15/01		
Tahiti	GC 640	4,292				
Tahoe	VK 783	1,500	VK 783	12/01/1984	1994	
Thunder Hawk	MC 734	5,724				
Thunder Horse	MC 778	6,050	MC 778	4/01/1999		
Thunder Horse North	MC 776	5,660				
Ticonderoga	GC 768	5,250				
Tiger	AC 818	9,004				
Timberwolf	MC 555	4,749	MC 555	10/30/2001		
Tobago	AC 859	9,627				
Tomahawk	EB 623	4,114	EB 579	1/28/2003	2003	
Trident	AC 903	9,743				
Triton	MC 728	5,373	MC 728	6/30/2002		
Troika	GC 244	2,721	GC 244	5/30/1994	1997	
Tubular Bells	MC 725	4,334				
Tulane	GB 158	1,054	GB 200	5/14/1998	2002	
Typhoon	GC 237	2,679	GC 236	10/01/1984	2001	
Ursa	MC 809	3,800	MC 807	4/01/1989	1999	
Virgo	VK 823	1,130	VK 823	1/01/1993	1999	
VK 862	VK 862	1,043	VK 862	10/01/1976	1995	
VK 917	VK 917	4,370	VK 917	12/08/2001		
VK 962	VK 962	4,677	VK 962	11/15/2001		
Vortex	AT 261	8,344				
Wrigley	MC 506	3,700				
Yosemite	GC 516	4,150	GC 472	2/01/1989	2002	
Zia	MC 496	1,804	MC 582	10/10/1998	2003	
Zinc	MC 354	1,478	MC 354	8/01/1977	1993	

[1] A block may be listed under more than one project name due to lease relinquishment, expiration, or termination and subsequent re-leasing. Some announced discoveries never reached the project stage and are listed under their prospect names.

[2] Water depths shown reflect depth at facility. If project is subsea or undeveloped, water depth reflects depth of deepest well location in project.

[3] The absence of a field discovery date indicates an industry-announced discovery without a qualified well on the lease. These discoveries have not necessarily been confirmed by the MMS and they are not yet classified as fields by the MMS.

[4] The deepwater portion of the Pardner project was discovered in 2002.

Appendix B. Deepwater Studies Program.

<u>Active Studies</u> [MMS Project Number]

Deepwater Program: Repeatability and Effectiveness of Subsurface Controlled Safety Valves [403]

Deepwater Program: Project Offshore Deep Slopes (PODS): Seafloor Stability on the Continental Shelf/Slope [404]

Deepwater Program: Damage Tolerance of Synthetic-Fiber Mooring Ropes; Phase I: Small-Scale Experiments [407]

Deepwater Program: Development of a Blowout Intervention Method and Dynamic Kill Simulated for Blowouts Occurring in Ultra-Deepwater [408]

Deepwater Program: World Wide Assessment of Industry Leak Detection Capabilities for Single and Multiphase Pipelines [409]

Deepwater Program: Damaged Polyester Rope-Large Scale Experiments JIP [416]

Deepwater Program: Deepwater Field Measurements [417]

Deepwater Program: Risk-Extend Comparative Risk Assessment (CRA) for a SPAR-Based FPSO [418]

Deepwater Program: Long Term Integrity of Deep-Water Cement Systems [426]

Deepwater Program: Evaluation of Secondary BOP Intervention Methods in Well Control [431]

Deepwater Program: Regional Synthesis of the Sedimentary Thermal History and Hydrocarbon Maturation in the Deepwater Gulf of Mexico [432]

Deepwater Program: Evaluation of Methods of Detecting and Monitoring of Corrosion Damage in Risers [433]

Deepwater Program: Strain-Based Design of Pipelines [434]

Deepwater Program: Reliability Analysis of Deepwater Anchors [437]

Deepwater Program: Technology Assessment of Alternatives for Handling Associated Gas Produced from Deepwater Oil Developments in the GOM [443]

Deepwater Program: ROV/AUV Capabilities [446]

Deepwater Program: Characterizing Natural Gas Hydrates in the Deepwater Gulf of Mexico [461]

Deepwater Program: Assessment of Performance of Deepwater Floating Production Facilities [471]

Deepwater Program: Project Offshore Deep Slopes (PODS) - Phase II [472]

Deepwater Program: Deep-Sea Furrows [479]

Deepwater Program: Deepwater Riser VIV Project - CFD Simulation of Riser VIV [481]

Deepwater Program: An Assessment of Magnetization Effects on Hydrogen Cracking for Thick Walled Pipelines [487]

Deepwater Program: Risk Assessment for Submarine Slope Stability [491}

Deepwater Program: New Touch-Down Zone Solutions for Steel Catenary Risers [494]

Deepwater Program: Design of Cathodic Protection Systems for Deep Water Compliant Petroleum Production Risers [496]

Deepwater Program: Probabilistic Reliability and Integrity Assessment of Large-Diameter Compliant Risers for Ultra-Deepwater Operations [497]

Deepwater Program: Assessment of New and/or Improved Repair Techniques for Ageing or Damaged Structures [502]

Deepwater Program: Seafloor Interaction with Steel Catenary Risers [510]

Deepwater Program: Drilling and Completion Gaps for High Temperature and High Pressure in Deep Water [519]

Deepwater Program: Methodologies for Measuring and Monitoring Hydrogen for Safety in Advanced High Strength Linepipe Steel Applications [522]

Deepwater Program: SCR Flex Joint Design and Performance JIP [530]

Deepwater Program: Deepwater GOM Pipeline Damage Characteristics and Repair Options [532]

Deepwater Program: An Analysis of the Socioeconomic Effects of OCS-Activities on Ports and Surrounding Areas in the Gulf of Mexico [GM-92-42-56]

Deepwater Program: Potential Spatial and Temporal Vulnerability of Pelagic Fish Assemblages in the Gulf of Mexico to Surface Oil Spills Associated with Deepwater Petroleum Development [GM-92-42-61]

Deepwater Program: Observation of Deepwater Manifestation of Loop Current Rings [GM-92-42-72]

Deepwater Program: Deepwater Currents at 92° W [GM-92-42-73]

Deepwater Program: Foraminiferal Communities of Bathyal and Abyssal Hydrocarbon Seeps, Northern Gulf of Mexico: A Taxonomic, Ecologic, and Geologic Study [GM-92-42-86]

Deepwater Program: Assessing and Monitoring Industry Labor Needs [GM-98-06]

Deepwater Program: Benefits and Burdens of OCS Deepwater Activities on Selected Communities and Local Public Institutions [GM-98-10]

Deepwater Program: Northern Gulf of Mexico Continental Slope Habitats and Benthic Ecology [GM-99-02]

Deepwater Program: Effects of Oil and Gas Exploration and Development at Selected Continental Slope Sites in the Gulf of Mexico [GM-00-01]

Deepwater Program: Exploratory Study of Deepwater Currents in the Gulf of Mexico [GM-01-02]

Deepwater Program: Cooperative Research on Sperm Whales and Their Response to Seismic Exploration in the Gulf of Mexico [GM-01-04C]

Deepwater Program: Understanding the Processes that Maintain the Oxygen Levels in the Deep Gulf of Mexico [GM-02-06]

Deepwater Program: Deepwater Current Measurements at 25° N; 90° W in Mexican Territory [GM-02-x14]

Deepwater Program: Survey of Deepwater Currents in the Western Gulf of Mexico [GM-03-01]

Deepwater Program: Direct Observations of Ocean Currents over the Western Slope in the Gulf of Mexico [GM-03-01b]

Deepwater Program: Characterization of Gulf of Mexico Deepwater Hard Bottom Communities with Emphasis on Lophelia Coral [GM-03-02]

Deepwater Program: The Archaeological and Biological Analysis of World War II Shipwrecks in the Gulf of Mexico: A Pilot Study of the Artificial Reef Effect in Deepwater [GM-03-07]

Deepwater Program: Survey of Deepwater Currents in the Eastern Gulf of Mexico [GM-04-01]

All reports are available at our web sites —

http://www.gomr.mms.gov/homepg/regulate/environ/deepenv.html.

http://www.mms.gov/tarprojectcategories/deepwate.html

Appendix C. Average Annual GOM Oil and Gas Production.

Year	Shallow-water Oil (MBOPD)	Deepwater Oil (MBOPD)	Total GOM Oil (MBOPD)	Shallow-water Gas (BCFPD)	Deepwater Gas (BCFPD)	Total GOM Gas (BCFPD)
1947	0	0	0	0.0	0.0	0.0
1948	0	0	0	0.0	0.0	0.0
1949	0	0	0	0.0	0.0	0.0
1950	1	0	1	0.0	0.0	0.0
1951	1	0	1	0.0	0.0	0.0
1952	2	0	2	0.1	0.0	0.1
1953	3	0	3	0.1	0.0	0.1
1954	7	0	7	0.2	0.0	0.2
1955	11	0	11	0.2	0.0	0.2
1956	19	0	19	0.2	0.0	0.2
1957	32	0	32	0.3	0.0	0.3
1958	54	0	54	0.4	0.0	0.4
1959	81	0	81	0.6	0.0	0.6
1960	111	0	111	0.8	0.0	0.8
1961	153	0	153	0.9	0.0	0.9
1962	210	0	210	1.2	0.0	1.2
1963	264	0	264	1.5	0.0	1.5
1964	305	0	305	1.8	0.0	1.8
1965	372	0	372	2.0	0.0	2.0
1966	480	0	480	2.7	0.0	2.7
1967	574	0	574	3.5	0.0	3.5
1968	695	0	695	4.4	0.0	4.4
1969	801	0	801	5.3	0.0	5.3
1970	901	0	901	6.6	0.0	6.6
1971	1,029	0	1,029	7.5	0.0	7.5
1972	1,022	0	1,022	8.2	0.0	8.2
1973	1,002	0	1,002	9.1	0.0	9.1
1974	926	0	926	9.4	0.0	9.4
1975	848	0	848	9.4	0.0	9.4
1976	824	0	824	9.7	0.0	9.7
1977	778	0	778	10.3	0.0	10.3

Year	Shallow-water Oil (MBOPD)	Deepwater Oil (MBOPD)	Total GOM Oil (MBOPD)	Shallow-water Gas (BCFPD)	Deepwater Gas (BCFPD)	Total GOM Gas (BCFPD)
1978	757	0	757	11.6	0.0	11.6
1979	720	2	721	12.8	0.0	12.8
1980	711	14	725	13.0	0.0	13.1
1981	711	10	721	13.4	0.0	13.4
1982	748	36	784	12.7	0.0	12.8
1983	806	72	878	11.1	0.1	11.2
1984	905	68	973	12.4	0.1	12.5
1985	904	58	962	11.1	0.1	11.2
1986	924	52	976	11.0	0.1	11.1
1987	852	47	899	12.3	0.1	12.5
1988	791	36	827	12.5	0.1	12.6
1989	743	27	770	12.7	0.1	12.7
1990	720	33	753	13.4	0.1	13.5
1991	746	63	808	12.8	0.2	12.9
1992	734	102	836	12.5	0.2	12.8
1993	746	101	847	12.5	0.3	12.8
1994	748	115	862	12.8	0.4	13.3
1995	795	151	947	12.6	0.5	13.1
1996	814	198	1,012	13.2	0.8	14.0
1997	831	296	1,127	13.1	1.0	14.1
1998	781	436	1,218	12.3	1.5	13.8
1999	740	617	1,357	11.6	2.3	13.9
2000	691	743	1,434	10.9	2.7	13.6
2001	663	862	1,526	10.6	3.2	13.9
2002	597	955	1,552	8.8	3.6	12.5
2003	573	958	1,531	8.2	3.9	12.1
2004*	522	922	1,444	7.3	3.9	11.2

*Estimate from *Gulf of Mexico Oil and Gas Production Forecast: 2005 Through 2014* (In press).

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 territories under U.S. administration.

The Minerals Management Service Mission

As a bureau of the Department of the Interior, the Minerals Management Service's (MMS) primary responsibilities are to manage the mineral resources located on the Nation's Outer Continental Shelf (OCS), collect revenue from the Federal OCS and onshore Federal and Indian lands, and distribute those revenues.

Moreover, in working to meet its responsibilities, the **Offshore Minerals Management Program** administers the OCS competitive leasing program and oversees the safe and environmentally sound exploration and production of our Nation's offshore natural gas, oil and other mineral resources. The MMS **Minerals Revenue Management** meets its responsibilities by ensuring the efficient, timely and accurate collection and disbursement of revenue from mineral leasing and production due to Indian tribes and allottees, States and the U.S. Treasury.

The MMS strives to fulfill its responsibilities through the general guiding principles of: (1) being responsive to the public's concerns and interests by maintaining a dialogue with all potentially affected parties and (2) carrying out its programs with an emphasis on working to enhance the quality of life for all Americans by lending MMS assistance and expertise to economic development and environmental protection.