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# Navy John Lewis (TAO-205) Class Oiler Shipbuilding Program: Background and Issues for Congress

(name redacted)

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March 17, 2017

Congressional Research Service

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[www.crs.gov](http://www.crs.gov)

R43546

## Summary

The John Lewis (TAO-205) class oiler shipbuilding program, previously known as the TAO(X) program, is a program to build a new class of 20 fleet oilers for the Navy. The primary role of Navy fleet oilers is to transfer fuel to Navy surface ships that are operating at sea, so as to extend the operating endurance of these surface ships and their embarked aircraft.

The first ship in the TAO-205 program was funded in FY2016 at a cost of \$674.2 million. The Navy's proposed FY2017 budget requests \$73.1 million in advance procurement (AP) funding for the second ship, which the Navy wants to procure in FY2018.

As part of its acquisition strategy for the TAO-205 program, the Navy issued a combined solicitation consisting of separate Requests for Proposals (RFPs) for the detailed design and construction of the first six ships in the TAO-205 class, and for an amphibious assault ship called LHA-8 that the Navy wants to procure in FY2017. The Navy limited bidding in this combined solicitation to two bidders—General Dynamics' National Steel and Shipbuilding Company (GD/NASSCO) and Huntington Ingalls Industries' Ingalls Shipbuilding (HII/Ingalls)—on the grounds that these are the only two shipbuilders that have the capability to build both TAO-205s and LHA-8. On June 30, 2016, the Navy awarded a fixed price incentive block buy contract for the first six TAO-205s to GD/NASSCO, and the contract for LHA-8 to HII/Ingalls.

The Navy was granted authority for using a block buy contract for the first six TAO-205s by Section 127 of the FY2016 National Defense Authorization Act (S. 1356/P.L. 114-92 of November 25, 2015). The Navy estimates that the block buy contract will reduce the procurement cost of the second through sixth TAO-205 by an average of about \$45 million each, compared to costs under the standard or default DOD approach of annual contracting.

Issues for Congress for FY2017 regarding the TAO-205 program include the following:

- whether to approve the Navy's plan to procure the second TAO-205 class ship in FY2018 (with advance procurement funding in FY2017), or instead accelerate the procurement of the ship to FY2017 (with all, or at least most, of the ship's procurement cost provided in FY2017);
- whether to provide additional advance procurement funding for the TAO-205 program in FY2017 to finance economic order quantity (EOQ) purchases (i.e., up-front batch purchases) of components for the first six TAO-205s, so as to further reduce the cost of the six ships; and
- whether to encourage or direct the Navy to build TAO-205s with more ship self-defense equipment than currently planned by the Navy.

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## Introduction

This report provides background information and issues for Congress on the John Lewis (TAO-205) class oiler shipbuilding program, a program to build a new class of 20 fleet oilers for the Navy. The TAO-205 program was previously known as the TAO(X) program. The first ship in the program was funded in FY2016 at a cost of \$674.2 million. The Navy's proposed FY2017 budget requests \$73.1 million in advance procurement (AP) funding for the second ship, which the Navy wants to procure in FY2018.

Issues for Congress for FY2017 regarding the TAO-205 program include the following: whether to approve the Navy's plan to procure the second TAO-205 class ship in FY2018 (with advance procurement funding in FY2017), or instead accelerate the procurement of the ship to FY2017 (with all, or at least most, of the ship's procurement cost provided in FY2017); whether to provide additional advance procurement funding for the TAO-205 program in FY2017 to finance economic order quantity (EOQ) purchases (i.e., up-front batch purchases) of components for the first six TAO-205s, so as to further reduce the cost of the six ships; and whether to encourage or direct the Navy to build TAO-205s with more ship self-defense equipment than currently planned by the Navy.

Decisions that Congress makes regarding the program could affect Navy capabilities and funding requirements and the U.S. shipbuilding industrial base.

## Background

### Strategic and Budgetary Context

For an overview of the strategic and budgetary context in which the TAO-205 program and other Navy shipbuilding programs may be considered, see CRS Report RL32665, *Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*, by (name redacted) .

### Role of Navy Fleet Oilers

The primary role of Navy fleet oilers is to transfer fuel to Navy surface ships that are operating at sea, so as to extend the operating endurance of these surface ships and their embarked aircraft. Fleet oilers also provide other surface ships with lubricants, fresh water, and small amounts of dry cargo. Fleet oilers transfer fuel and other supplies to other surface ships in operations called underway replenishments (UNREPs). During an UNREP, an oiler steams next to the receiving ship and transfers fuel by hose (see **Figure 1**, **Figure 2**, and **Figure 3**).<sup>1</sup>

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<sup>1</sup> The Navy states that

A typical connected replenishment starts when a warship makes an "approach" on a CLF ship. The CLF ship maintains steady course and speed while the "customer ship" approaches and comes alongside the CLF ship, matching course and speed. The distance between the two ships is usually between 120-200 feet. The CLF ship then passes heavy metal wires, to the customer ship, that are connected at the replenishment stations. These wires are placed under tension to support fuel hoses for refueling operations or trolleys that move pallets of provisions, ammunition, or other cargo from ship to ship. Ships with flight decks can also receive provisions and ammunition via vertical replenishment. During this evolution a helicopter transfers cargo in external sling loads, or in the case of mail or passengers, inside the helicopter.

(Statement of Mr. F. Scott DiLisio, Director, Strategic Mobility / Combat Logistics Division, (continued...))

**Figure 1. Fleet Oiler Conducting an UNREP**



**Source:** Navy photo accessed May 5, 2014, at [http://www.navy.mil/view\\_image.asp?id=163895](http://www.navy.mil/view_image.asp?id=163895). The Navy states that the photo is dated October 24, 2013, and shows the oiler *Tippecanoe* (TAO-199) extending its fuel probe to the Aegis cruiser *USS Antietam* (CG-54), a part of the George Washington (CVN-73) Carrier Strike Group, in the South China Sea.

Oilers are one kind of Navy UNREP ship; other Navy UNREP ships include ammunition ships, dry cargo ships, and multiproduct replenishment ships. The Navy's UNREP ships are known more formally as the Navy's combat logistics force (CLF). Most of the Navy's CLF ships are operated by MSC.

Navy oilers carry the designation TAO (sometimes written as T-AO). The T means that the ships are operated by the Military Sealift Command (MSC) with a mostly-civilian crew; the A means it is an auxiliary ship of some kind; and the O means that it is, specifically, an oiler.

Although the role of fleet oilers might not be considered as glamorous as that of other Navy ships, fleet oilers are critical to the Navy's ability to operate in forward-deployed areas around the world on a sustained basis. The U.S. Navy's ability to perform UNREP operations in a safe and efficient manner on a routine basis is a skill that many other navies lack. An absence of fleet oilers would significantly complicate the Navy's ability to operate at sea on a sustained basis in areas such as the Western Pacific or the Indian Ocean/Persian Gulf region. The Navy states that

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Office of the Chief of Naval Operations, on the Logistics and Sealift Force Requirements and Force Structure Assessment Before the House Armed Services Committee Seapower and Projection Forces Subcommittee, July 30, 2014, p. 3.)

the ability to rearm, refuel and re-provision our ships at sea, independent of any restrictions placed on it by a foreign country, is critical to the Navy's ability to project warfighting power from the sea.

As the lifeline of resupply to Navy operating forces underway, the ships of the Navy's Combat Logistic Force (CLF) enable Carrier Strike Groups and Amphibious Ready Groups to operate forward and remain on station during peacetime and war, with minimal reliance on host nation support.<sup>2</sup>

**Figure 2. Fleet Oiler Conducting an UNREP**



**Source:** Navy photo accessed May 5, 2014, at [http://www.navy.mil/view\\_image.asp?id=61415](http://www.navy.mil/view_image.asp?id=61415). The Navy states that the photo is dated July 13, 2008, and shows the oiler *Leroy Grumman* (TAO-195) refueling the frigate *Underwood* (FFG-36) during an exercise with the Iwo Jima (LHD-7) Expeditionary Strike Group in the Atlantic Ocean.

## Existing Henry J. Kaiser (TAO-187) Class Oilers

The Navy's existing force of fleet oilers consists of 15 Henry J. Kaiser (TAO-187) class ships (**Figure 4**).<sup>3</sup> These ships were procured between FY1982 and FY1989 and entered service between 1986 and 1996. They have an expected service life of 35 years; the first ship in the class will reach that age in 2021. The ships are about 677 feet long and have a full load displacement of

<sup>2</sup> Statement of Mr. F. Scott DiLisio, Director, Strategic Mobility / Combat Logistics Division, Office of the Chief of Naval Operations, on the Logistics and Sealift Force Requirements and Force Structure Assessment Before the House Armed Services Committee Seapower and Projection Forces Subcommittee, July 30, 2014, pp. 2-3.

<sup>3</sup> The oilers shown in **Figure 1**, **Figure 2**, and **Figure 3** are also Kaiser-class class oilers.

about 41,000 tons, including about 26,500 tons of fuel and other cargo. The ships were built by Avondale Shipyards of New Orleans, LA, a shipyard that eventually became part of the shipbuilding firm Huntington Ingalls Industries (HII). HII has wound down Navy shipbuilding operations at Avondale and plans to have Avondale exit the Navy shipbuilding business. (HII continues to operate two other shipyards that build Navy ships.)

**Figure 3. Fleet Oiler Conducting an UNREP**



**Source:** Navy photo accessed May 5, 2014, at [http://www.navy.mil/view\\_image.asp?id=1737](http://www.navy.mil/view_image.asp?id=1737). The Navy states that the photo is dated June 19, 2002, and shows the oiler *Walter S. Diehl* (TAO-193), at center, conducting simultaneous UNREPs with the aircraft carrier *John F. Kennedy* (CV-67) and the Aegis destroyer *Hopper* (DDG-70). CV-67, a conventionally powered carrier, has since retired from the Navy, and all of the Navy's aircraft carriers today are nuclear powered. Even so, Navy oilers continue to conduct UNREPs with Navy aircraft carriers to provide fuel for the carriers' embarked air wings.

## TAO-205 Program

### Program Name

The TAO-205 class program was originally called the TAO(X) program, with the (X) meaning that the exact design of the ship had not yet been determined. On January 6, 2015, Secretary of the Navy Ray Mabus announced that ships in the class will be named for “people who fought for civil rights and human rights,”<sup>4</sup> and that the first ship in the class, TAO-205, which was procured

<sup>4</sup> Valerie Insinna, “Navy to Name Next Generation Oilers for Civil Rights Icons,” *Defense Daily*, January 7, 2016: 4. For more on Navy ship names, see CRS Report RS22478, *Navy Ship Names: Background for Congress*, by (name redacted) .



in FY2016, will be named for Representative John Lewis.<sup>5</sup> The class will henceforth be known as the John Lewis (TAO-205) class. Many Navy documents, however, continue to refer to the program as the TAO(X) program. On July 28, 2016, it was reported that the Navy will name the second through sixth ships in the class (i.e., TAOs 206 through 210) for Harvey Milk, Earl Warren, Robert F. Kennedy, Lucy Stone, and Sojourner Truth, respectively.<sup>6</sup>

**Figure 4. Henry J. Kaiser (TAO-187) Class Fleet Oiler**



**Source:** U.S. Navy image accessed April 14, 2014, at <http://www.navy.mil/management/photodb/photos/130703-N-TG831-240.jpg>. (The oilers shown in **Figure 1**, **Figure 2**, and **Figure 3** are also Kaiser-class class oilers.)

## Program Quantity

As part of its previous force-level goal, which called for achieving and maintaining a fleet of 308 ships of various types and numbers, the Navy had originally envisaged procuring a total of 17 new TAO-205s as replacements for the 15 Kaiser-class ships. In December 2016, however, the Navy released a new force-level goal that calls for achieving and maintaining a fleet of 355 ships. The Navy has informed CRS and the Congressional Budget Office (CBO) that this 355-ship

<sup>5</sup> “Secretary of the Navy Ray Mabus Names Fleet Replenishment Oiler,” *Navy News Service*, January 6, 2016; Sam LaGrone, “SECNAV Mabus Names First TAO(X) Next Generation Oiler After Rep. John Lewis,” *USNI News*, January 6, 2016.

<sup>6</sup> Sam LaGrone, “Navy to Name Ship After Gay Rights Activist Harvey Milk,” *USNI News*, July 28, 2016. See also “Document: Notice to Congress on 8 Proposed Navy Ship Names,” *USNI News*, August 3, 2016. See also “SECNAV to Name Next John Lewis-Class Oiler After Civil and Human Rights Leader Harvey Milk,” *Navy Live*, July 30, 2016; “Secretary of the Navy Names Newest Fleet Replenishment Oiler, USNS Harvey Milk,” *Navy News Service*, August 17, 2016.

force-level goal includes a total of 20 oilers,<sup>7</sup> implying a planned procurement of 20 TAO-205s. The required number of oilers largely depends on the numbers and types of other surface ships (and their embarked aircraft) to be refueled, and the projected operational patterns for these ships and aircraft.

### Program Schedule

The Navy procured the first TAO-205 in FY2016; the ship is scheduled to be delivered in August 2020. The Navy wants to procure the remaining 19 TAO-205s in FY2018 and subsequent years at a rate of at least one ship per year.

### Program Funding

**Table 1** shows procurement funding for the TAO-205 program under the Navy’s proposed FY2017 budget. The funding is located in the Navy’s regular shipbuilding account, called the Shipbuilding and Conversion, Navy (SCN) account.

**Table 1. TAO-205 Program Procurement Funding**  
(Millions of dollars, rounded to nearest tenth)

	FY16	FY17 (req.)	FY18 (proj.)	FY19 (proj.)	FY20 (proj.)	FY21 (proj.)
Procurement funding	674.2	73.1	530.4	519.0	544.2	539.6
Procurement quantity	1	0	1	1	1	1

**Source:** Navy FY2017 budget submission. Procurement funding figures in this table include both procurement and advance procurement (AP) funding.

The estimated procurement cost of the lead ship includes detailed design/non-recurring engineering (DD/NRE) costs for the class. This one-time cost accounts for most of the difference in estimated procurement cost between the first ship and the follow-on ships. Incorporating most or all of the DD/NRE cost for a class of ship into the procurement cost of the lead ship in the class is a traditional budgeting practice for Navy shipbuilding programs.

### Ship Capabilities and Design

The Navy anticipates that the TAO-205 class design will have capabilities similar to those of the Kaiser-class ships, and will rely on existing technologies rather than new technologies. To guard against oil spills, TAO-205s are to be double-hulled, like modern commercial oil tankers, with a space between the two hulls to protect the inner hull against events that puncture the outer hull. (The final Kaiser-class ships are double-hulled, but earlier ships in the class are single-hulled.)

**Figure 5** shows an artist’s rendering of reported design for the TAO-205 class.

<sup>7</sup> Source Navy information paper dated February 28, 2017, provided to CRS and CBO March 8, 2017.

Figure 5. Artist's rendering of TAO-205



**Source:** “US Navy Picks General Dynamics to Build First Six T-AO 205 Replenishment Oilers,” *NavalToday.com*, July 1, 2016, which credits the image to GD/NASSCO. The background shows the skyline of San Diego, where GD/NASSCO is located.

At an April 24, 2013, hearing on Navy and Air Force acquisition before the Seapower and Projection Forces subcommittee of the House Armed Services Committee, Sean Stackley, the Assistant Secretary of the Navy for Research, Development, and Acquisition (i.e., the Navy’s acquisition executive), testified that

we’re doing design studies leading up to the ultimate competition for procurement in 2016. We are, in fact, doing everything we can to just leverage mature technologies.

There is no invention or breakthrough required for TAOX. We want to leverage commercial design to the extent practical, and we’re working through those details right now, inside the building [i.e., the Pentagon], inside the process and with industry.<sup>8</sup>

A July 15, 2013, press report quoted Frank McCarthy, the Navy’s program manager for support ships, boats, and craft, as stating that

We know the [TAO-205’s] basic capacities, the size, the relative speed, how much dry cargo we’re going to hold, and whether it’s going to be aircraft-capable or not, and how capable it’s going to be.... So we do know those things, and we have tons of lessons learned from the T-AO-187 program and the [Lewis and Clark class] T-AKE [dry cargo ship] program because it’s a similar mission ship in terms of being a shuttle [i.e., UNREP] ship. We’ve taken all those lessons learned and rolled them into the system specification, and we’ve involved our operators and users at Military Sealift Command to help inform the system specification.

The press report stated that the TAO-205 would have capabilities similar to the Kaiser-class ships, but that compared to the Kaiser-class design, the TAO-205 will have increased space for dry cargo, as well as a refueling capability for helicopters on its deck.<sup>9</sup>

<sup>8</sup> Transcript of hearing.

<sup>9</sup> Megan Eckstein, “TAO(X) Leverages Lessons From Recent Ship Classes, Uses Existing Tech,” *Inside the Navy*, July (continued...)

At an April 10, 2014, hearing on Navy shipbuilding programs before the Seapower subcommittee of the Senate Armed Services Committee, the Navy testified that

Research and development efforts continue as the Navy matures its concept for the replacement of the KAISER Class (T-AO 187) of Fleet Replenishment Oilers. The new replacement oilers, currently designated as T-AO(X), will be double-hulled and meet Oil Pollution Act 1990 and International Marine Pollution Regulations. Similar to the LHA(R) and LX(R) [amphibious ship acquisition] programs, T-AO(X) benefitted from early industry engagement in terms of cost/capability trade-off studies that will help to refine the ship specifications.<sup>10</sup>

At a July 30, 2014, hearing on logistics and sealift ships before the Seapower and Projection Forces subcommittee of the House Armed Services Committee, the Navy stated:

Basically, we did a complete study of the current oiler base, [the] Kaiser class, to determine what pieces of the Kaiser class gave us our acceptable requirement set. We took the Kaiser class, [and] increased—increased some of the freeze chill [cargo-carrying] portions. [We] Increased the lift so we could handle a heavier lift. [We] Readdressed speed requirements so we have a ray [sic: an array] of different speed requirements that we went and looked at, which would bring you [i.e., imply] different propulsion sets.

So—so, basically, we're looking at what is does a carrier need to take oil? And provisions—what does the rest of the [carrier] strike group need? So, you get a strike group answer, you get an ARG answer, and then you get a—basically, a rest of the strike group answer. So, we were looking [at] kind of a middle of the road [approach]. We have a very good class of ships right now in the Kaiser class. So, we didn't have to go too far from the Kaiser class [design] to get to something that we liked [for the TAO-X requirements].

Then we want to use the—the competition in the industry to take us the rest of the way with some interesting ideas on how to manage energy, get the O&S [operation and support] costs down, and—and see if we can get the number of mariners [needed to operate the ship] down, as well.

So—so, basically, we're pretty happy with our current [Kaiser-class] oiler. What we're looking for is something new. Something as fast as we could get it, that could do multi-product [replenishment work], and continue the workforce development that we currently enjoy.<sup>11</sup>

## **Combined Solicitation Limited to Two Builders<sup>12</sup>**

On June 25, 2015, the Navy, as part of its acquisition strategy for TAO-205 program, issued a combined solicitation consisting of separate Requests for Proposals (RFPs) for

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15, 2013.

<sup>10</sup> Statement of The Honorable Sean J. Stackley, Assistant Secretary of the Navy (Research, Development and Acquisition) and Vice Admiral Joseph P. Mulloy, Deputy Chief of Naval Operations for Integration of Capabilities and Resources and Vice Admiral William H. Hilarides, Commander, Naval Sea Systems Command, Before the Subcommittee on Seapower of the Senate Armed Services Committee on Department of the Navy Shipbuilding Programs, April 10, 2014, p. 16.

<sup>11</sup> Spoken remarks of F. Scott DiLisio, Director, Strategic Mobility / Combat Logistics Division, Office of the Chief of Naval Operations, during the question-and-answer portion of hearing, as shown in transcript of hearing.

<sup>12</sup> Source for this section: Navy briefing for CRS and Congressional Budget Office (CBO), March 23, 2015.

- the detailed design and construction (DD&C) of the first six TAO-205s;
- the DD&C in FY2017 (and also procurement of long lead-time materials in FY2016) for an amphibious assault ship called LHA-8 that the Navy wants to procure in FY2017; and
- contract design support for the LX(R) program, a program to procure a new class of 11 amphibious ships.<sup>13</sup>

The Navy limited bidding in this combined solicitation to two bidders—Ingalls Shipbuilding of Huntington Ingalls Industries (HII/Ingalls) and National Steel and Shipbuilding Company of General Dynamics (GD/NASSCO)—on the grounds that these are the only two shipbuilders that have the capability to build both TAO-205s and LHA-8.

Under the Navy’s plan for the combined solicitation, one of these two yards was to be awarded the DD&C contract for the first six TAO-205s, the other yard was to be awarded the DD&C contract (and procurement of long lead-time materials) for LHA-8, and the shipyard with the lowest combined evaluated price was to receive a higher profit on its DD&C contract<sup>14</sup> and was to be awarded the majority of the LX(R) contract design engineering man-hours.

### **Block Buy Contract Awarded to GD/NASSCO**

On June 30, 2016, the Navy announced its awards in the above-described combined solicitation, awarding a fixed price incentive block buy contract for the DD&C of the first six TAO-205s to GD/NASSCO. (The Navy awarded the contract for the DD&C of LHA-8 to HII/Ingalls.<sup>15</sup> HII/Ingalls was also awarded the majority of the LX(R) contract design engineering man-hours.<sup>16</sup>) The Navy was granted authority for using a block buy contract to procure the first six TAO-205s by Section 127 of the FY2016 National Defense Authorization Act (S. 1356/P.L. 114-92 of November 25, 2015). The Navy estimates that the block buy contract will reduce the procurement cost of the second through sixth TAO-205s by an average of about \$45 million each, compared to costs under the standard or default DOD approach of annual contracting.<sup>17</sup>

### **FY2017 Procurement Funding Request**

The Navy’s proposed FY2017 budget requests \$73.1 million in advance procurement (AP) funding for the second TAO-205, which the Navy wants to procure in FY2018.

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<sup>13</sup> Press reports describe it as a single RFP; see, for example, Sam LaGrone, “Navy Issues RFP for Oilers and LHA-8 to NASSCO, Ingalls,” *USNI News*, July 10, 2015; Valerie Insinna, “Navy Quietly Issues RFP for LHA-8, TAO(X),” *Defense Daily*, July 14, 2015: 2. For more on the LX(R) program, see CRS Report R43543, *Navy LX(R) Amphibious Ship Program: Background and Issues for Congress*, by (name redacted) . Contract design work is intended to develop the design of a ship enough so that a contract can then be awarded for the detailed design of the ship.

<sup>14</sup> The Navy is planning to employ a Profit Related to Offer (PRO) contracting approach within this combined solicitation strategy to encourage competitive pricing by the shipyards. Under PRO bidding, both bidders are granted work, but the bidder with the lower price is given a high profit margin. PRO bidding has been used in other Navy shipbuilding programs, particularly the DDG-51 destroyer program, where it has been used since the 1990s.

<sup>15</sup> DOD’s contract awards for June 30, 2016, are posted at: <http://www.defense.gov/News/Contracts/Contract-View/Article/822083>

<sup>16</sup> Source: Navy Office of Legislative Affairs email to CRS, July 12, 2016.

<sup>17</sup> For more on block buy contracts, see CRS Report R41909, *Multiyear Procurement (MYP) and Block Buy Contracting in Defense Acquisition: Background and Issues for Congress*, by (name redacted) and (name redacted) .

## Issues for Congress

### Procuring Second Ship in FY2018 or FY2017

One issue for Congress for FY2017 is whether to approve the Navy's plan to procure the second TAO-205 class ship in FY2018 (with advance procurement funding in FY2017), or instead accelerate the procurement of the ship to FY2017 (with all, or at least most, of the ship's procurement cost provided in FY2017).

It is a traditional Navy shipbuilding practice to have a so-called gap year (i.e., a year in which no ships in a given class are procured) between the procurement year of the first ship in a class and the procurement year of the second ship in a class. The primary purpose of the gap year is to provide time for the shipyard and the Navy, during the construction of the first ship, to discover and correct any problems there might be in the design of the ship before those problems are built into follow-on ships in the program.

Supporters of procuring the second TAO-205 in FY2018 (with advance procurement funding in FY2017), as proposed by the Navy, can argue that the Navy's proposal is consistent with traditional Navy shipbuilding practice, and will help reduce design risks in building follow-on ships in the program. They can also argue that accelerating the procurement of the second ship to FY2017 (with all, or at least most, of the ship's procurement cost provided in FY2017) could require making offsetting FY2017 funding reductions in other Navy programs, which could have adverse effects on those programs, and on resulting Navy capabilities.

Supporters of accelerating the procurement of the second TAO-205 to FY2017 (with all, or at least most, of the ship's procurement cost provided in FY2017) could argue that the practice of having a gap year predates the era of shipyard computer-aided design (CAD), that CAD reduces the risk of discovering design problems during the construction of lead ships, that the risks of such problems are lower to begin with for a relatively simple ship like the TAO-205—an auxiliary ship that will not involve new technologies—and that certain other auxiliary shipbuilding programs, such as the recent Mobile Landing Platform (MLP) shipbuilding program, have been executed without a gap year.<sup>18</sup> They could also argue that accelerating the procurement of the second TAO-205 to FY2017 could reduce costs for follow-on TAO-205s by reducing shipyard loss of learning between the first and second ship and thereby improving the production learning curve for the program.

### Additional FY2017 Funding for Economic Order Quantity (EOQ) Purchases

Another issue for Congress for FY2017 is whether to provide additional advance procurement funding for the TAO-205 program in FY2017 to finance economic order quantity (EOQ) purchases (i.e., up-front batch purchases) of components for the first six TAO-205s, so as to further reduce the cost of the six ships. The authority for using a block buy contract in the TAO-205 program that Congress provided the Navy through Section 127 of the FY2017 National Defense Authorization Act (S. 1356/P.L. 114-92 of November 25, 2015) includes authority for

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<sup>18</sup> The first and second MLPs were funded together in FY2011.

making EOQ purchases.<sup>19</sup> The Navy states that the block buy contract it is proposing to use for procuring the first six TAO-205s does not include EOQ purchases.

Opponents of providing additional advance procurement funding for the TAO-205 program in FY2017 to finance economic order quantity (EOQ) purchases could argue that the Navy has judged the return on the investment—that is, the resulting reduction in the cost of the ships, relative to the additional funding that would be needed in FY2017—to be too low,<sup>20</sup> and that providing this funding could require making offsetting FY2017 funding reductions in other Navy programs, which could have adverse effects on those programs, and on resulting Navy capabilities.

Supporters of providing additional advance procurement funding for the TAO-205 program in FY2017 to finance economic order quantity (EOQ) purchases could argue that doing so would take more full advantage of the authority that Congress provided in Section 127, that the resulting reduction in the cost of TAO-205s, though perhaps not large, would nevertheless be welcome, and that making EOQ purchases of components could provide additional business stability for ship component manufacturers.

## **TAO-205 Ship Self-Defense Equipment**

Another issue for Congress for FY2017 is whether to encourage or direct the Navy to build TAO-205s with more ship self-defense equipment than currently planned by the Navy. The issue relates to how changes in the international security environment might affect how the Navy operates and equips its underway replenishment ships.

During the Cold War, the Navy procured underway replenishment ships to support a two-stage approach to underway replenishment in which single-product “shuttle” ships (such as oilers, ammunition ships, and dry stores ships) would take their supplies from secure ports to relatively safe mid-ocean areas, where they would then transfer them to multiproduct “station” ships called TAOEs and AORs. The TAOEs and AORs would then travel to Navy carrier strike groups operating in higher-threat areas and transfer their combined supplies to the carrier strike group ships. As a result, single-product shuttle ships were equipped with lesser amounts of ship self-defense equipment, and TAOEs and AORs were equipped with greater amounts of such equipment.

When the Cold War ended and transitioned to the post-Cold War era, threats to U.S. Navy ships operating at sea were substantially reduced. As a consequence, the amount of ship self-defense equipment on the TAOEs and AORs was reduced, and a single-stage approach to underway

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<sup>19</sup> The text of Section 127 of P.L. 114-92 is as follows (emphasis added):

SEC. 127. Fleet Replenishment Oiler Program.

(a) Contract authority.—The Secretary of the Navy may enter into one or more contracts to procure up to six Fleet Replenishment Oilers. Such procurements may also include **advance procurement for economic order quantity** and long lead time materials, beginning with the lead ship, commencing not earlier than fiscal year 2016.

(b) Liability.—Any contract entered into under subsection (a) shall provide that any obligation of the United States to make a payment under the contract is subject to the availability of appropriations for that purpose, and that total liability to the Government for termination of any contract entered into shall be limited to the total amount of funding obligated at the time of termination.

<sup>20</sup> Source: CRS and Congressional Budget Office (CBO) discussions with Navy acquisition officials, March 7, 2016.

replenishment, in which oilers and dry stores ships took supplies from secure ports all the way to carrier strike group ships, was sometimes used.

Now that the post-Cold War era has transitioned to a new strategic environment featuring renewed great power competition with countries like China and Russia,<sup>21</sup> and a consequent renewal of potential threats to U.S. Navy ships operating at sea, the question is whether TAO-205s should be equipped with lesser amounts of ship self-defense equipment, like oilers were during both the Cold War and post-Cold War eras, or with greater amounts of ship self-defense equipment, like TAOEs and AORs were during the Cold War. Building TAO-205s with more ship self-defense equipment than currently planned by the Navy could increase TAO-205 procurement costs by tens of millions of dollars per ship, depending on the amount of additional ship self-defense equipment.

Section 1026 of the FY2016 National Defense Authorization Act (S. 1356/P.L. 114-92 of November 25, 2015) states:

SEC. 1026. Independent assessment of United States Combat Logistic Force requirements.

(a) Assessment required.—

(1) IN GENERAL.—The Secretary of Defense shall seek to enter into an agreement with a federally funded research and development center with appropriate expertise and analytical capability to conduct an assessment of the anticipated future demands of the combat logistics force ships of the Navy and the challenges such ships may face when conducting and supporting future naval operations in contested maritime environments.

(2) ELEMENTS.—The assessment under paragraph (1) shall include the following:

(A) An assessment of the programmed ability of the United States Combat Logistic Force to support the Navy and the naval forces of allies of the United States that are operating in a dispersed manner and not concentrated in carrier or expeditionary strike groups, in accordance with the concept of distributed lethality of the Navy.

(B) An assessment of the programmed ability of the United States Combat Logistic Force to support the Navy and the naval forces of allies of the United States that are engaged in major combat operations against an adversary possessing maritime anti-access and area-denial capabilities, including anti-ship ballistic and cruise missiles, land-based maritime strike aircraft, submarines, and sea mines.

(C) An assessment of the programmed ability of the United States Combat Logistic Force to support distributed and expeditionary air operations from an expanded set of alternative and austere air bases in accordance with concepts under development by the Air Force and the Marine Corps.

(D) An assessment of gaps and deficiencies in the capability and capacity of the United States Combat Logistic Force to conduct and support operations of the United States and allies under the conditions described in subparagraphs (A), (B), and (C).

(E) Recommendations for adjustments to the programmed ability of the United States Combat Logistic Force to address capability and capacity gaps and deficiencies described in subparagraph (D).

(F) Any other matters the federally funded research and development center considers appropriate.

<sup>21</sup> For more on this transition, see CRS Report R43838, *A Shift in the International Security Environment: Potential Implications for Defense—Issues for Congress*, by (name redacted) .



(b) Report required.—

(1) IN GENERAL.—Not later than April 1, 2016, the Secretary of Defense shall submit to the congressional defense committees a report that includes the assessment under subsection (a) and any other matters the Secretary considers appropriate.

(2) FORM.—The report required under paragraph (1) shall be submitted in unclassified form, but may include a classified annex.

(c) Support.—The Secretary of Defense shall provide the federally funded research and development center that conducts the assessment under subsection (a) with timely access to appropriate information, data, resources, and analyses necessary for the center to conduct such assessment thoroughly and independently.

The report required by the above provision was delivered to Congress in February 2016. A copy of the report was posted by the media outlet Politico on March 11, 2016. The report states:

The T-AO(X) will only have a limited capability to defeat a submarine launched torpedo attack and no capability to defeat a missile attack. When delivered, the TAO(X) will have:

—[the] NIXIE Torpedo Countermeasure System [for decoying certain types of torpedoes]

—[the] Advanced Degaussing System (Anti-Mine) [for reducing the ship's magnetic signature, so as to reduce the likelihood of attack by magnetically fused mines]

When required, the T-AO(X) will also have ability to embark Navy Expeditionary Combat Command Expeditionary Security Teams (EST). The ESTs will embark with several crew served weapons and are designed to provide limited self-defense against a small boat attack.

The T-AO(X) will have Space, Weight, Power and Cooling (SWAP-C) margins for future installations of the following systems:

—[the] Close In Weapon System (CIWS) or SeaRAM (Rolling Airframe Missile) [for defense against missile attack]

—[the] Anti-Torpedo Torpedo Defense System (ATTDS) [for destroying torpedoes]

Even after the installation of a CIWS or ATTDS, if the T-AO(X) was to operate in anything other than a benign environment, the ship will require both air and surface escorts.

The decision to rely on [other] Fleet assets to provide force protection [i.e., defense against attacks] for the T-AO(X) was validated by the JROC [in June 2015].<sup>22</sup>

## Legislative Activity for FY2017

### Summary of Congressional Action on FY2017 Funding

**Table 2** summarizes congressional action on the Navy's request for FY2017 procurement funding for the TAO-205 program.

<sup>22</sup> Department of the Navy, *Report to Congress on Requirements for the Fleet Replenishment Oiler, T-AO(X)*, February 2016 (with cover letter dated February 12, 2016), p. 8. The report was posted by Politico on March 11, 2016, at <http://static.politico.com/1e/e0/f26a9fb1471aacd5358c420fcf10/navy-oiler-report.pdf>, and accessed by CRS on March 15, 2016.

**Table 2. Congressional Action on FY2017 Procurement Funding**

Millions of dollars, rounded to nearest tenth

	Request	Authorization			Appropriation		
		HASC	SASC	Conf.	HAC	SAC	Conf.
Advance procurement	73.1	73.1	73.1	73.1	73.1	73.1	73.1
Advance procurement for EOQ purchases	0	0	0	0	0	0	0
Procurement	0	0	0	0	0	0	0

**Source:** Navy FY2017 budget submission and committee reports, authorization conference report, and appropriations conference explanatory statement.

**Notes:** **HASC** is House Armed Services Committee; **SASC** is Senate Armed Services Committee; **HAC** is House Appropriations Committee; **SAC** is Senate Appropriations Committee; **Conf.** is conference agreement.

## FY2017 National Defense Authorization Act (H.R. 4909/S. 2943/P.L. 114-328)

### House

The House Armed Services Committee, in its report (H.Rept. 114-537 of May 4, 2016) on H.R. 4909 of the 114<sup>th</sup> Congress, recommended the funding levels shown in the HASC column of **Table 2**.

**Section 838** of H.R. 4909 as reported states:

SEC. 838. Requirement that certain ship components be manufactured in the national technology and industrial base.

(a) Additional procurement limitation.—Section 2534(a) of title 10, United States Code, is amended by adding at the end the following new paragraph:

“(6) COMPONENTS FOR AUXILIARY SHIPS.—Subject to subsection (k), the following components:

“(A) Auxiliary equipment, including pumps, for all shipboard services.

“(B) Propulsion system components, including engines, reduction gears, and propellers.

“(C) Shipboard cranes.

“(D) Spreaders for shipboard cranes.”.

(b) Implementation.—Such section is further amended by adding at the end the following new subsection:

“(k) Implementation of auxiliary ship component limitation.—Subsection (a)(6) applies only with respect to contracts awarded by the Secretary of a military department for new construction of an auxiliary ship after the date of the enactment of the National Defense Authorization Act for Fiscal Year 2017 using funds available for National Defense Sealift Fund programs or Shipbuilding and Conversion, Navy.”.

H.Rept. 114-537 states:

*TAO(X) oiler shipbuilding program*

The committee notes that the budget request seeks to execute a block buy for TAO(X) ships and includes \$73.0 million in fiscal year 2017 Advance Procurement (AP) funding, as well as similar amounts in subsequent years to leverage the cost efficiency of a block

buy for these required assets. The program's first ship was authorized in fiscal year 2016, and section 127 of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114-92) provided the Navy the authority for use of a block buy for the program. The committee further notes that the 1-ship-per-year TAO(X) procurement rate planned beginning in fiscal year 2018 will result in a lengthy period to fulfill the 17-ship requirement and will not optimally utilize the industrial base, which has the capacity to produce at least 2 ships per year. Accelerating this procurement may serve to reduce overall program costs and minimize the time that the Navy has to continue to operate single-hulled fleet oilers.

Therefore, the committee directs the Secretary of the Navy to submit a report to the congressional defense committees concurrent with the date on which the budget for fiscal year 2018 is submitted to Congress pursuant to section 1105 of title 31, United States Code, on the potential benefits and program savings that could be achieved by increasing the program procurement rate to two ships per year as well as by taking continued advantage of block-buy procurement. The Secretary is further directed to report on the industrial base capacity to construct two TAO(X) fleet oilers per year. (Page 24)

## **Senate**

The Senate Armed Services Committee, in its report (S.Rept. 114-255 of May 18, 2016) on S. 2943 of the 114<sup>th</sup> Congress, recommended the funding levels shown in the SASC column of **Table 2**.

## **Conference**

The conference report (H.Rept. 114-840 of November 30, 2016) on S. 2943/P.L. 114-328 of December 23, 2016, recommended the funding levels shown in the authorization conference column of **Table 2**.

## **FY2017 DOD Appropriations Act (H.R. 5293/S. 3000/H.R. 1301)**

### **House**

The House Appropriations Committee, in its report (H.Rept. 114-577 of May 19, 2016) on H.R. 5293 of the 114<sup>th</sup> Congress, recommended the funding levels shown in the HAC column of **Table 2**.

**Section 8115** of H.R. 5293 as reported states:

Sec. 8115. None of the funds provided in this Act for the T-AO(X) program shall be used to award a new contract that provides for the acquisition of the following components unless those components are manufactured in the United States: Auxiliary equipment (including pumps) for shipboard services; propulsion equipment (including engines, reduction gears, and propellers); shipboard cranes; and spreaders for shipboard cranes.

### **Senate**

The Senate Appropriations Committee, in its report (S.Rept. 114-263 of May 26, 2016) on S. 3000 of the 114<sup>th</sup> Congress, recommended the funding levels shown in the SAC column of **Table 2**.

**Section 8105** of S. 3000 as reported states:

Sec. 8105. None of the funds provided in this Act for the T-AO(X) program shall be used to award a new contract that provides for the acquisition of the following components unless those components are manufactured in the United States: Auxiliary equipment (including pumps) for shipboard services; propulsion equipment (including engines, reduction gears, and propellers); shipboard cranes; and spreaders for shipboard cranes: Provided, That the Secretary of the military department responsible for such procurement may waive these restrictions on a case-by-case basis by certifying in writing to the Committees on Appropriations of the House of Representatives and the Senate that adequate domestic supplies are not available to meet Department of Defense requirements on a timely and cost competitive basis and that such an acquisition must be made in order to acquire capability for national security purposes.

## **Conference**

The explanatory statement for H.R. 1301 of the 115<sup>th</sup> Congress provides the funding levels shown in the appropriations conference column of **Table 2**.

**Section 8117** of H.R. 1301 states:

Sec. 8117. None of the funds provided in this Act for the T-AO(X) program shall be used to award a new contract that provides for the acquisition of the following components unless those components are manufactured in the United States: Auxiliary equipment (including pumps) for shipboard services; propulsion equipment (including engines, reduction gears, and propellers); shipboard cranes; and spreaders for shipboard cranes.

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