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Report to Congressional Requesters

April 2000

MARITIME INDUSTRY

As U.S. Single-Hull Oil Vessels Are Eliminated, Few Double-Hull Vessels May Replace Them

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Contents

Abbreviations

DOT	Department of Transportation
GAO	General Accounting Office

GAO
Accountability * Integrity * Reliability

United States General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

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April 28, 2000

The Honorable Rodney P. Frelinghuysen
The Honorable Frank LoBiondo
House of Representatives

Ships and barges are a major link in the country's oil transportation network, both for transporting crude oil to U.S. refineries and for transporting refined oil products to market. The Oil Pollution Act of 1990 made extensive changes designed to make these shipments environmentally safer. One of these changes was to phase out all shipment of oil cargoes in single-hull vessels in U.S. waters from 1995 through January 1, 2015, with the oldest and largest vessels generally being phased out first.[1] The total number of U.S.-built vessels that were subject to the act's requirements is unknown. Coast Guard records do not indicate how many single-hull vessels had phase-out dates prior to October 1999 and had been removed from service. However, after January 1, 2015, only double-hull vessels may be used. Double-hull vessels are considered to be environmentally safer because their inner hull helps protect against oil spills if the outer hull is punctured. As of October 1999, 144 U.S.-built single-hull vessels larger than 5,000 gross tons were still certified to carry oil. The U.S. Coast Guard is responsible for ensuring that these vessels do not carry oil after their specific phase-out deadline has passed.

[1]Single-hull means that the vessel's hull has one layer of steel. While the 1990 act's provisions apply to single-hull vessels built both in the United States and abroad, this report focuses on U.S.–built vessels. These vessels occupy a special niche in shipping. Under the Jones Act (46 U.S.C. App. Sec. 883), they are the only vessels that can move cargo among U.S. ports. This report also focuses on U.S.–built vessels larger than 5,000 gross tons. Ships and barges smaller than 5,000 gross tons are not subject to phase-out until 2015 and usually are operated on rivers and lakes rather than in the open sea.

You asked us to examine several issues related to the process for phasing out single-hull oil vessels and replacing them with double-hull vessels. Although the 1990 act contained no specific authorization for extending phase-out deadlines, owners had the opportunity, under a 1979 regulation, to reduce the documented carrying capacity of their vessels.[2] Because phase-out deadlines were based in part on capacity, with larger vessels phased-out first, such reductions might be sufficient to automatically move the vessel into a category with a later phase-out deadline. In 1997, the Congress rescinded an owner's ability to extend a scheduled phase-out in this way and instead gave owners until January 1, 1998 to apply to the Coast Guard for a specific waiver allowing an extension. You were concerned about the extent to which phase-out deadlines have been extended, as well as about the extent to which double-hull replacement vessels were coming on line. As agreed with your offices, we focused our work on the following:

- How has the Coast Guard implemented the act's phase-out requirements for U.S.-built single-hull vessels larger than 5,000 gross tons?
- To what extent have owners received extensions or waivers that extend the phase-out deadlines for their single-hull vessels?
- To what extent are owners replacing or planning to replace or convert their single-hull vessels, and what effect do their plans have on the ability to provide sufficient oil-carrying shipping capacity in the future?

Results in Brief

The Coast Guard's approach for implementing the Oil Pollution Act's phase-out requirements relies on inspectors at individual ports to identify single-hull vessels subject to the act's requirements, use the act's phase-out schedule to establish a deadline for the vessel, and ensure that vessels are not being used for transporting oil after the deadline has passed. Inspectors monitor these vessels as part of their existing inspection and boarding activities. If the Coast Guard were to find that a vessel is still being used to transport oil beyond its phase-out date, it has authority to require the vessel to cease operation, revoke its certificate, and potentially levy a civil penalty against the owner or operator. So far, no instances of noncompliance have been identified.

[2]There is nothing that prevents a vessel owner from altering a vessel's tonnage by redesignating how an internal space may be used. For example, 33 CFR 157.10, (Nov. 1979) required vessel owners to dedicate tanks to segregated ballast, and vessel owners took legitimate tonnage reductions.

In all, 17 vessels extended their original phase-out deadlines by reducing their tonnages. Sixteen did so before Congress rescinded their ability to extend their scheduled phase-out deadline pursuant to a 1979 regulation. One vessel received a Department of Transportation waiver from this congressional prohibition and was granted an extension pursuant to a subsequent law. Five of these 17 vessels are no longer in service as oil carriers. Extensions ranged from 1 year to 12 years, with none taking the phase-out deadline beyond the act's final deadline of 2015. Vessel owners are no longer eligible to apply for extensions. To ensure that vessels with extended phase-out dates are maintained and operated in accordance with established safety standards, the Coast Guard periodically inspects them as part of its ongoing inspection program.

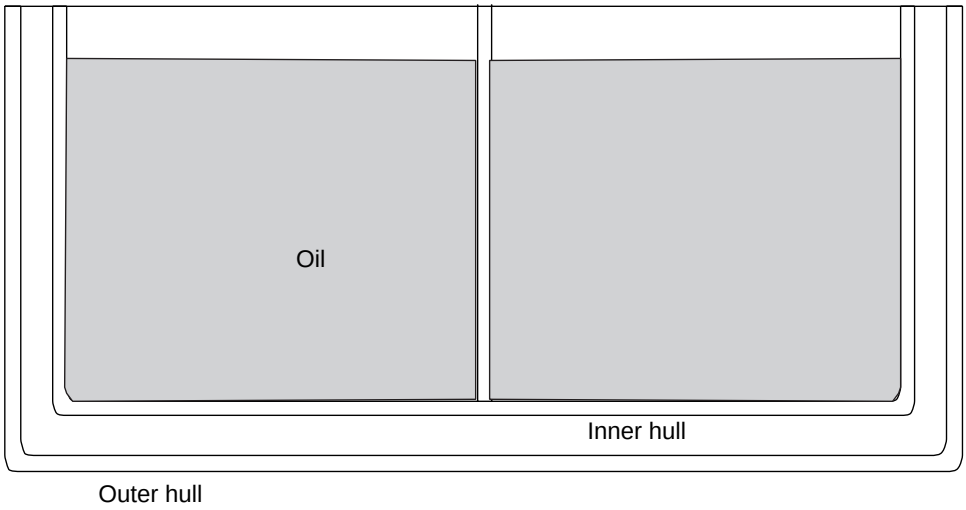
The 22 domestic shipping companies we contacted that own single-hull oil vessels said that they have only limited plans to replace or convert these vessels. Most said they would simply take their vessels out of service when their phase-out deadlines occurred and would take a "wait-and-see" approach to making replacements in the future. The industry currently has more vessels than needed to meet the current shipping demand, and vessel owners said the rates they receive for shipping oil products are currently not high enough to justify investing in replacements for the future. After taking into account available double-hull capacity and the limited amount of planned double-hull replacements, the phase-out of single-hull vessels will on balance cut total carrying capacity by about 1.9 million gross tons by the end of 2005, assuming no major changes in industry replacement plans. Decisions by ship owners to make only limited replacements will probably have little effect on the ability to meet demand over the next few years, because the available supply of U.S.-built vessels is still expected to be greater than demand for their services. Beyond the next few years, however, the potential effect of limited replacement is less certain. Shipping company officials, along with oil company officials we contacted, said that if enough U.S.-built vessels could not be found to move oil between U.S. ports, their most likely alternatives would be to import oil products from foreign ports using non-U.S. ships or to make greater use of domestic pipelines. Two parts of the country—New England and Florida—are not served by pipelines; however, both regions are served extensively by tank barges and U.S. and non-U.S. tankers.

Background

The Oil Pollution Act of 1990 brought sweeping changes in the way oil is transported in the United States and globally. Passed after the 1989 *Exxon Valdez* oil spill, the act's provisions included a phased-in requirement for

transporting nearly all oil cargoes in double-hulled vessels. In a single-hulled vessel, such as the *Exxon Valdez*, a rupture of the vessel's outer steel skin can release the oil cargo into the water, but a double-hull vessel has another steel skin inside, separated from the outer skin by about 6 feet (see fig. 1). This inner hull provides an extra layer of protection in the case of grounding, collision, or other accident.

Figure 1: Simplified Cross-Section of Double-Hull Structure



The 1990 act requires most single-hull vessels carrying oil in bulk as cargo or cargo residue to either convert to double-hull configuration or stop operating as an oil tanker in U.S. waters.[3] The act phases out single-hull tank vessels over time, with the first phase-outs occurring in 1995 and the last in 2015. The act based each vessel's specific phase-out deadline on the vessel's age, gross tonnage, and hull configuration (see table 1). In general, vessels that are older, larger, or without double sides or double bottoms face earlier phase-out deadlines, while vessels that are newer, smaller, or double-sided or double-bottomed have later deadlines. After a vessel's phase-out date, it can continue to ship other types of products, but it can no longer be used to transport oil in U.S. waters.

[3]Some types of vessels are excluded from this requirement. Examples include oil spill response vessels, offshore supply vessels, and single-hull vessels smaller than 5,000 gross tons that have a double containment system but are not fully double-hulled.

Table 1: Summary of Characteristics Affecting Phase-Out Deadlines Under the 1990 Act

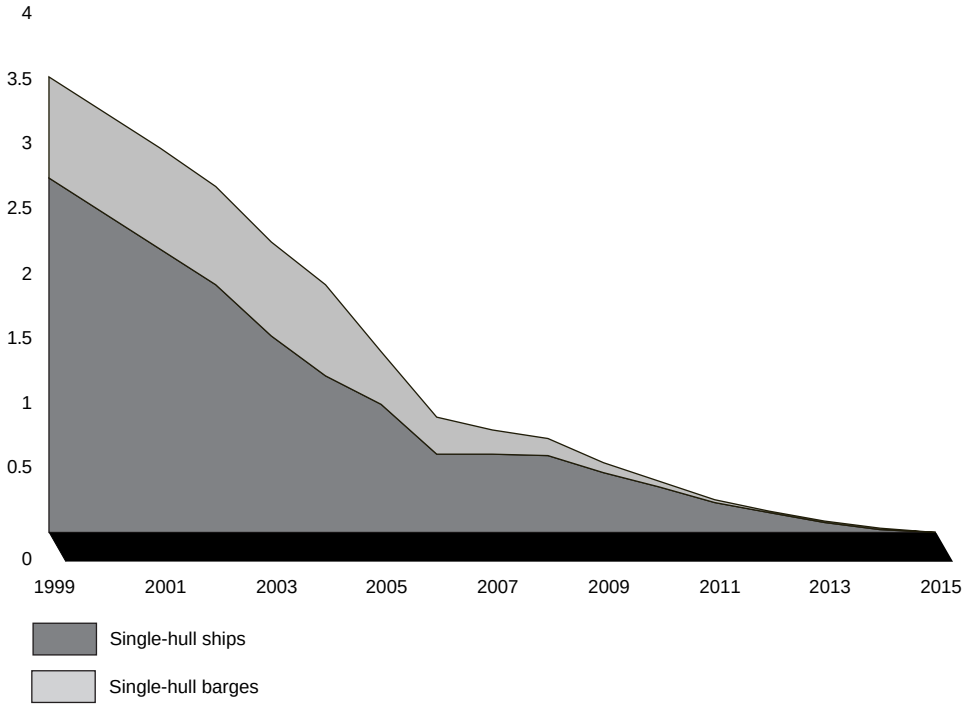
Characteristic	Application
Age	Age is determined by construction date or date of last major conversion. Generally, older vessels are phased out first. For example, a 30,000-gross ton vessel built in 1974 has a phase-out deadline of January 1, 1999. A similarly sized vessel built in1980 has a phase-out deadline of its anniversary date in 2003.
Gross tonnage	Gross tonnage is not related to the vessel's displacement (or weight), but rather is a measure of the volume of the vessel as measured in "tons" of 100 cubic feet. Certain areas that are not used for carrying cargo, such as the wheelhouse or ballast tanks, are excluded. The capacity of all U.S. vessels must be measured by organizations approved by the Coast Guard. Generally, larger vessels are phased out first. For example, a 1979 vessel rated at 30,000 gross tons has a phase-out deadline of its anniversary date in 2002. A 1979 vessel rated at 5,000 gross tons has a phase-out deadline of January 1, 2005.
Hull configuration	Vessels affected by the 1990 act can have three main hull configurations: single-hull, single-hull with double sides, or double-bottom. (Vessels with only double sides or double bottoms are not considered double-hulled.) The phase-out schedule allows a maximum of 5 additional years of service life for a single-hull tank vessel with double sides or a double bottom.

The act's provision to phaseout single-hull vessels has particular implications for the U.S. shipbuilding industry. Most double-hulled ships are built outside the United States, where shipbuilding costs are often decidedly lower. However, under the Jones Act, foreign-built vessels are limited in the shipments they can make between U.S. ports. The Jones Act provides that a vessel cannot transport cargoes among U.S. ports unless it is built in the United States, registered (or "flagged") in the United States, owned by a U.S. citizen, and operated by a U.S. crew. This provision affects two key types of oil shipments:

- Transporting crude oil from the end of the Trans-Alaska Pipeline in Valdez, Alaska, to U.S. refineries. Alaska's North Slope is the largest domestic source of crude oil. Most of the oil is shipped to refineries in Washington State and California.
- Transporting oil products from U.S. refineries to U.S. ports or transporting products among U.S. ports. These trades are served by tankers and coastal tank barges. Tankers and tank barges compete in both intercoastal (e.g., U.S. Gulf/Atlantic) and intracoastal trades. Shippers generally prefer tankers in long-haul, time sensitive trades because they are not as likely as tank barges to get weatherbound. In addition to coastwise shipments, tank barges, which have smaller drafts than tankers, are used for shipments to shallow draft areas on U.S. inland waterways.

Currently, the U.S.-built oil transportation fleet is made up of 194 vessels–144 single-hull and 50 double-hull. By the end of 2005, about 60 percent of the current fleet of 144 single-hull tank vessels carrying oil, representing 61 percent of single-hulled carrying capacity, will be phased out under the deadlines established in the 1990 act (see fig. 2). The reductions will be most dramatic for ships, where only about 36 percent of the carrying capacity will remain. Barge capacity will remain somewhat higher, at 52 percent. Five years later, by 2011, 90 percent of the single-hull gross tonnage of tank ships and barges will have been phased out.

Figure 2: Effect of the 1990 Act's Phase-Out Deadlines on the Gross Tonnage of U.S.-Built, Single-Hull Tank Ships and Barges Carrying Oil, 1999 to 2015 (Millions of Gross Tons)



Source: GAO analysis of oil tanker replacement data.

Coast Guard Integrated the Phase-Out Requirements Into its Existing Monitoring Program

To meet the 1990 act's requirements for phasing out single-hull vessels, the Coast Guard needed to identify each single-hull vessel carrying oil as a cargo and establish a phase-out deadline for it. The Coast Guard achieved these two tasks through its existing vessel inspection program. Each vessel operating in U.S. waters is inspected a minimum of once a year, according to Coast Guard inspectors.[4] As part of these routine inspections, inspectors identify the single-hull vessels that are approved to carry oil and, using the act's provisions as a guide, establish a phase-out deadline for each one. Coast Guard headquarters also required inspectors to document the phase-out deadline in two places. One was the certificate of inspection or tank vessel examination letter,[5] ensuring that the owner had been formally notified of the date. The other was in the Coast Guard's Marine Safety Information System, a computer database, ensuring that other inspectors would also know about the vessel's phase-out deadline.

The Coast Guard relies on the same network of inspections and boardings to ensure that vessels are not transporting oil or related products past their phase-out deadline. Each vessel is reviewed for compliance at least once a year, when the recertification or mid-period inspection is conducted or when the tank vessel examination letter is renewed. Coast Guard inspectors also have the opportunity to include such vessels as part of other inspections and boardings during the year.[6] Coast Guard officials believe this combination of opportunities allows them to ensure that single-hull vessels are complying with the act's requirements and are maintained in a safe condition throughout their life as oil tankers.

If an inspection or boarding shows that a vessel is carrying oil products in violation of its phase-out deadline, the Coast Guard has the authority to prohibit the ship from entering U.S. ports or traveling in U.S. waters. In

[4]Vessels must undergo a recertification inspection every 2 years, with a mid-period inspection in the off year. Inspections are also conducted when a ship is drydocked (twice in 5 years) and whenever a vessel undergoes major repairs or alterations. Coast Guard inspectors may also conduct other examinations or boardings during the year.

[5]The certificate of inspection is for vessels registered in the United States; the tank vessel examination letter is for vessels registered in other countries.

[6]Vessel traffic at U.S. ports is too great for the Coast Guard to inspect every ship and barge each time they enter a U.S. port. Instead, under a process known as Port State Control, the Coast Guard targets its inspection and boarding activities on the basis of risk. For example, inspectors may put greater emphasis on vessels with a documented history of problems or vessels that carry more environmentally sensitive cargoes.

addition, if such a vessel were to arrive at a U.S. port, the Coast Guard could require the vessel to cease operation and fine the owner or operator. According to a Coast Guard headquarters official, no such incidents have occurred.

Relatively Few Extensions or Waivers Obtained

The 1990 act contained no specific authorization for waiving or extending phase-out deadlines. However, since the act's deadlines were based in part on the size of the vessel—with larger vessels generally having earlier deadlines—owners could extend their deadline by reducing the documented carrying capacity of their vessels.[7] Until the Congress took action on November 18, 1997, to rescind a vessel owner's prerogative to reduce a vessel's gross tonnage, the 1990 act did not prohibit a vessel owner from reducing a vessel's gross tonnage and then applying that reduced tonnage to the vessel's 1990 act phase-out date. If the reduction was large enough, the vessel would move into a different size category with a later phase-out deadline. In all, 17 vessels had their phase-out dates extended. (Owners have since removed five of these vessels from oil transportation.) All but 1 of the 17 vessels were changed before July 1, 1997, which is the cut-off date for altering a vessel's gross tonnage and having the reduced tonnage count toward a vessel's 1990 act phase-out date. A new law now allows an extension only if the Coast Guard grants the waiver established by Congress.[8] For vessels that received extensions or waivers, no additional monitoring is planned for these vessels beyond the Coast Guard's usual system of inspections and boardings.

Sixteen Vessels Extended Their Phase-out Date by Reducing Carrying Capacity

According to a Coast Guard official, the carrying capacity of a ship or barge is generally measured in tons and reflected in the vessel's "gross tonnage." Such determinations are made by certain organizations, called authorized measurement organizations, that have Coast Guard authorization to establish a vessel's gross tonnage, also known as the vessel's carrying capacity. They establish gross tonnage by physically measuring the vessel

[7]Under a 1979 regulation (33 CFR 157.10), owners had the opportunity to reduce the documented carrying capacity of their vessels. Ship owners could reduce their carrying capacity by converting one or more cargo tanks into ballast tanks. As part of the regulatory change, vessel owners were allowed to remove the capacity of these segregated ballast tanks from the vessel's gross tonnage.

[8]The ability to apply for a waiver ended January 1, 1998.

or by using dimensions provided by the vessel's owner and applying a formula.

Vessel owners have always had the prerogative to alter their vessel's tonnage by redesignating how the vessel's internal spaces maybe used. As the tonnage of a vessel is the key determinant of a broad range of impacts on a vessel, such as its regulatory status and port fees, vessel owners will balance these decisions against the earning capacity of the vessel (cargo carrying capacity is counted toward gross tonnage). For example, a vessel owner could deduct a cargo-carrying tank from a vessel's gross tonnage by re-designating it as a tank that only carries ballast water. This may exempt a vessel from certain regulatory requirements and reduce its port fees, but it also reduces the earning capacity of the vessel. With the passage of the 1990 act, it offered an additional benefit—the reduced capacity might automatically put the vessel into a lower gross tonnage category with a longer phase-out period. Moved into a different category, a single-hull ship or barge might be able to continue carrying oil for several more years. Up to November 18, 1997, a vessel owner was not prevented from making tonnage reductions to a vessel and then applying the reduced tonnage to the vessel's 1990 act phase-out date. Furthermore, according to a Coast Guard official, in 1979 oil-carrying vessels were required to have segregated ballast tanks—tanks that could carry only ballast water and could not be used to carry oil. To comply, owners generally had to convert one or more cargo tanks into ballast tanks. As part of this conversion, vessel owners were allowed to remove the capacity of these segregated ballast tanks from the vessel's gross tonnage.

We identified 16 vessels with phase-out deadlines that were extended prior to July 1997 due to a reduction in their gross tonnage—12 were ships and 4 were barges. Seven of the 11 ships and all 4 of the barges currently have Coast Guard certification to carry oil products.[9] Operating periods for the seven ships were extended by 1 to 4 years; operating periods for the barges were extended by 9 to 12 years. For example, when one ship initially rated at 35,589 gross tons converted some of its cargo tanks into a ballast tank, the reduction of 5,679 gross tons extended its phase-out deadline from 1998 to 2001.

[9]The five other ships were converted to freighters and are no longer certified to carry oil products.

Some reductions were done specifically to extend the phase-out deadline, while some were done for other reasons, according to owners and operators. For example, one operator said the carrying capacity of two ships was reduced so that the ships could enter certain ports that would not allow larger vessels.

One Vessel Received Extension Through Waiver

In 1997, the Congress limited the shipping industry's ability to extend phase-out dealines. Public Law 105-85 mandated that after July 1, 1997, a vessel's phase-out deadline would not change as a result of a reduction in carrying capacity unless the U.S. Department of Transportation (DOT) (the Coast Guard's parent agency) granted a waiver allowing it. To receive the waiver, the law required that the conversion would have to (1) result in a significant reduction in the risk of a discharge of oil and (2) involve conversion of cargo tanks into protectively located segregated ballast tanks.[10] The law also established a deadline for waiver applications—January 1, 1998.

[10]To establish what constitutes a significant reduction in the risk of a discharge of oil, the Coast Guard contracted for a study evaluating various sizes of ships and barges. The study equated a significant risk reduction with converting enough space from cargo to protectively located segregated ballast tanks so that the vessel's "outflow signature" (the expected outflow of oil considering a range of accidental grounding and collision scenarios) is reduced by at least 15 percent.

Although DOT received initial inquiries for more than 30 vessels, it received only one completed application for a waiver by the deadline. The application was for reducing a barge's gross tonnage from 5,455 gross tons to less than 5,000, a move that placed it in a category with a phase-out deadline of January 1, 2008, rather than January 1, 2005. DOT approved the waiver for this barge on July 6, 1999, after a public comment period, giving the barge an extra 3 years to operate as an oil carrier. The Coast Guard's consideration of the owner's documentation showed that the barge met the law's requirement for significantly reducing the risk of a discharge of oil.[11]

Vessels With Extensions Will Receive Normal Monitoring

The Coast Guard is relying on its regular system of inspections and boardings to monitor the vessels that have extensions and that are still certified to carry oil. According to Coast Guard field office officials, these vessels will be inspected at least annually, but most likely they will be boarded and examined several times during routine cargo monitoring operations to ensure that they are maintained in a safe condition. The Coast Guard does not plan any specific additional monitoring activity for these vessels.

[11]There is one other way in which those owners who initially inquired about their vessels could conceivably still receive a waiver. The law requires that any conversion be completed before the later of "the date by which the first special survey of the tank vessel is required to be completed after the date of the enactment of the National Defense Authorization Act for Fiscal Year 1998; or July 1, 1999." The National Defense Authorization Act for Fiscal Year 1998 was enacted on November 18, 1997. A "special survey" is a classification society term for the survey that is done every 5 years. It is conceivable that a tank vessel could have had a special survey immediately prior to November 18, 1997, and so would have 5 years from that date to complete the conversion. Accordingly, the last possible date a vessel could undergo conversion and receive a waiver is November 18, 2002. After that date, the opportunity for the waiver authorized by Public Law 105-85 (46 U.S.C. 3703a) will be ended.

Owners' Current Plans Call for Limited Replacement of Single-Hull Vessels

Owners of U.S.-built vessels are not making extensive plans to replace single-hull ships and barges, mainly because they consider the rates they currently receive to ship oil products as insufficient to justify investing in replacement vessels. Most of the 22 vessel owners we interviewed said that the shipping industry has more vessels than are needed to meet existing demand. As a result, most owners are adopting a "wait and see" approach to replacing vessels. Over the next few years, the remaining single-hull vessels that have not yet been phased out together with existing double-hull tank vessels' capacity, orders for new construction or retrofitted tank barges, foreign tanker capacity, and domestic pipeline capacities should be sufficient to meet demand for oil transportation service as additional single-hull tanker capacity is phased out.[12] Beyond the next few years, whether the limited number of double-hull vessels will be sufficient to meet demand as additional single-hull vessels are phased out is somewhat less certain.

Few Double-Hull Replacement Vessels Built, Ordered, or Planned

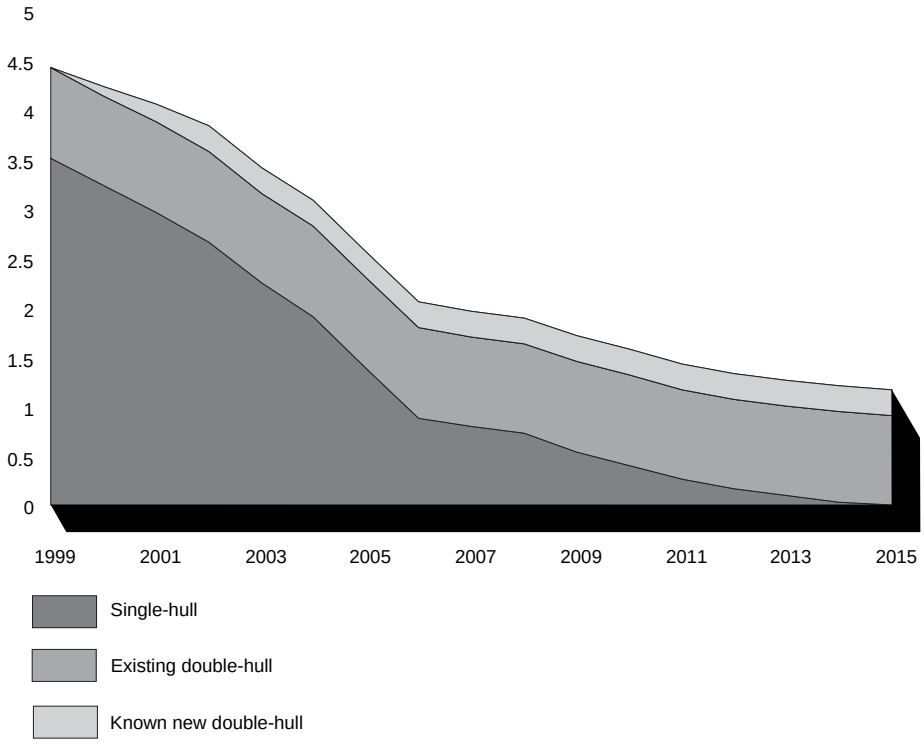
If owner's current plans do not change appreciably, there will likely be a substantial drop in the shipping industry's capacity to carry oil cargoes in U.S.-built vessels within the next few years (see fig. 3). U.S.-built double-hull ships and barges currently in service have a capacity of about 900,000 gross tons, or about one-fourth as much as the single-hull fleet.[13]

Double-hull vessels under construction or under contract will add about 400,000 more gross tons through 2002. However, the 1990 act's phaseout of single-hull vessels will cut total carrying capacity 42 percent by the end of 2005, assuming no major changes in the industry's replacement plans. On balance, however, because of single-hull vessel phase-outs, there will be a net reduction of about 1.9 million gross tons by the end of 2005. If no additional replacement capacity is added, gross tonnage will continue to decline beyond 2006.

[12]Single-hull tank barges will not be significantly affected by the 1990 act until year 2005.

[13]This includes double-hull vessels built before 1995 as well as those built and placed into service since that time.

Figure 3: Effect of the 1990 Act's Phase-Out Deadlines on the Overall Gross Tonnage of U.S.-Built Fleet, 1999 to 2015 (Millions of Gross Tons)



Source: GAO's analysis of oil tanker replacement data.

Since phaseouts began in 1995, the number of double-hulled ships and barges built in U.S. shipyards has been relatively small. In all, 17 double-hull vessels, with a combined capacity of about 310,000 gross tons, have been placed in service from January 1995 to January 2000. As table 2 shows, these vessels are a combination of new and retrofitted [14] ships and barges. In all, the 17 vessels are owned by six different companies.

[14]Retrofitted means that an existing vessel has been modified to meet the new requirements.

Table 2: U.S.-Built, Double-Hull Vessels in Service Since January 1, 1995

Thousands of gross tons		
Vessel type	**Number**	**Capacity**
Ships		
New	5	152
Retrofitted	4	86
Barges		
New	7	61
Retrofitted	1	11
Total	**17**	**310**

Source: Prepared by GAO using year 2000 data.

To obtain an indication of shipping companies' future plans with regard to building or ordering new double-hull vessels or turning existing single-hulled vessels into double-hulled ones, we contacted 22 companies that own U.S.-flagged vessels certified to carry cargoes of oil. Together, these companies hold the vast majority of the remaining single-hull vessels. Four of these companies operate vessels that carry crude oil, while 18 operate vessels that carry refined oil products.

Companies Shipping Crude Oil

U.S.-built ships move crude oil from essentially one location—the southern terminus of the Trans-Alaska Pipeline at Valdez, Alaska. The four companies we contacted that ship crude oil carry nearly all of this oil. The four companies are affiliated with the companies that produce the oil and do not compete with each other in the rates they charge. Thus, the needed amount of shipping capacity is dictated primarily by the amount of oil field production. As of October 1999, the four companies' plans for building or ordering double-hull vessels varied, as follows:

- *One company is building new ships.* This company is the only company in either segment of the market—crude oil or refined oil products—with firm commitments to build new double-hull ships.[15] Because of declining oil production on Alaska's North Slope, the company did not replace four single-hull ships phased out in 1998 and 1999. However, the

[15]We contacted nine shipyard company officials who said that no companies outside of these we interviewed had made firm commitments to build ships.

company decided that it would need three ships to replace the three single-hull ships and one double-bottom ship being phased out from 2000 through 2004. The company awarded a contract for three new ships with an option to purchase two more. The first ship is under construction, with delivery set for the summer of 2000. Each of the three ships will have a capacity of 125,000 gross tons. A company official indicated they might need two additional ships in the 2003 to 2004 time frame but have not contracted for them.

- *One company said it was too early to make commitments.* This company, which also operates three double-hull ships, operates two single-hull ships and six double-bottom ships that will not begin to reach phase-out deadlines until 2004. A company official said that it will delay decisions about whether to order new ships for as long as possible to take advantage of the most current oil production data available. Given the 2-year lead time needed to build such ships, the company expects to make its decisions as to whether to purchase these ships in 2000 and 2001. Company officials have held discussions with several shipyards.
- *One company is phasing out its only ship.* This company operates one ship—a single-hull ship with a phase-out deadline in 2000. Company officials had decided not to replace it but had not yet decided how to deal with its share of Alaskan crude oil production.
- *One company would not disclose its plans.* This company, which owns nine ships with phase-out deadlines from 2000 through 2014, declined to discuss its plans for replacing any of these ships. However, it appears that at least three ships will not be replaced by their phase-out deadlines because there is likely not enough time left to build them before the phase-out deadlines pass, according to shipyard officials. One of these ships must be phased out this year and the other two in 2002.

Companies Carrying Refined Oil Products

Companies that ship oil products from refineries or among ports are generally involved in a competitive market where charter rates depend on the supply of shipping services and the demand for them. Therefore, the companies' decision about whether to replace their single-hulled vessels depends heavily on whether they anticipate that charter rates will be high enough to justify the investment in new vessels. The 18 companies we contacted that operate in this market collectively own the vast majority of U.S.-built ships and barges certified to ship oil products in domestic markets. As of October 1999, their plans to build or order double-hulled vessels were as follows:

- *Four companies had at least some replacement plans.* The four companies said they were proceeding with plans to replace at least one

single-hull ship or barge with a double-hulled vessel. One had built four new barges, one was building one new ship, one was building one new barge, and one was planning to convert used barges. These vessels had a combined capacity of about 270,000 gross tons.

- *Fourteen companies had no firm replacement plans.* These companies said that they had no firm plans to replace any single-hull vessels with double-hull vessels. Three of them had already decided they would not replace their single-hull ships, while the rest were still waiting before making a final decision.[16]

High Cost of New Vessels and Low Charter Rates Strongly Influence the "Wait-and-See" Approach of Many Owners

The main reason for the limited interest in replacing single-hull vessels is that most companies view current shipping rates as too low to allow them to recoup their investment. New double-hull vessels represent large investments; a crude oil carrier can cost $195 million, a ship for refined products $75 million, and an ocean-going barge can cost as much as $20 million. DOT's Maritime Administration and some companies we contacted that were involved in shipping oil products told us charter rates ranged between $16,000 and $22,000 per day for ships and between $11,500 and $13,000 per day for barges of about 10,000 gross tons in 1999. These officials told us that charter rates would need to rise to between $30,000 and $35,000 per day for ships and $20,000 per day for barges of about 10,000 gross tons before decisions to build would become economically justifiable.

Charter rates have remained basically the same for a number of years, reflecting declining demand for shipping and a resulting overcapacity in the industry, according to oil and shipping company officials.[17] Several companies have turned oil-carrying ships into grain carriers. Shipping industry officials we interviewed do not see charter rates rising

[16]Five of these companies already have at least one double-hull vessel. To the degree they already have double-hull capacity, they would be able to continue to ship oil products even if they did not replace any single-hull vessels that still remain to be phased out.

[17]Declining demand for shipping is the result of several factors that are still continuing in the domestic oil market. One factor is oil companies' increased propensity to exchange their oil products with each other. For example, a company with refineries in Southern California and another with refineries in Northern California might agree to an exchange, reducing the need to shop the company's own product to the other part of the state. A second factor is greater use of pipelines, which in recent years have carried about two-thirds of the nation's crude oil and petroleum products, compared with about half in 1978, according to statistics compiled or developed by the oil pipeline industry.

significantly in the near future. Charter rates through 2005 will likely be from $25,000 to $27,000 a day for 20,000 to 30,000 gross ton product tank ships and from $13,000 to $17,000 a day for tug/tank barge units above 10,000 gross tons, according to officials at DOT's Maritime Administration. Most vessel owners we interviewed said that such rates were not high enough to justify building new vessels or retrofitting existing ones.

Impact of Limited Replacement Efforts Is Small in Short Term, Largely Unknown in Longer Term

Vessel owners and oil company officials we spoke with were unanimous in saying that the shipping industry has too much capacity and most said that, in the short term, limited replacement of single-hull ships and barges would have little effect on the ability to meet oil shipping demands. Many officials also indicated that they expected the oil industry to continue to become more efficient in supplying markets in other ways, thereby limiting the need to transport oil by water. Even in the longer term, most industry officials did not believe that a potential shortfall in shipping capacity would develop. However, to help identify the alternative actions if oil producers suddenly confronted a problem in obtaining enough U.S.-built vessel capacity, we (1) looked at the ability of the U.S. shipbuilding industry to meet a sudden surge in demand and (2) asked oil company executives what actions they would likely take if the capacity of U.S.-built ships was not enough to meet demand.

Sudden Future Demand for Ships Could Strap U.S. Shipbuilding Capacity

The U.S. shipbuilding industry's ability to meet a sudden surge of orders for double-hull tank vessels is limited, based on our discussions with officials of nine U.S. shipyards, which collectively represent most of the U.S. capacity for building tank ships or tank barges of this size. These officials indicated that shipyard capacity is currently available for building double-hull ships and barges but confirmed that because of current shipping rates, most shipping companies are not conducting negotiations that are likely to lead to contracts in the immediate future. They said that if many companies wait for several years and then suddenly place orders, delays may result. Besides the difficulty of accommodating a large number of orders for double-hull vessels, shipyard officials cited the need to meet other competing demands for shipyard capacity, including cruise ships, ferries, military ships, container ships, floating casinos, inland barges, and offshore service vessels and drilling rigs. Avoiding a shortage of shipyard capacity, they said, would require ordering double-hull ships and barges over a longer period, starting immediately.

Greater Use of Foreign Ships and Domestic Pipelines Seen as Main Alternatives if Capacity Shortage Develops

Oil company and shipping company officials, when asked what alternatives the industry would likely use if it were to face a shortfall of domestic shipping capacity, most often cited greater use of foreign ships. Under the Jones Act, a foreign-built ship cannot transport cargo between two U.S. ports or between a refinery in the United States and a U.S. port. However, these ships may bring products from a foreign port to a domestic port. As an alternative, a large foreign ship carrying crude oil, refined products, or both could anchor offshore and transfer its cargo to smaller vessels.

The other alternative frequently mentioned by oil and shipping company officials we interviewed was the greater use of pipelines. One official told us that some areas of the country had additional pipeline capacity available and could move more oil products if necessary. However, two parts of the country—New England and Florida—are served extensively by tank barges and U.S. and non-U.S. tankers and are not served by pipelines. New England is not served by pipelines because there is not enough demand for oil products to justify the investment in building a pipeline, according to an oil pipeline official we interviewed. Florida is currently not served by pipelines, and none are under construction or planned.[18]

Conclusions

A clear picture of the degree to which single-hull ships and barges will be replaced by double-hull vessels is probably several years away. Shipping companies who own and operate these vessels base their replacement decisions largely on whether they believe that new or converted vessels are worth the investment, and most companies apparently are not encouraged that a ready demand for replacement vessels will emerge. Until the shipping companies have more confidence in this regard, it is unlikely that many more of them will venture into building new double-hull vessels or converting existing ones.

For now, there appears to be relatively little reason for general concern about such inaction. Overall, the industry currently has more than enough shipping capacity, and it can continue to turn to other alternatives, such as pipelines, tank barges, or foreign vessels, to bring products to many of these markets. Given the importance of oil to the economy, the issue of adequate shipping capacity merits regular examination, particularly

[18]Besides these two primary alternatives, other possibilities mentioned by some officials included greater shipment by truck or (in the Northeast) reducing the need to transport oil products by converting more electrical generating plants to natural gas.

considering that most of the single-hull vessels will be phased out from operation in several years.

Recommendation

To determine whether sufficient shipping capacity exists to meet domestic oil needs, we recommend that the Secretary of Transportation direct the Administrator of the Maritime Administration to regularly assess the progress being made to replace single-hull vessels with double-hull vessels and to report the results of these assessments to the relevant House and Senate committees of jurisdiction.

Agency Comments

We provided a draft of this report to the Department of Transportation, the Coast Guard and the Maritime Administration for their review and comment. DOT had no comments on the report. Coast Guard officials, including the Chief of the Vessel Compliance Division, Marine Safety and Environmental Protection Directorate, and Maritime Administration officials, including the Chief of the Division of Economics, told us that they generally agreed with the facts presented in the report, and with its conclusions and recommendation. Additionally, Coast Guard officials asked that we clarify information in the report on the circumstances under which vessel owners receive waivers to extend their phase-out dates. The Maritime Administration told us that while the 1990 act will significantly affect the replacement of single-hull tank ships starting in year 2000, it will not have a significant impact on the replacement of tank barges until 2005. The Maritime officials also told us that the replacement of single-hull tank ships are stifled by high shipyard prices relative to foreign alternatives. We revised our draft report to include this information. Both the Coast Guard and Maritime Administration officials provided us with other technical clarifications, which we incorporated as appropriate.

As requested, unless you publicly announce its contents earlier, we plan no further distribution of this report until 10 days from the date of this report. We will then send copies to the appropriate congressional committees; the Honorable Rodney E. Slater, Secretary of Transportation; Admiral James M. Loy, Commandant of the Coast Guard; the Honorable Jacob J. Lew, Director, Office of Management and Budget; and other interested parties. Copies will be made available to others upon request.

If you or your staffs have any questions about this report, please contact me at (202) 512-2834.

John H. Anderson, Jr.
Director, Transportation Issues

Scope and Methodology

To address how the Coast Guard has implemented the 1990 Oil Pollution Act's phase-out requirements, we developed a list of all known vessels to which the phase-out requirements might apply. To do so, we contacted the U.S. Maritime Administration and the U.S. Coast Guard (both within the Department of Transportation) to obtain information about all vessels over 5,000 gross tons that are certified to carry oil products. We limited our work to vessels above 5,000 gross tons because single-hull vessels smaller than 5,000 gross tons are not subject to phase-out until 2015—the end of the phase-out period and are usually not operated in the open sea, which was the focus for our work. We used the information provided to develop a list of single-hull ships and barges and their phase-out deadlines as of October 1999. We also used this information to develop a list of existing double hull-ships and barges. As further preparation, we reviewed pertinent federal statutes and Coast Guard guidance for determining and documenting the phase-out deadlines. To determine how the Coast Guard actually implemented these requirements and ensures that vessels are not transporting oil products past their phase-out deadline, we interviewed personnel responsible for the vessel inspection program at Coast Guard headquarters in Washington, D.C., and at a field office in Seattle, Washington.

To determine the extent to which vessel owners received extensions to phase-out deadlines, we first reviewed pertinent federal statutes and Coast Guard regulations to identify those circumstances under which vessels could extend their phase-out deadlines. Information on resizing a vessel's cargo-carrying capacity—and thereby extending its phase-out date—was contained in Coast Guard files for individual ships but was not readily retrievable from these files. We therefore reviewed the history of each vessel's phase-out date to determine if an extension had occurred. Coast Guard headquarters officials assisted in determining those situations in which extensions had occurred. We then attempted to contact the vessel owners to determine the specific reasons for changing the vessel's carrying capacity. We interviewed Coast Guard officials to obtain information about the monitoring efforts given to these vessels and officials' views about the effects of extending phase-out deadlines.

To assess to what extent vessel owners are replacing or planning to replace single-hull vessels, we relied on the lists we had developed of all single- and double-hull vessels over 5,000 gross tons certified to carry oil products as of October 1999. We used these lists to determine current carrying capacity and the portion of that capacity scheduled to be phased out annually between 2000 and 2015. To obtain some indication of shipping companies'

future plans with regard to possibly ordering new double-hull vessels or turning existing single-hulled vessels into double-hulled ones, we contacted 24 companies that own U.S.-flagged vessels certified to carry oil products. Twenty-two of these companies provided us with information about their plans and explained their reasons for building or not building new double-hull vessels. We asked these same officials, which included officials from four oil companies, for their views on the alternatives the industry would take if faced with a shortfall of domestic shipping capacity. We also interviewed officials from nine shipbuilding companies to corroborate the information we had received about construction under way or under contract, as well as to obtain the industry's views on the capability and capacity to build double hull vessels currently and in the future. For industrywide information on the current supply of vessels carrying oil products and the future demand for such shipping, we interviewed representatives from American Petroleum Institute, American Shipbuilding Association, Association of Oil Pipelines, The International Association of Independent Tanker Owners, Shipbuilders Council of America, and The American Waterways Operators.

We conducted our review from May 1999 through March 2000 in accordance with generally accepted government auditing standards.

GAO Contacts and Staff Acknowledgments

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