



Testimony

Before the Subcommittee on Energy
and Mineral Resources, Committee on
Natural Resources, House of
Representatives

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OFFSHORE OIL AND GAS RESOURCES

Information on Infrastructure Decommissioning and Federal Financial Risk

Statement of Frank Rusco, Director,
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Accessible Version

GAO Highlights

Highlights of [GAO-17-642T](#), testimony before the Subcommittee on Energy and Mineral Resources, Committee on Natural Resources, House of Representatives

Why GAO Did This Study

Oil and gas produced on federal leases in the Gulf are important to the U.S. energy supply. When oil and gas infrastructure is no longer in use, Interior requires lessees to decommission it so that it does not pose safety and environmental hazards. Decommissioning can include plugging wells and removing platforms, which can cost millions of dollars. Interior requires lessees to provide bonds or other financial assurances to demonstrate that they can pay these costs; however, if lessees do not fulfill their decommissioning obligations, the federal government may be liable for these costs.

This statement describes offshore oil and gas infrastructure in the Gulf and Interior's requirements and procedures for overseeing decommissioning, and the risks posed by its financial assurances procedures. This statement is based on [GAO-16-40](#) from December 2015. For that report, GAO reviewed agency regulations and procedures and interviewed officials from Interior, credit rating agencies, academia, and trade associations. GAO also followed up on the implementation status of the report's recommendations.

What GAO Recommends

Among other recommendations, GAO recommended in [GAO-16-40](#) that Interior complete plans to revise its financial assurance procedures to address risks posed by these procedures. Interior concurred with GAO's recommendations and has taken or described planned actions to address the recommendations, which GAO will continue to monitor.

View [GAO-17-642T](#). For more information, contact Frank Rusco at (202) 512-3841 or ruscof@gao.gov.

May 2017

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What GAO Found

As GAO reported in December 2015, offshore oil and gas infrastructure in the Gulf of Mexico (Gulf) varies in size and complexity, and lessees have installed and removed thousands of structures over the past half century. The simplest structures are found in shallow water and include a caisson, which is a cylindrical, large diameter steel pipe enclosing a well. A more complex structure in shallow water is a fixed platform, which uses a jacket and pilings to support the superstructure, or deck. A typical platform is designed so that multiple wells may be drilled from it. Structures in deep water rely on other methods to anchor to the ocean floor, such as using a narrow, flexible tower and a piled foundation. From 1947 through 2014, lessees drilled over 50,000 wells and installed over 7,000 structures in the Gulf. Over the same time period, lessees plugged almost 30,000 of these wells and removed about 5,000 of these structures. Oil production from deepwater wells increased significantly in recent decades, and in 2014, over 80 percent of Gulf oil production occurred in deep water.

The Department of the Interior (Interior) requires lessees to decommission offshore oil and gas infrastructure, and according to GAO's December 2015 report, Interior developed procedures for overseeing the decommissioning of offshore oil and gas infrastructure and estimating costs associated with decommissioning liabilities. According to Interior regulations, lessees must permanently plug all wells, remove all platforms and other structures, decommission all pipelines, and clear the seafloor of all obstructions created by the lease and pipeline operations when the lessee's facility is no longer useful for operations. Lessees must also permanently plug wells and remove platforms within 1 year after a lease terminates. According to officials GAO interviewed for its December 2015 report, Interior's procedures for overseeing decommissioning and estimating costs associated with decommissioning liabilities included (1) identifying and tracking unused infrastructure, (2) reviewing lessee plans to decommission infrastructure, and (3) using different cost estimates for decommissioning in shallow and deep water.

Interior requires financial assurances from lessees to cover decommissioning liabilities, but GAO's December 2015 report found that Interior's financial assurance procedures in place at that time posed risks to the federal government. Under Interior's financial assurance procedures in place at the time, each offshore lease with a decommissioning liability had to be covered by a bond unless Interior determined that a lessee had the financial ability to fulfill its decommissioning obligations. Interior's procedures allowed it to waive its requirement for a lessee to provide a bond if the lessee passed a financial strength test. However, GAO found that of \$38.2 billion in decommissioning liabilities as of October 2015, Interior held or required about \$2.9 billion in bonds and other financial assurances, and had foregone requiring about \$33.0 billion in bonds for most of the remaining liabilities. Prior GAO work has shown that the use of financial strength tests in lieu of bonds poses risks to the federal government. GAO recommended that Interior address this risk by following through on plans to revise its financial assurance procedures. Interior issued revised financial assurance procedures in July 2016 but, according to Interior, delayed implementing them in 2017 pending a six-month review process.

Chairman Gosar, Ranking Member Lowenthal, and Members of the Subcommittee:

I am pleased to be here today to discuss our work on the decommissioning of offshore oil and gas infrastructure on federal leases. As you know, oil and gas resources located on federal leases on the outer continental shelf are an important component of the nation's energy supply.¹ The vast majority of the nation's crude oil and natural gas production on the outer continental shelf occurs in the Gulf of Mexico (Gulf). Historically, most offshore oil and gas activities have occurred in shallow water,² but in recent decades these activities have moved into deep water. Most active oil and gas leases in the Gulf are now located in deep water.

Management of offshore oil and gas resources is primarily governed by the Outer Continental Shelf Lands Act, which authorizes leasing,³ exploration, development, and production of those resources. The Department of the Interior (Interior) is responsible for establishing procedures and managing oil and gas activities on offshore federal leases, including activities associated with thousands of wells, platforms, and miles of pipelines on the outer continental shelf. When this infrastructure is no longer useful for operations or otherwise becomes idle,⁴ or when a lease has been expired for more than 1 year, Interior requires oil and gas lessees to decommission it so that it does not pose potential safety hazards to marine vessels and environmental hazards to sea life and humans.⁵

¹The outer continental shelf refers to the submerged lands outside the territorial jurisdiction of all 50 states, but within U.S. jurisdiction and control. The portion of the North American continental edge that is federally designated as the outer continental shelf generally extends seaward 3 geographical miles off the coastline to at least 200 nautical miles.

²In this testimony, unless otherwise specified, we use the term "shallow" water to refer to depths of less than 400 feet and "deep" water to refer to depths of greater than 400 feet.

³For the purposes of this testimony, we use the term "lease" to include leases, grants of right of way, and right of use and easements.

⁴Interior refers to wells and platforms as "idle" if they have not been used in the past 5 years for oil and gas exploration or development and production activities.

⁵For purposes of this testimony, we use the term "lessees" to refer to owners of record title and owners of operating rights on offshore leases, designated operators acting on behalf of record title and operating rights owners, and right-of-way holders.

Decommissioning refers to the process of plugging wells, removing platforms and other structures, removing or cleaning out pipelines, and clearing sites of debris. According to Interior estimates, in shallow water, decommissioning infrastructure can cost tens of millions of dollars per lease, depending on the number of wells and types of structures present. In deep water, decommissioning can cost hundreds of millions of dollars per lease. In addition, infrastructure damaged by hurricanes is significantly more expensive to decommission than undamaged infrastructure.

Two bureaus within Interior are responsible for managing offshore oil and gas infrastructure. Interior's Bureau of Ocean Energy Management (BOEM) oversees resource management activities, including preparing the 5-year outer continental shelf oil and gas leasing program; reviews oil and gas exploration and development plans and environmental studies; and conducts National Environmental Policy Act analyses. Interior's Bureau of Safety and Environmental Enforcement (BSEE) oversees operations and environmental compliance, including reviewing drilling permits, inspecting offshore drilling rigs and production platforms, assessing civil penalties, developing regulations and standards for offshore drilling (including those related to decommissioning), and ensuring the conservation of natural resources.

My testimony today discusses information presented in our December 2015 report on potential federal liabilities associated with the decommissioning of offshore oil and gas infrastructure.⁶ In particular, I will discuss (1) oil and gas infrastructure in the Gulf, (2) Interior's requirements and procedures for overseeing the decommissioning of oil and gas infrastructure, and (3) Interior's requirements and procedures for obtaining financial assurances for decommissioning liabilities and the risks posed by these procedures.

For that report, we reviewed Interior's regulations regarding its management of leases for offshore oil and gas production. We interviewed BSEE officials in their Washington, D.C., headquarters office and Gulf regional office in New Orleans, Louisiana, and reviewed and summarized relevant BSEE procedures, guidance, and related

⁶GAO, *Offshore Oil and Gas Resources: Actions Needed to Better Protect Against Billions of Dollars in Federal Exposure to Decommissioning Liabilities*, [GAO-16-40](#) (Washington, D.C.: Dec. 18, 2015).

documentation.⁷ We also interviewed BOEM officials in their Washington, D.C., headquarters office and Gulf regional office in New Orleans, Louisiana, and reviewed and summarized relevant BOEM guidance, procedures, and related documentation. Our December 2015 report includes a more detailed explanation of the scope and methodology we used to conduct our work. We also followed up on the implementation status of the report's recommendations.

We conducted the work on which this testimony is based in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Offshore Oil and Gas Infrastructure in the Gulf Varies in Size and Complexity, and Lessees Have Installed and Removed Thousands of Structures Over the Past Half Century

As we reported in December 2015, offshore oil and gas infrastructure in the Gulf varies in size and complexity, and lessees have installed and plugged or removed thousands of wells and structures over the past half century.⁸ The simplest structures are found in shallow water and include caissons and well protectors. A caisson is a cylindrical or tapered large diameter steel pipe enclosing a well conductor and is the minimum structure for offshore development. A well protector provides support to one or more wells with no production equipment and facilities. Lessees drill wells to access and extract oil and gas from geologic formations. According to an Interior publication, "exploratory" wells are drilled in an area with potential oil and gas reserves, while "development" wells are

⁷For the purposes of this testimony, we use the term "procedure" to include Interior's notices to lessees, which are intended to clarify, supplement, or provide more details about Interior's regulations; standard operating procedures; and other related documents describing Interior's processes. See 30 C.F.R. § 250.103.

⁸[GAO-16-40](#).

drilled to produce oil and gas from a known reserve.⁹ An exploratory well may not actually produce any oil or gas, while a successful development well produces oil or gas. Some wellheads are located on a fixed platform (typically in shallow water), while other wellheads are located on the seafloor (typically in deep water).

A more complex structure in shallow water is a fixed platform, which uses a jacket and pilings to support the superstructure, or deck.¹⁰ The deck is the surface where work is performed and provides space for crew quarters, a drilling rig, and production facilities. Most of the large fixed platforms have living quarters for the crew, a helicopter pad, and room for drilling and production equipment.¹¹ A typical platform is designed so that multiple wells may be drilled from it. Wells from a single platform may have bottom-hole locations many thousands of feet (laterally displaced) from the surface location.

Structures in deep water rely on other methods to anchor to the ocean floor. For example, a “compliant tower” structure supports the deck using a narrow, flexible tower and a piled foundation. According to an industry publication, the flexible nature of the compliant tower allows it to withstand large wind and wave forces associated with hurricanes. Other common deep-water structures include the tension leg platform, floating production system, and spar platform.¹² Illustrations of these structures are shown in figure 1.

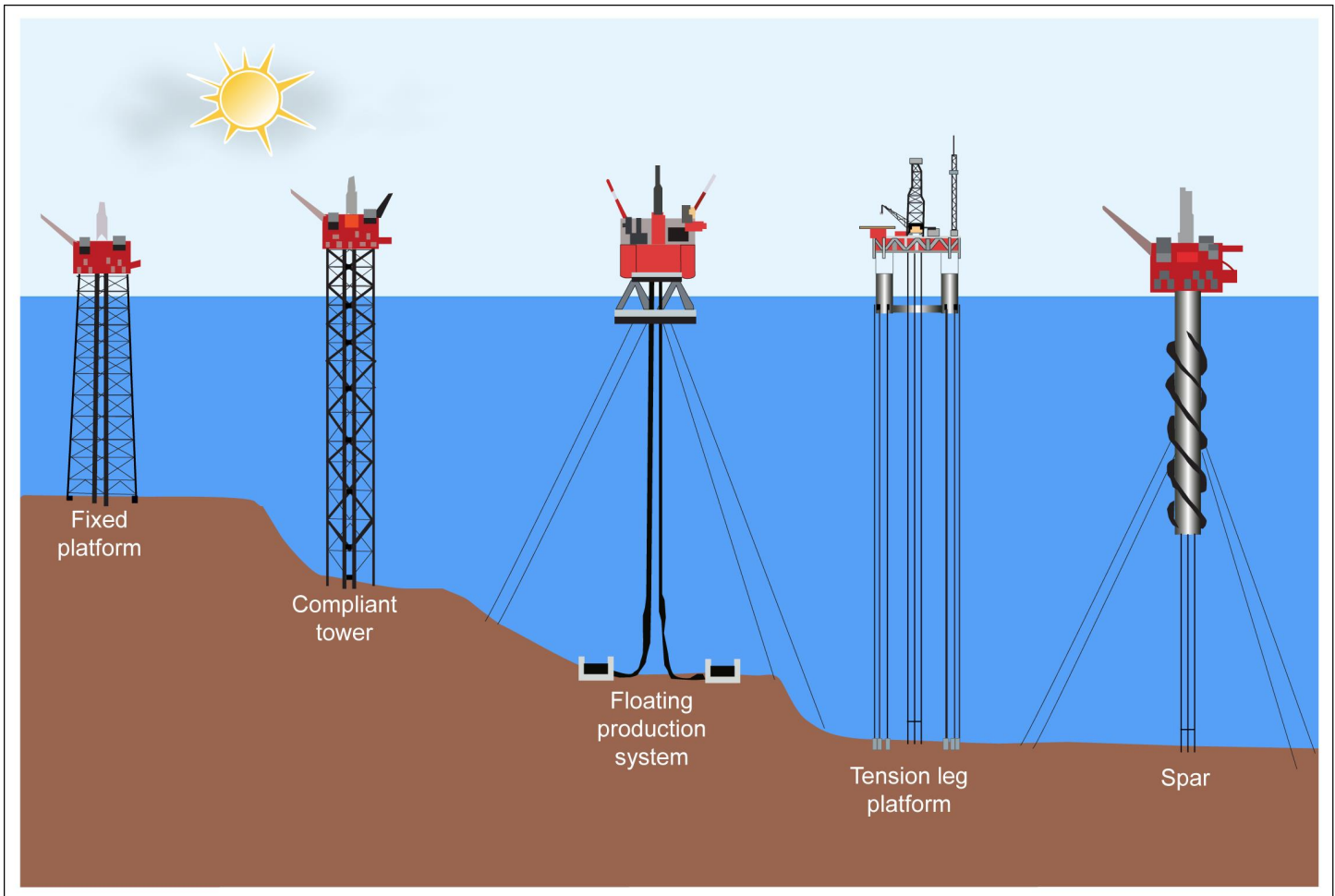
⁹According to BSEE officials interviewed for our December 2015 report, lessees sometimes drill other types of wells, such as relief wells and core test wells. However, these types of wells represent a very small portion of the wells drilled in the Gulf.

¹⁰A jacket is a steel structure that rests on the ocean’s floor and has columns, or legs. Pilings are driven through the legs of the jacket into the seafloor to hold the jacket in place.

¹¹According to BSEE officials we interviewed for our December 2015 report, fixed platforms are typically found in shallow water, but some fixed platforms are used in water depths between 400 feet and 1,400 feet.

¹²A tension leg platform structure supports a floating deck using vertical steel “tendons” or a chain and wire system anchored to the seafloor by pilings. A floating production system uses a floating, semisubmersible hull equipped with drilling and production equipment. It can be anchored in place with a chain and wire system or dynamically positioned using rotating thrusters. A spar platform supports a floating deck using a long, slender column that extends far below the ocean surface. Vertical steel tendons anchor the column to the seafloor (using pilings), and guy-wires extend out diagonally to seafloor anchors for horizontal stability.

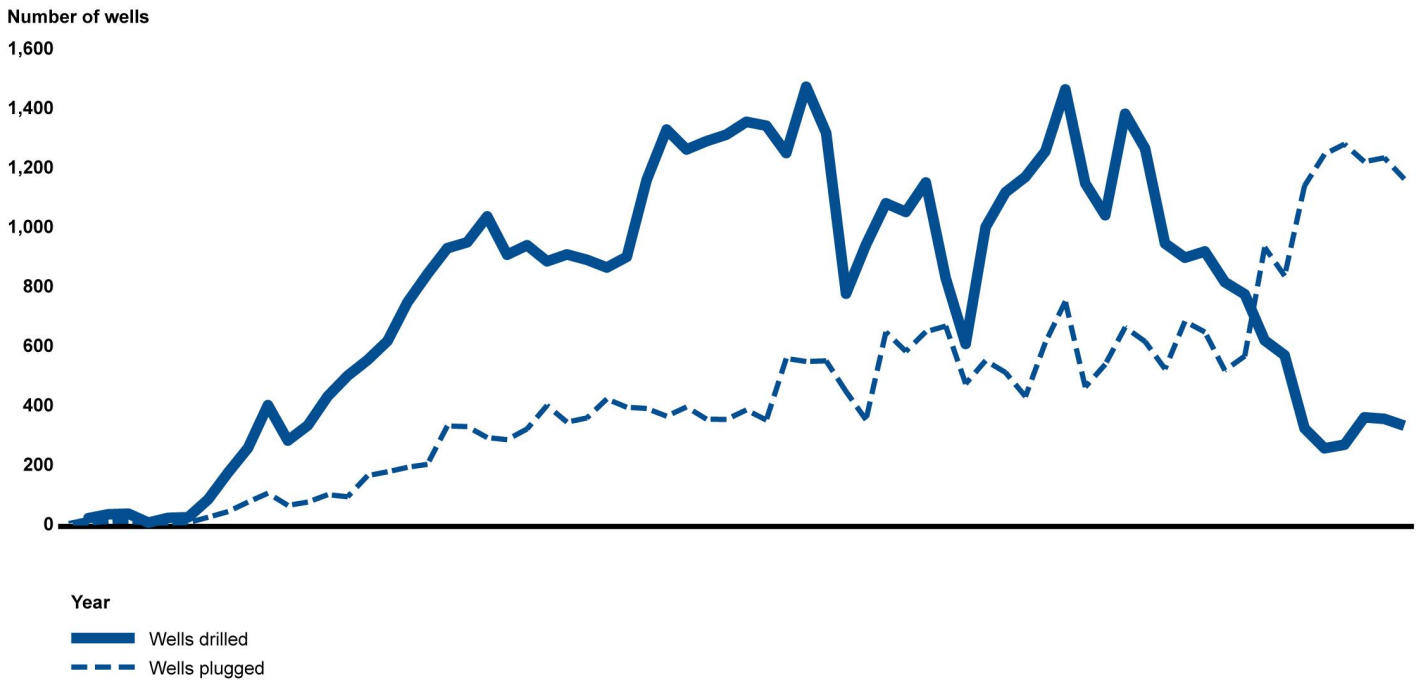
Figure 1: Examples of Oil and Gas Structures in the Gulf of Mexico



Source: GAO analysis of industry reports. | GAO-17-642T

In our December 2015 report, we also discussed the oil and gas infrastructure installed and removed in the Gulf over time. Figure 2 shows the annual number of wells drilled and plugged in the Gulf from 1947 through 2014. During this period, lessees drilled a total of 52,223 wells in the Gulf (including 18,447 exploratory wells and 33,776 development wells) and plugged a total of 29,879 wells (including 4,017 temporarily abandoned wells and 25,862 permanently abandoned wells).

Figure 2: Annual Number of Wells Drilled and Plugged in the Gulf of Mexico, 1947-2014



Source: GAO analysis of Bureau of Safety and Environmental Enforcement (BSEE) data. | GAO-17-642T

Data for Figure 2: Annual Number of Wells Drilled and Plugged in the Gulf of Mexico, 1947-2014

Year	Wells drilled	Wells plugged
1947	5	3
1948	19	3
1949	32	8
1950	34	9
1951	4	2
1952	20	3
1953	22	4
1954	82	22
1955	172	41
1956	255	73
1957	399	103
1958	280	62
1959	331	73
1960	429	98
1961	498	91

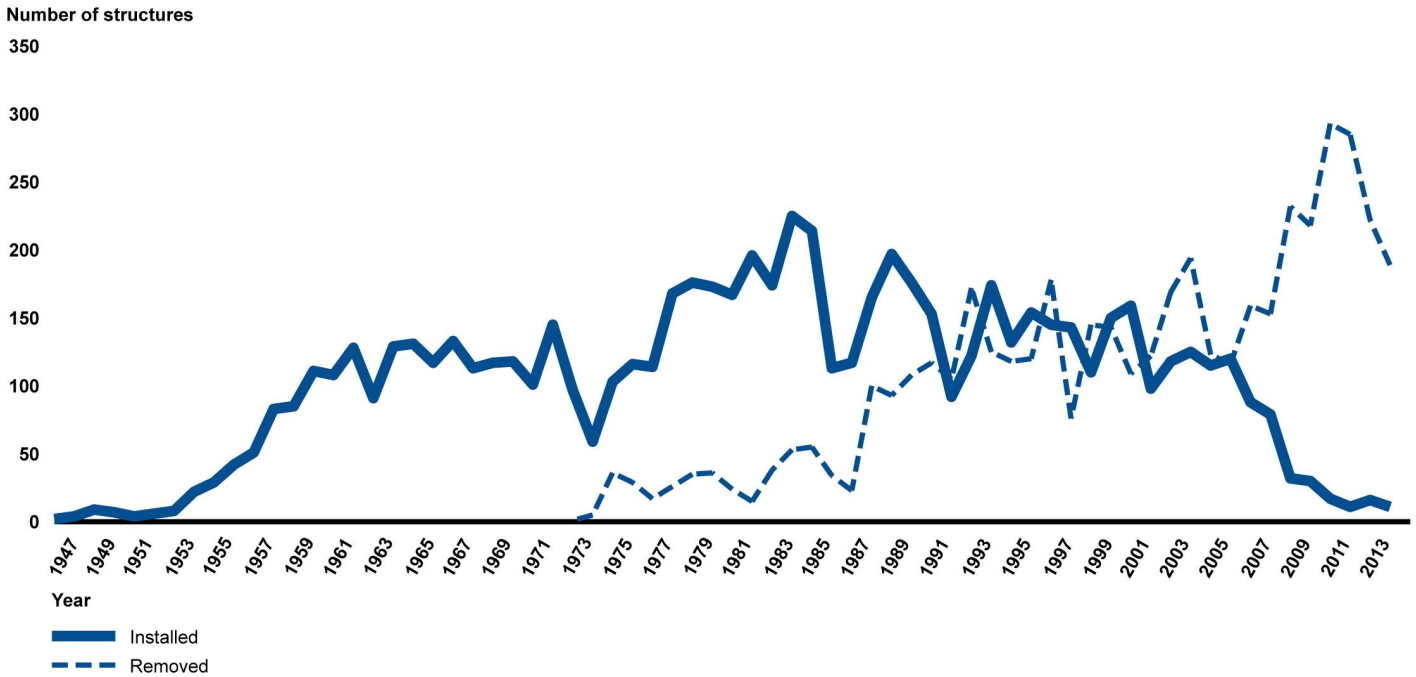
Year	Wells drilled	Wells plugged
1962	551	162
1963	615	175
1964	745	190
1965	840	200
1966	927	329
1967	947	327
1968	1034	290
1969	905	283
1970	937	319
1971	883	398
1972	906	342
1973	888	356
1974	862	420
1975	898	392
1976	1157	388
1977	1326	362
1978	1259	393
1979	1287	352
1980	1309	351
1981	1352	383
1982	1339	349
1983	1247	556
1984	1470	546
1985	1315	548
1986	774	445
1987	939	350
1988	1078	645
1989	1049	580
1990	1148	646
1991	826	665
1992	605	471
1993	998	549
1994	1115	509
1995	1167	428
1996	1253	610
1997	1461	748
1998	1145	460

Year	Wells drilled	Wells plugged
1999	1038	536
2000	1379	661
2001	1262	613
2002	943	521
2003	895	681
2004	916	645
2005	813	516
2006	772	564
2007	617	930
2008	567	834
2009	321	1137
2010	254	1243
2011	266	1277
2012	358	1218
2013	353	1231
2014	330	1160

Note: Wells drilled include exploratory and development wells. Wells plugged include temporary and permanent well abandonments.

Figure 3 shows the annual number of structures installed and removed in the Gulf from 1947 through 2014. During this period, lessees installed a total of 7,038 structures in the Gulf. In addition, starting in the 1970s, lessees began removing structures from the Gulf. Specifically, lessees removed a total of 4,611 structures from 1973 through 2014. Most of the structures installed and removed were fixed platforms and caissons installed in shallow water.

Figure 3: Annual Number of Structures Installed and Removed in the Gulf of Mexico, 1947-2014



Source: GAO analysis of Bureau of Safety and Environmental Enforcement (BSEE) data. | GAO-17-642T

Data table for Figure 3: Annual Number of Structures Installed and Removed in the Gulf of Mexico, 1947-2014

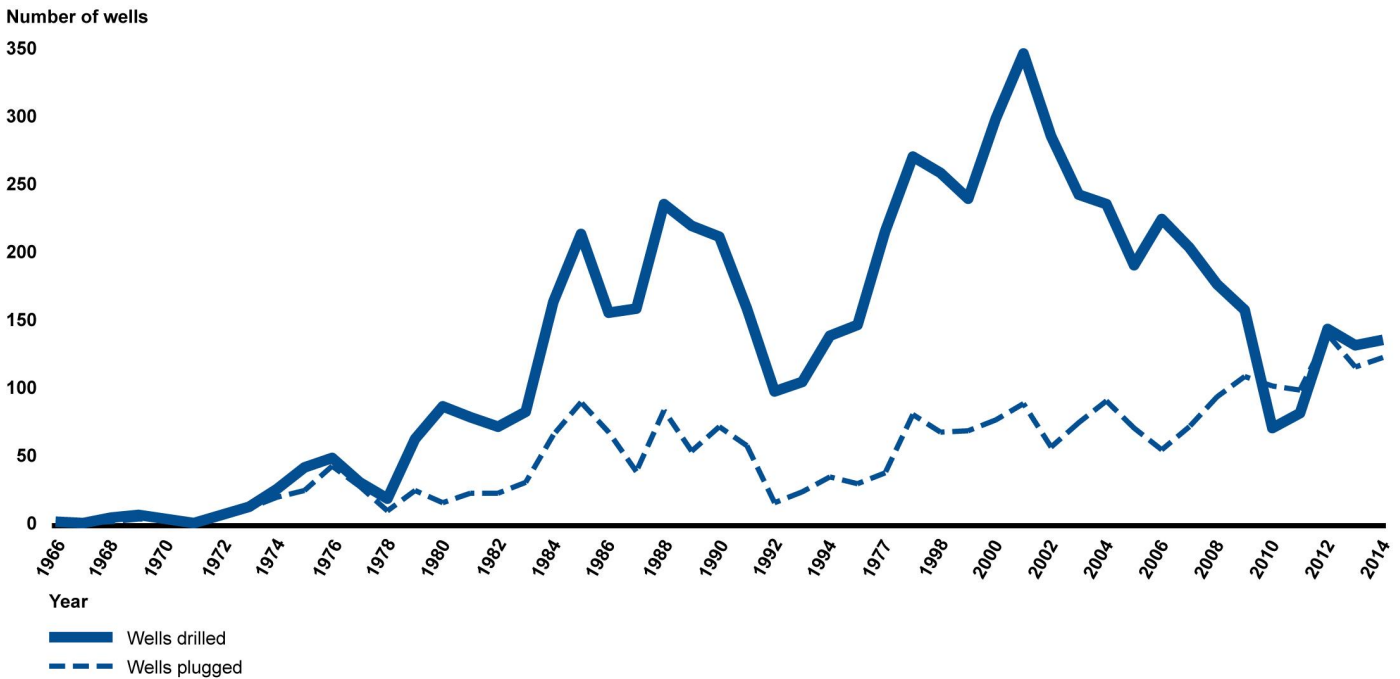
Year	Installed	Removed
1947	2	
1948	4	
1949	9	
1950	7	
1951	4	
1952	6	
1953	8	
1954	22	
1955	29	
1956	42	
1957	51	
1958	83	
1959	85	
1960	111	
1961	108	
1973		0
1974		35
1975		35
1976		25
1977		35
1978		35
1979		35
1980		25
1981		15
1982		45
1983		55
1984		55
1985		35
1986		25
1987		100
1988		100
1989		120
1990		120
1991		100
1992		170
1993		120
1994		120
1995		120
1996		170
1997		80
1998		140
1999		140
2000		100
2001		160
2002		170
2003		190
2004		120
2005		120
2006		160
2007		160
2008		230
2009		230
2010		290
2011		290
2012		230
2013		190
2014		190

Year	Installed	Removed
1962	128	
1963	91	
1964	129	
1965	131	
1966	117	
1967	133	
1968	113	
1969	117	
1970	118	
1971	101	
1972	145	
1973	97	1
1974	59	5
1975	103	36
1976	116	29
1977	114	17
1978	168	26
1979	176	35
1980	173	36
1981	167	24
1982	196	15
1983	174	38
1984	225	53
1985	214	55
1986	113	34
1987	117	23
1988	165	100
1989	197	93
1990	176	108
1991	153	117
1992	92	105
1993	122	172
1994	174	125
1995	132	118
1996	154	120
1997	145	178
1998	143	76

Year	Installed	Removed
1999	110	145
2000	150	143
2001	159	109
2002	98	122
2003	118	169
2004	125	194
2005	115	123
2006	120	116
2007	88	159
2008	79	153
2009	32	232
2010	30	218
2011	17	293
2012	11	285
2013	16	222
2014	11	189

From the late 1940s through the early 1960s, lessees only drilled wells in shallow water. However, starting in the mid-1960s, lessees began drilling wells in deep water. Figure 4 shows the annual number of wells drilled and plugged in deep water in the Gulf from 1966 through 2014. During this period, lessees drilled a total of 6,468 wells (including exploratory and development wells) and plugged a total of 2,489 wells (including temporary and permanently abandoned wells) in deep water. Lessees also installed 112 structures—mostly fixed platforms, spar, tension leg platforms, and floating production systems—and removed 19 structures in deep water during this period.

Figure 4: Annual Number of Deepwater Wells Drilled and Plugged in the Gulf of Mexico, 1966-2014



Source: GAO analysis of Bureau of Safety and Environmental Enforcement (BSEE) data. | GAO-17-642T

Note: Wells drilled include exploratory and development wells drilled in greater than 400 feet of water. Wells plugged include temporary and permanent well abandonments in greater than 400 feet of water.

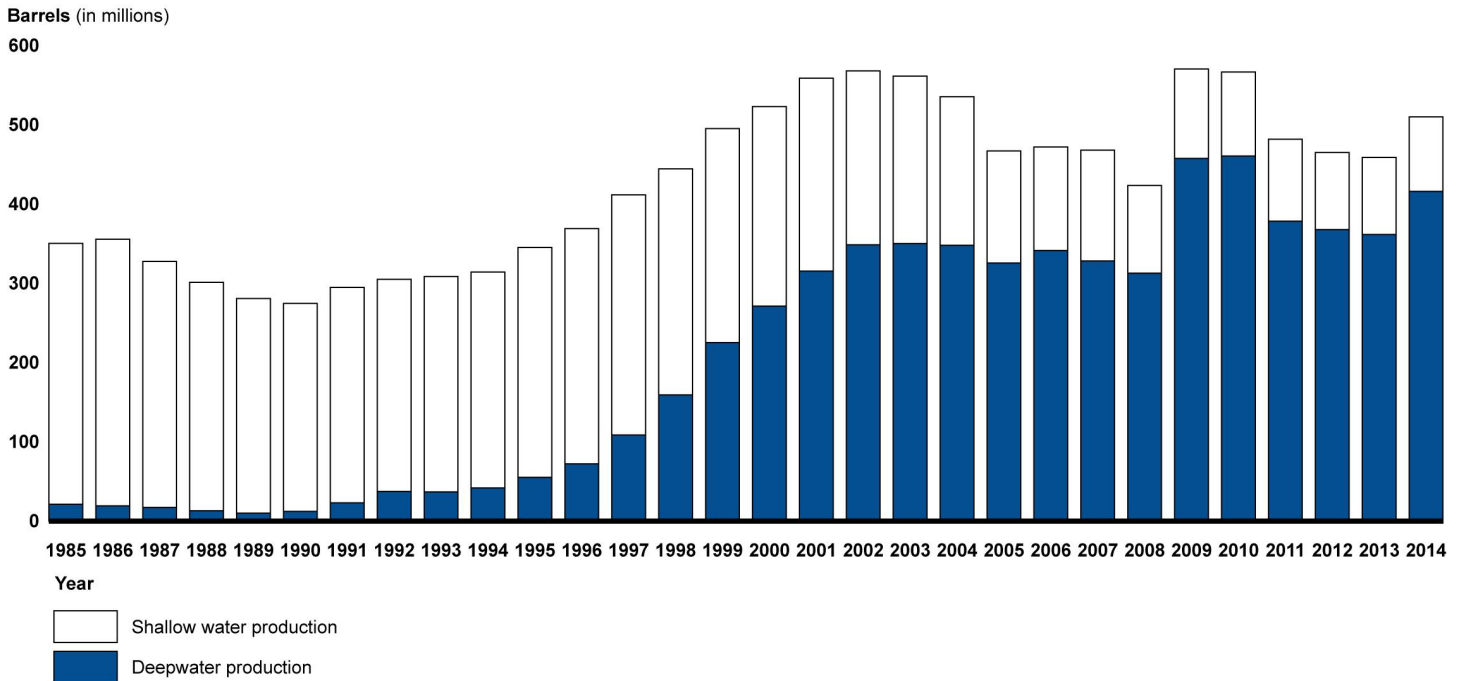
Data table for Figure 4: Annual Number of Deepwater Wells Drilled and Plugged in the Gulf of Mexico, 1966-2014

Year	Wells drilled	Wells plugged
1966	1	1
1967	0	0
1968	4	1
1969	6	3
1970	3	3
1971	0	1
1972	6	4
1973	12	11
1974	25	19
1975	41	24
1976	48	42
1977	30	27

Year	Wells drilled	Wells plugged
1978	18	9
1979	62	24
1980	86	15
1981	78	22
1982	71	22
1983	82	30
1984	163	65
1985	213	89
1986	155	67
1987	158	38
1988	235	83
1989	219	53
1990	211	71
1991	158	57
1992	97	15
1993	104	23
1994	138	34
1995	146	29
1996	215	37
1997	270	80
1998	258	67
1999	239	68
2000	298	76
2001	346	88
2002	285	56
2003	242	74
2004	235	90
2005	190	70
2006	224	54
2007	203	71
2008	176	93
2009	157	108
2010	70	101
2011	81	98
2012	143	139
2013	131	115

From 1985 through 2014, oil production from deepwater wells has increased significantly, as shown in figure 5. While the number of wells drilled decreased in recent years, offshore production increased as lessees drilled wells in deep water that are more productive than wells in shallower water. In 2014, over 80 percent of Gulf oil production occurred in deep water, up from 6 percent in 1985.¹³ According to BSEE officials we interviewed for our December 2015 report, activities in deep water, including drilling and decommissioning, are significantly more expensive than those in shallow water because of the technology required and challenges associated with deep water, such as very high pressures at significant water and well depths.

Figure 5: Oil Production in the Gulf of Mexico, 1985-2014



Source: GAO analysis of Bureau of Ocean Energy Management (BOEM) data. | GAO-17-642T

¹³For these data, Interior defined deep water as depths of greater than 1,000 feet. According to Interior’s data, gas production in deep water also increased dramatically over this period, from less than 1 percent of total Gulf production in 1985 to over 50 percent in 2014.

Data Table for Figure 5: Oil Production in the Gulf of Mexico, 1985-2014 (barrels in millions)

Year	Deepwater Production	Shallow Water Production
1985	21.0538	329.291
1986	19.0771	336.465
1987	17.0709	310.497
1988	12.9846	288.222
1989	10.0076	270.71
1990	12.142	262.446
1991	22.8868	271.887
1992	37.2951	267.57
1993	36.7699	271.826
1994	41.8032	272.293
1995	55.2009	289.874
1996	72.2131	296.656
1997	108.515	303.108
1998	159.233	285.054
1999	225.09	270.082
2000	271.144	251.886
2001	315.392	243.397
2002	348.566	219.312
2003	350.149	211.272
2004	347.954	187.402
2005	325.578	141.347
2006	341.294	130.723
2007	328.133	139.875
2008	312.732	110.688
2009	457.549	112.753
2010	460.647	105.979
2011	378.423	103.276
2012	367.757	97.2466
2013	361.588	97.2551
2014	415.872	94.1071

Interior Requires Lessees to Decommission Offshore Infrastructure and Developed Procedures to Oversee the Process and Estimate the Associated Costs

As we reported in December 2015, Interior requires lessees to decommission offshore oil and gas infrastructure, and Interior's BSEE developed procedures to oversee the decommissioning process for offshore oil and gas infrastructure and to estimate costs associated with decommissioning liabilities.¹⁴ According to Interior regulations, lessees must permanently plug all wells, remove all platforms and other structures, decommission all pipelines, and clear the seafloor of all obstructions created by the lease and pipeline right-of-way operations when the lessee's facility is no longer useful for operations.¹⁵ Generally, lessees must permanently plug wells and remove platforms within 1 year after a lease terminates.¹⁶ As we reported in December 2015, BSEE referred to infrastructure that was no longer useful for operations on active leases as idle infrastructure (or "idle iron") and infrastructure on expired leases as terminated lease infrastructure. In general, BSEE's guidance defined idle infrastructure as follows:¹⁷

- A well is considered idle if it has not been used in the past 5 years for operations associated with exploration or development and production of oil or gas, and if the lessee has no plans for such operations.
- A platform is considered idle if it has been toppled or otherwise destroyed, or it has not been used in the past 5 years for operations associated with exploration or development and production of oil or gas.

¹⁴[GAO-16-40](#).

¹⁵30 C.F.R. § 250.1703 (b)-(e).

¹⁶Lessees may temporarily abandon a well when it is necessary for proper development and production of a lease, subject to certain requirements and procedures. 30 C.F.R. § 250.1721.

¹⁷Department of the Interior, *Notice to Lessees and Operators of Federal Oil and Gas Leases and Pipeline Right-of-way Holders in the Outer Continental Shelf, Gulf of Mexico OCS Region: Decommissioning Guidance for Wells and Platforms*, NTL No. 2010-G05 (Sept. 15, 2010). This guidance expired Oct. 14, 2013, but BSEE continued to use it at the time of our December 2015 report.

According to BSEE officials we spoke with as part of our December 2015 report, companies may postpone decommissioning idle wells and platforms to defer the cost of removal, increase the opportunity for resale, or reduce decommissioning costs through economies of scale and scheduling, among other reasons. However, they said that postponing decommissioning can be costly because the longer a structure is present in the Gulf the greater the likelihood it will be damaged by a storm. According to Interior documentation, decommissioning a storm-damaged structure may cost 15 times or more the cost of decommissioning an undamaged structure. In 2005, Hurricanes Katrina and Rita destroyed 116 structures and significantly damaged another 163 structures and 542 pipelines in the Gulf, according to Interior documentation. According to BSEE officials, as of April 2015, the Gulf contained 13 destroyed structures with 16 associated wells.

Storm-damaged or toppled structures present a greater risk to safety and require difficult and time-consuming salvage work. After preliminary salvage work that can take weeks, divers cut and remove structural components while crane assemblies remove the components and place them on a barge for transport and disposal. Additionally, when working in areas with strong currents and unconsolidated material, coffer dams are often constructed on the seabed to prevent material from slumping back in on the dive crews and equipment.

In December 2015, we reported that BSEE had developed procedures for overseeing the decommissioning of offshore oil and gas infrastructure and estimating costs associated with decommissioning liabilities. Under BSEE's regulations, lessees must apply for approval before plugging wells, removing platforms or other facilities, and decommissioning pipelines. According to BSEE regional officials, they reviewed applications to ensure that they contained the required information (see table 1 below). Once this process was complete, BSEE officials approved a lessee's application, which authorized the lessee to begin decommissioning activities.

Table 1: Bureau of Safety and Environmental Enforcement (BSEE) Requirements for Decommissioning Applications for Offshore Oil and Gas Infrastructure, as of December 2015

Type of application	Description
Plugging wells ^a	Lessees must provide the following information: (1) reason for plugging the well; (2) recent well test and pressure data; (3) maximum possible surface pressure; (4) type and weight of well-control fluid to be used; (5) description of work; (6) current and proposed well schematic and description; and (7) certification by a registered professional engineer of the well abandonment design and procedures, and that all plugs meet BSEE requirements.
Removing platforms or other facilities	Lessees must provide the following information: (1) identification and description of the structure to be removed; (2) description of vessel(s) used to remove structure; (3) identification of purpose for removing structure; (4) description of removal method (e.g., explosives); (5) plans for transportation and disposal or salvage of removed platform; (6) if available, results of any recent biological surveys conducted in vicinity of structure; (7) and plans to protect archaeological and sensitive biological features during removal operations, among other things.
Decommissioning pipelines	If decommissioning a pipeline in place, lessees must submit information on the proposed decommissioning procedures and the length of the segment to be decommissioned and left in place, among other things. If removing a pipeline, lessees must submit information on the proposed removal procedures and length of segment to be removed, among other things.

Source: GAO analysis of BSEE documentation. | GAO-17-642T

^aBSEE has established requirements for an application to permanently plug a well and to temporarily abandon a well. This table reflects requirements for an application to permanently plug a well.

After lessees completed all planned decommissioning, they were required to report to BSEE on the outcome of these activities so that BSEE could verify that all their decommissioning obligations had been met, including clearing the seafloor around wells, platforms, and other facilities. According to BSEE regional officials we spoke with as part of our December 2015 report, they reviewed lessee reports on decommissioning activities to ensure that the results were consistent with the information presented as part of the application process. Table 2 summarizes BSEE’s reporting requirements related to the results of decommissioning activities, as of December 2015.

Table 2: Bureau of Safety and Environmental Enforcement (BSEE) Requirements for Reporting on Decommissioning Results for Offshore Oil and Gas Infrastructure, as of December 2015

Type of report	Description
Plugging wells	Lessees must submit a report within 30 days after plugging a well. This report must include the following information: (1) information included with request submitted before permanently plugging the well along with a final well schematic; (2) description of plugging work; (3) nature and quantities of material used in plugs; and (4) description of methods used for casing removal (including information on explosives, if used), among other things.
Removing platforms or other facilities	Lessees must submit a report within 30 days after removing a platform or other facility. This report must include the following information: (1) summary of removal operations including completion date; (2) description of any mitigation measures taken; and (3) signed statement certifying that the types and amounts of explosives used in removing the platform were consistent with those set forth in the approved removal application.
Decommissioning pipelines	Lessees must submit a report within 30 days after decommissioning a pipeline. This report must include the following information: (1) summary of the decommissioning operation including completion date; (2) description of any mitigation measures taken; and (3) signed statement certifying that the pipeline was decommissioned according to the approved application.
Clearing sites around wells, platforms, and other facilities	Lessees must verify that a site is clear of obstructions within 60 days of plugging a well or removing a platform or other facility. Lessees then must submit a report within 30 days after verifying site clearance to certify to BSEE that all site clearance activities are completed. For wells, this report must include the following information: (1) signed certification that the well site area is cleared of all obstructions; (2) date the verification work was performed and the vessel used; (3) extent of the area surveyed; (4) survey method used; and (5) results of the survey, among other things. For platforms and other facilities, this report must include the following information: (1) letter (signed by the lessee) certifying that the platform or area is cleared of all obstructions and that a company representative witnessed the activities; (2) letter (signed by contractor) certifying that it cleared the platform or area of all obstructions; (3) date that work was performed and vessel used; (4) extent of area surveyed; (5) survey method used; and (6) survey results, among other things.

Source: GAO analysis of BSEE documentation. | GAO-17-642T

In addition to reviewing lessee applications and reports, the BSEE Gulf region identified and tracked idle and terminated lease infrastructure. According to BSEE regional officials we spoke with as part of our December 2015 report, the BSEE Gulf region began identifying and tracking idle lease infrastructure in 2010 and updated a list of this infrastructure on an annual basis. BSEE began identifying and tracking terminated lease infrastructure prior to 2010, according to BSEE regional officials. At the beginning of each calendar year, BSEE regional officials obtained data from Interior’s main data system—the Technical Information Management System—on wells and structures on leases that

meet the criteria for idle and terminated lease infrastructure.¹⁸ Based on these data, BSEE sent a list of idle and terminated lease infrastructure to each lessee, requesting a decommissioning plan and schedule for decommissioning the lessee's inventory. According to BSEE regional officials, BSEE worked with lessees to verify the accuracy of their inventory of idle and terminated lease infrastructure, and BSEE tracked lessees' progress in meeting their schedules.¹⁹

According to BSEE regional officials we spoke with for our December 2015 report, BSEE estimated the costs associated with decommissioning liabilities by counting the number and types of wells, pipeline segments, and structures on a lease and using data on the water depth associated with this infrastructure.²⁰ Using these data, BSEE then calculated the costs associated with (1) plugging and abandoning wells, (2) removing platforms and other structures, (3) decommissioning pipelines, and (4) clearing debris from the site.

In general, the cost to plug wells and remove structures increases as the water depth increases. For example, according to BSEE's methodology at the time of our December 2015 report, its estimate of the cost to plug a dry tree well attached to a fixed structure in shallow water was \$150,000, while its estimate of the cost to plug a subsea well in deep water was a minimum of about \$21 million. Likewise, BSEE's estimates of the costs to remove fixed platforms in shallow water ranged from approximately \$85,000 to \$4.6 million, while its estimate of the cost to remove a floating structure (and associated equipment) in deep water was a minimum of \$30 million.

¹⁸According to the Federal IT Dashboard, the Technical Information Management System is a computerized information system that automates many of the business and regulatory functions of BSEE and BOEM. This system enables staff of the regional and headquarters offices of both BSEE and BOEM to share and combine data; create and print maps; standardize processes, forms, and reports; and promote the electronic submission of data.

¹⁹According to BSEE data, lessees made progress in decommissioning idle infrastructure in the Gulf. Specifically, in 2010, there were 3,233 idle wells and 617 idle platforms in the Gulf and, as of June 15, 2015, there were 1,082 idle wells and 245 idle platforms in the Gulf.

²⁰The BSEE Gulf regional office established a Decommissioning Support Section in December 2013 to estimate costs associated with decommissioning liabilities in the Gulf. Prior to that date, BSEE officials in other sections within the Gulf regional office were assigned the responsibilities associated with estimating these costs.

In our December 2015 report, we found that BSEE generally did not have access to current data on decommissioning costs but had taken steps to address this issue. Prior to December 2015, under BSEE's regulations, lessees were not required to report costs associated with decommissioning activities to BSEE. According to BSEE regional officials, data on decommissioning costs were considered proprietary, and companies generally did not share this information with BSEE. Instead, BSEE regional officials told us that they relied on other sources of data—some of which were decades old and, as a result, likely inaccurate—to estimate costs associated with decommissioning liabilities. For example, according to BSEE regional officials, their estimates for decommissioning liabilities in shallow water were based on data provided by the oil and gas industry in 1995. However, in December 2015, BSEE issued a final rule requiring establishing new requirements for lessees to submit expense information on costs associated with plugging and abandonment, platform removal, and site clearance.²¹

²¹Department of the Interior, Bureau of Safety and Environmental Enforcement, *Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Decommissioning Costs, Final Rule*, 80 Fed. Reg. 75806 (Dec. 4, 2015) (effective Jan. 4, 2016).

Interior Requires Lessees to Provide Financial Assurances for Decommissioning Liabilities, but Our December 2015 Report Found that Interior's Procedures Posed Risks to the Federal Government

As we reported in December 2015, Interior's BOEM requires financial assurances from lessees to cover decommissioning liabilities, but we found that Interior's financial assurance procedures in place at that time posed risks to the federal government.²² Under The Outer Continental Shelf Lands Act, Interior has issued regulations and developed financial assurance procedures to protect the government from incurring costs if a lessee fails to meet its lease obligations, including its obligation to decommission offshore infrastructure.

Under the regulations and procedures in place at the time of our December 2015 report, BOEM regional directors could require a lessee to provide a bond—referred to as a “supplemental bond”—that covers the estimated costs of decommissioning for a lease.²³ BSEE is responsible for estimating costs associated with decommissioning liabilities. If a lessee was unable to accomplish decommissioning obligations as required, the federal government could use the bond to cover decommissioning costs.²⁴ However, where there are co-lessees or prior lessees, if BOEM determined that at least one lessee had sufficient

²²[GAO-16-40](#).

²³According to our December 2015 report, to satisfy the requirement to provide bonds, BOEM accepted surety bonds, U.S. Treasury notes, and other financial instruments if the government's interests were protected. A surety bond is a third-party guarantee that a lessee purchases from a private insurance company or other entity approved by the Department of the Treasury (i.e., listed on Circular No. 570). The lessee must pay a premium to the surety company to maintain the bond.

²⁴In addition to a supplemental bond that may be required from a lessee, under BOEM regulations and procedures, every offshore oil and gas lease must be covered by a general bond that could be used to ensure a lessee complies with regulatory and lease requirements such as inspection fees, civil penalties, decommissioning and rents and royalties. General bonds vary in amount, from \$50,000 to \$3 million, depending on the geographical area and phase of operation covered by the bond. As of June 10, 2015, lessees had provided 604 general bonds with a value of \$517 million.

financial strength to accomplish decommissioning obligations on the lease, BOEM might waive the requirement for a supplemental bond.²⁵

Under BOEM and BSEE regulations, lessee liability is “joint and several”—that is, each lessee is liable for all decommissioning obligations that accrue on the lease during its ownership, including those that accrued prior to its ownership but had not been performed. In addition, a lessee that transfers its ownership rights to another party will continue to be liable for the decommissioning obligations it accrued. According to BOEM officials we spoke with as part of our December 2015 report, BOEM ensured that all decommissioning obligations on offshore leases were required to be covered by either a supplemental bond or a current lessee that had the financial ability to conduct decommissioning.

Under BOEM’s financial assurance procedures in place at the time of our December 2015 report,²⁶ each offshore lease with a decommissioning liability had to be covered by a supplemental bond unless BOEM determined that a lessee had the financial ability to fulfill its decommissioning obligations. BOEM staff evaluated the financial ability of a lessee to fulfill its decommissioning obligations by means of a financial strength test. BOEM’s financial strength test required a lessee to meet the following criteria:

- provide an independently audited financial statement indicating a net worth greater than \$65 million;
- possess a total decommissioning liability (as determined by BSEE) of less than or equal to 50 percent of its audited net worth;

²⁵Each lease may have numerous lessees that have various rights to the lease, including lessees that are record title holders and lessees that are operating rights holders. At the time of our December 2015 report, BOEM required that all lessees agree to one designated operator, and the designated operator generally provides BOEM with the required bonding.

²⁶Department of the Interior, Minerals Management Service, *Notice to Lessees and Operators of Federal Oil, Gas, and Sulfur Leases and Pipeline Right-of-way Holders in the Outer Continental Shelf: Supplemental Bond Procedures*, NTL No. 2008-N07 (Aug. 28, 2008).

- possess total company liabilities of no more than 2 to 3 times the value of the adjusted net worth;^{27, 28} and
- demonstrate reliability, as shown by a record of compliance with laws, regulations and lease terms, among other factors.

According to our December 2015 report, if a lessee passed the financial strength test by demonstrating its financial ability to pay for decommissioning on its leases, BOEM waived its requirement for the lessee to provide supplemental bonds. Other responsible parties on the lease would also be waived from the requirement to provide supplemental bonds.²⁹ According to BOEM officials, BOEM waived these parties as well because the waived lessee could be held responsible if another party on a lease did not fulfill its decommissioning obligations. In addition, a waived lessee might provide financial assurance in the form of a corporate guarantee of the lease obligations of a lessee on another lease.³⁰

According to our December 2015 report, after BOEM waived a lessee from the requirement to provide supplemental bonding, it monitored the financial strength of the lessee to ensure it continued to pass BOEM's financial strength test. BOEM conducted quarterly financial reviews for the first 2 years after a lessee received a waiver and then an annual

²⁷Adjusted net worth includes a percentage of a lessee's proven oil and gas reserves added to a lessee's audited net worth. According to our December 2015 report, BOEM varied the total liability ratio it would accept based on adjusted net worth—for example, a lessee with between \$65 million and \$100 million in adjusted net worth could possess total lessee liabilities of no more than 2 or 2.5 times its adjusted net worth, depending on the size of the company's potential decommissioning liability.

²⁸Alternatively, according to our December 2015 report, BOEM allowed a lessee to use a substitute criterion—the lessee had to demonstrate that it produced in excess of an average of 20,000 barrels of oil equivalent per day on its leases. However, according to BOEM officials, of the 51 waived lessees only 1 or 2 chose to use this alternative criterion.

²⁹In addition to bonds required by BOEM, according to our December 2015 report, some lessees that transferred leases or rights might require the party acquiring the lease to provide a surety bond. This bond protected the transferring party from paying decommissioning costs it might be liable for if the purchasing party was unable to fulfill its decommissioning obligations. According to BOEM officials, these bonds were generally not reported to BOEM, and BOEM did not consider them as financial assurance because BOEM was not a beneficiary of such bonds.

³⁰According to BOEM officials we spoke with for our December 2015 report, nearly all corporate guarantees were between parent companies and subsidiaries.

review thereafter.³¹ In addition, on a weekly basis, BOEM compared the decommissioning obligations (as determined by BSEE) of all waived lessees with the financial information provided by lessee audited financial statements.³² If BOEM found that a lessee no longer passed its financial strength test, BOEM conducted a more in-depth review of a lessee's financial status by reviewing financial statements, credit ratings, and other financial information. BOEM might also conduct an unscheduled financial review if: (1) BSEE revised its estimate of a lessee's decommissioning liability, (2) a lessee's financial status changed as reported by credit rating agencies, or (3) a lessee did not pay the required royalties to the federal government. According to BOEM officials, these reviews could have caused BOEM to revoke a lessee's waiver from the requirement to provide supplemental bonding. For example, in May 2015, BOEM revoked the waiver of one lessee and, according to BOEM officials, the waived lessee and related parties could have been required to provide as much as \$1 billion in supplemental bonds.³³

However, in our December 2015 report, we found that BOEM's financial assurance procedures posed financial risks to the federal government in several ways. In particular, under BOEM's procedures in place at the time, less than 8 percent of estimated decommissioning liabilities in the Gulf were covered by financial assurance mechanisms such as bonds. Specifically, as of October 2015, according to BOEM officials, for an estimated \$38.2 billion in decommissioning liabilities in the Gulf, BOEM held or required about \$2.9 billion in bonds and other financial assurances.³⁴ For \$33.0 billion in decommissioning liabilities, BOEM had waived 47 lessees from the requirement to provide supplemental bonds

³¹According to our December 2015 report, these reviews evaluated the same criteria that BOEM officials used during the initial financial strength test.

³²According to our December 2015 report, as part of these reviews, BOEM determined whether the waived lessee had the ability to pay for all decommissioning costs on leases where the lessee was an owner.

³³According to our December 2015 report, in cases where BOEM revoked a lessee's waiver from the requirement to provide supplemental bonding, the lessee or other responsible parties on a lease or recipients of corporate guarantees would have been required to provide supplemental bonds to cover decommissioning obligations that were no longer covered by a waiver or guarantee.

³⁴As of October 2015, BOEM held about \$1.8 billion in bonds (including supplemental and general bonds) and about \$500 million in trust agreements. In addition, BOEM issued letters requiring lessees to provide about \$600 million in financial assurances.

based on BOEM's reviews of the lessees' financial strength, according to BOEM officials.^{35, 36}

As we have found in prior GAO reports, the use of financial strength tests and corporate guarantees in lieu of bonds pose financial risks to the federal government. Specifically, we found, in August 2005, that the financial assurance mechanisms that impose the lowest costs on the companies using them—such as financial strength tests and corporate guarantees—also typically pose the highest financial risks to the government entity accepting them.³⁷ In that report, we found that, if a company passes a financial strength test but subsequently files for bankruptcy or becomes insolvent, the company in essence is no longer providing financial assurance because it may no longer have the financial capacity to meet its obligations. Such financial deterioration can occur quickly. While companies no longer meeting the financial test are to obtain other financial assurance, they may not be able to obtain or afford to purchase it. In addition, in May 2012, we found that, according to the Bureau of Land Management and the Environmental Protection Agency, corporate guarantees are potentially risky because they are not covered by a specific financial asset such as a bond.³⁸ Therefore, in our December 2015 report, we concluded that BOEM's use of the financial strength test and corporate guarantees in lieu of bonds raised the risk that the federal government would have to pay for offshore decommissioning if lessees did not.

³⁵According to our December 2015 report, for the purposes of ensuring that there was at least one responsible party with the financial ability to fulfill lease decommissioning obligations, BOEM attributed all lease decommissioning liabilities to any waived lessee on a lease (even if other responsible parties were present on the lease). The waived lessee was, with all other lessees, jointly and severally liable for decommissioning and relied on its financial strength to secure the costs of this decommissioning, on behalf of all the jointly and severally liable parties.

³⁶Under Interior regulations and procedures in place at the time of our December 2015 report, regional directors might determine that a supplemental bond was necessary to ensure compliance with a lessee's obligations. According to Interior officials, supplemental bonding became a requirement once the regional director determined that it was necessary.

³⁷GAO, *Environmental Liabilities: EPA Should Do More to Ensure That Liable Parties Meet Their Cleanup Obligations*, [GAO-05-658](#) (Washington, D.C.: Aug. 17, 2005).

³⁸GAO, *Phosphate Mining: Oversight Has Strengthened, but Financial Assurances and Coordination Still Need Improvement*, [GAO-12-505](#) (Washington, D.C.: May 4, 2012).

According to BOEM officials we spoke with for our December 2015 report, BOEM recognized the financial risks associated with its financial assurance procedures and planned to revise its procedures to reduce risk. Specifically, BOEM officials told us that BOEM's planned revisions would eliminate the use of financial strength tests to completely waive lessees from the requirement to provide supplemental bonding. Instead, BOEM planned to conduct financial reviews of lessees' financial status and, based on those reviews, assign lessees an amount of credit that may be used to reduce required bonding associated with decommissioning liabilities on leases. Lessees would be able to apportion this credit to leases, in coordination with other responsible parties on those leases, to ensure that lease decommissioning liabilities are fully covered by apportioned credit or supplemental bonds. However, because it was unclear whether BOEM's planned revisions would improve its procedures and the extent to which these revisions would increase the amount of bonding that lessees provide, we recommended in our December 2015 report, that BOEM complete its plans to revise its financial assurance procedures, and Interior concurred.

Since the issuance of our December 2015 report, BOEM revised its financial assurance procedures. Specifically, on July 12, 2016, BOEM issued revised procedures, effective on September 12, 2016, containing several changes to BOEM's policy concerning additional financial security requirements for leases, pipeline rights-of-way, and rights-of-use and easement, including the use of alternative measures of financial strength.³⁹ In December 2016, BOEM issued orders to sole liability lessees requiring them to provide additional security.⁴⁰ In January 2017, BOEM delayed implementation of its revised financial assurance procedures for 6 months. The following month, BOEM withdrew its December 2016 orders to sole liability lessees, stating that these orders will be discussed as part of the six-month review process related to the financial assurance procedures. We have not evaluated the extent to which these financial assurance procedures and orders, if fully

³⁹Department of the Interior, Bureau of Ocean Energy Management, *Notice to Lessees and Operators of Federal Oil and Gas, and Sulfur Leases, and Holders of Pipeline Right-of-Way and Right-of-Use and Easement Grants in the Outer Continental Shelf: Requiring Additional Security*, NTL No. 2016-NO1 (July 12, 2016).

⁴⁰Sole liability properties are leases, rights-of-way, or rights of use and easements for which the holder is the only liable party, i.e., there are no co-lessees, operating rights owners and/or other grant holders, and no prior interest holders liable to meet the lease and/or grant obligations.

implemented, would address the concerns we have identified about the financial risks to the federal government. We will continue to monitor Interior's actions to address our recommendations.

Chairman Gosar, Ranking Member Lowenthal, and Members of the Subcommittee, this completes my prepared statement. I would be pleased to respond to any questions that you may have at this time.

GAO Contact

If you or your staff have any questions about this testimony, please contact Frank Rusco, Director, Natural Resources and Environment, at (202) 512-3841 or ruscof@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement.

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