

ARCHIVED REPORT

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Lewis and Clark Class

Outlook

- TAO-205 program is formalized version of T-AO(X)
- NASSCO seen as leading contender for TAO-205 due to T-AKE experience
- New report being generated to cover TAO-205 John Lewis class
- Lewis and Clark class report will be archived next year

Orientation

Description. Underway replenishment ship supplying dry cargo to aircraft carrier and amphibious warfare battle groups.

Sponsor

U.S. Navy

Naval Sea Systems Command (NAVSEA)

1333 Isaac Hull Ave SE

Washington Navy Yard, DC 20376

Tel: + 1 (202) 781-4123

Fax: + 1 (202) 781-4713

Website: <http://www.navsea.navy.mil>

Licensees. There are no licensees for the program.

Status. In service.

Total Produced. The U.S. Navy has 14 ships of this class in service.

Application. The ships have a primary role of providing logistic lift from sources of supply and transferring cargo at sea to aircraft carrier and other surface warfare battle groups. The T-AKE-1 class ship, which carries dry cargo, operates in concert with AOE class and T-AO ships, which carry liquid cargo and ammunition.

Price Range. According to the 2011 budget, the unit cost of a T-AKE is \$570 million.

Pennant List

<u>Name</u>	<u>Builder</u>	<u>Ordered</u>	<u>Launched</u>	<u>Commissioned</u>
T-AKE-1 <i>Lewis and Clark</i>	NASSCO	11/2001	5/2005	6/2006
T-AKE-2 <i>Sacagawea</i>	NASSCO	11/2001	12/2005	2/2007
T-AKE-3 <i>Alan Shepard</i>	NASSCO	9/2002	5/2006	6/2007
T-AKE-4 <i>Richard E. Byrd</i>	NASSCO	8/2003	12/2006	11/2007
T-AKE-5 <i>Robert E. Peary</i>	NASSCO	1/2004	10/2007	6/2008
T-AKE-6 <i>Amelia Earhart</i>	NASSCO	1/2004	4/2008	10/2008
T-AKE-7 <i>Carl Brashear</i>	NASSCO	1/2005	9/2008	3/2009
T-AKE-8 <i>Wally Schirra</i>	NASSCO	1/2005	3/2009	9/2009
T-AKE-9 <i>Matthew Perry</i>	NASSCO	2/2006	1/2009	2/2010
T-AKE-10 <i>Charles Drew</i>	NASSCO	1/2007	7/2009	7/2010

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<u>Name</u>	<u>Builder</u>	<u>Ordered</u>	<u>Launched</u>	<u>Commissioned</u>
T-AKE-11 <i>Washington Chambers</i>	NASSCO	12/2008	2/2010	2/2011
T-AKE-12 <i>William McLean</i>	NASSCO	12/2008	7/2011	9/2011
T-AKE-13 <i>Medgar Evers</i>	NASSCO	3/2010	10/2011	4/2012
T-AKE-14 <i>Cesar Chavez</i>	NASSCO	3/2010	5/2012	10/2012

Contractors

Prime

National Steel and Shipbuilding Company (NASSCO)	http://www.nassco.com , 2798 Harbor Dr, San Diego, CA 92186-5278 United States, Tel: + 1 (619) 544-3400, Fax: + 1 (619) 544-3541, Email: sclarey@nassco.com , Prime
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Subcontractor

MAN B&W Diesel AG	http://www.manbw.com , Stadtbachstrass 1, Augsburg 86153, Germany, Tel: + 49 821 322 0, Fax: + 49 821 322 3382, Email: info@manbw.de (Diesel Engines)
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Technical Data

	<u>Metric</u>	<u>U.S.</u>
Dimensions		
Length – overall	210 m	689 ft
Waterline	203 m	666 ft
Beam	32.2 m	106 ft
Depth to main deck	18 m	59 ft
Draft – DWL	9 m	29.5 ft
Maximum height above waterline	41 m	134 ft
Cargo staging area	12,788 cu m	451,544 cu ft
Dry cargo stowage volume	21,181 cu m	712,685 cu ft
Displacement		
Full load	35,942 tonnes	35,374 tons
Light	18,157 tonnes	17,871 tons
Military Sealift Capability		
Maximum dry cargo	6,675 tonnes	6,570 tons
Freeze/chill maximum weight	1,743 tonnes	1,716 tons
Freeze/chill usable volume	5,543 cu m	195,752 cu ft
Cargo fuel – maximum weight	2,548 tonnes	2,508 tons
Volume	3,055 cu m	19,218 bbl
Helicopter	CH-60 (2 each)	
Performance		
Sustained speed	37 kmph	20 kt
Range (25,000-bbl payload)	26,000 km at 37 kmph	14,000 nm at 20 kt
Endurance (stores sustainability)	45-90 days (varies by product)	
Accommodations	209 (72 military, 112 civilian, 25 spares/surge)	

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	<u>Metric</u>	<u>U.S.</u>
	Type	Quantity
Electronics		
Radars – surface search	I/J-band	
Navigation	I-band	
Machinery		
Diesel engines	Medium speed	4x 8,200 kW
Electric motors	Alstom	2x 6.6 kW
Auxiliary generator	Diesel	1x 3,500 kW
Shafts		2

Design Features. The Lewis and Clark class T-AKEs are conventional monohulls that are 210 meters in length with a beam of 32.2 meters. The class exploits innovative methods in an effort to ensure the highest build quality while incorporating new ways "to reduce costs in all aspects of the ship, especially in such areas as cargo handling, material handling, inventory control, and inventory management."

The design of the ships is based on proven conventional commercial criteria, and they are built, according to the manufacturer, to the best commercial practices using state-of-the-art technology. The class meets the Class I (Level 1) survivability criteria required of amphibious ships. The only exception is that electromagnetic pulse (EMP) hardening is not required. The ships are required to comply with all applicable laws and regulations, as well as the requirements of the American Bureau of Shipping (ABS), the U.S. Coast Guard (USCG), and other regulatory bodies, as is standard. Ice strengthening is in accordance with ABS Class C0. The ships are capable of operating in all ocean environments other than high latitudes and close sea ice (seawater temperature is expected to range from -2°C to +35°C). All systems are designed to retain their full capability through a relative humidity range from 0 to 95 percent and are capable of operating through a relative humidity range from 0 to 100 percent.

The ships are designed to function independently for extended periods at sea while providing replenishment services to U.S. and NATO ships. The designed sustained speed is 20 knots. Two helicopter hangars house CH-60 helicopters for vertical replenishment (VERTREP) missions.

The T-AKE class has one underway refueling station on each side for supplying and two on the starboard side for receiving. Three replenishment-at-sea stations are designed for supplying on the port side and two on the starboard side, with one sliding pad-eye for receiving on the starboard side. Six 16,000-pound elevators are designed for the ship – two per hold.

The crew consists of U.S. Merchant Marine or Military Sealift Command (MSC) civilian mariners (CIVMARs).

The accommodations are to MSC standards, with separate spaces for male and female personnel, including both crew and military detachment as well as surge/transient personnel.

Being manned by civilians, the ships have no active means of self-defense. They are provided with passive defenses against mines and torpedoes, and atomic, biological, and chemical (ABC) weapon countermeasures. However, they are designed with appropriate space and weight reservations "to allow future installations of self-defense systems as required." The T-AKE class is designed to survive flooding caused by damage to the shell at any location except the transverse bulkheads bounding an aft machinery space. The class is designed for survival of ship, cargo, equipment, and personnel up to Sea State 9, at all headings, at zero speed.

The powertrain is an integrated propulsion and ship service electrical system, with FM/MAN B&W diesel generators having total installed electrical power of approximately 35 MW. The propulsion plant meets ABS R1 redundancy requirements. The electric component consists of two tandem, synchronous, variable-speed, reversible, double-wound Alstom 6.6-kV propulsion motors with brush/slipring excitation, each rated at 11,262 kW at 120 rpm driving one fixed-pitch propeller.

The T-AKE-1 class is fitted with fiber-optic cabling to support two separate local area networks (LANs) consisting of desktop microcomputers. One network is unclassified, and the other has security classification up to Secret level. The shipboard computer resources include commercial navigational and ship control systems, communications systems, and an automated cargo planning and inventory management control system.

The ships have commercial and military C4I systems for communications, navigation (positioning verification), and other necessary functions, under the two separate LANs. Operational differences between the two LANs are based on the information being processed. All navigational charts are in electronic form, but hard-copy

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backup versions are required to be maintained on board as well.

Although the T-AKE-1 ships carry out their normal functions mostly through standard physical exchange of goods at sea from ship to ship, the class is being used by the U.S. Navy as a means to improve the service's strike-up, pre-staging management of materials, and inventory management procedures. To this end, the program sponsor invited innovative ideas from the projected builders of the class. The Navy emphasized that the program was non-developmental in nature (no research and development was required or funded for the program), meaning that the design per se was based on the utilization of proven concepts in an innovative manner.

Operational Characteristics. The T-AKE-1 class is designed for at-sea delivery and replenishment of ammunition, food, liquids, fuel, and spare parts, as well as other types of cargo. The 12 ships of this class replace about 15 older T-AFS, T-AE, and T-AO ships. To accomplish this, the T-AKE-1 class is tasked with multiple cargo-carrying missions instead of being a dedicated platform for one type of payload only. The U.S. Navy frequently describes the T-AKE-1 as being "convertible" in nature, meaning that the ship has the ability to accept either one or two products, depending on the mission. The majority of cargo holds are able to store either ammunition or dry stores.

The T-AKE class ships operate independently by shuttling from forward operating bases and meeting up with support ships in the battle group's operating area. They are expected to typically operate in 90-day employment shuttle missions in peacetime. This assumes serving two carrier battle groups per voyage before returning to port for resupply. In wartime, the operating profile is expected to consist of continuous deployments of about 26 days each, using the "next closest" resupply points as the basis for such shuttle mission scenarios. If the ship is used in substitute station ship missions, the notional peacetime operating profile is extended to 180 days per journey, and to 90 days (continuous) in wartime.

The ships have continuous transfer capability at a rate of at least 149 tonnes per hour to an aircraft carrier using three continuous underway replenishment (CONREP) stations and VERTREP by two military cargo logistics helicopters. The ships perform CONREP at speeds between 12 and 16 knots with precise speed and course control, while receiving ships are replenished on both sides simultaneously. T-AKE-1 ships are able to continuously transfer palletized ordnance at a rate of 138 tonnes per hour to a carrier and a cruiser by using five CONREP stations. If the transfer is for ordnance only, the transfer rate goes up to 220 to 274 tonnes per hour, depending on the mix of CONREP stations and VERTREP by helicopter applied. The T-AKE-1 class ships are capable of landing, fueling, and maintaining H-46D, CH-60, and commercial logistics helicopters. Furthermore, the landing deck is able to provide day and night landing of H-53E and V-22 aircraft as necessary.

The propulsion plant and propulsion control system of the T-AKE-1 guarantee smooth acceleration and deceleration, ensuring that the ship operates in a consistent and predictable manner. Sudden deviations in vessel acceleration or deceleration complicate ship handling and pose significant risk during underway replenishment operations.

More and more underway replenishment and fleet support ships are being assigned to and operated by the Military Sealift Command. They are operated by a crew comprising civilian mariners supported by a military detachment; the ships carry no armaments. Such ships are technically distinct from the U.S. Navy proper – their names are preceded by USNS (United States Naval Ship) rather than USS (United States Ship), and have a "T" prefix on their type designation.

The ships have a projected service life of 40 years from completion of "post-shakedown availability." They are to be available for maintenance every 12 to 15 months, with an expected midterm availability of 21 to 30 days and a regular overhaul of 30 to 45 days alternating within that cycle. A minimum time-out for emergent repairs is expected, with the objective being no more than 2.5 days per year (exclusive of mandatory dry dockings and other scheduled maintenance and repair).

Variants/Upgrades

MPS Variant. T-AKEs 1, 2, and 3 are each assigned to one of the three Maritime Pre-positioning Ship squadrons, which are permanently forward deployed to the Eastern Atlantic Ocean/Mediterranean Sea, Western Pacific Ocean, and Indian Ocean. While these three ships are identical in configuration to the other T-AKEs, their mission is to provide selective offload of cargo for

resupply and sustainment of U.S. Marine Corps forces ashore.

TAO-205 John Lewis Class Variant. The U.S. Navy has issued a requirement for a new class of double-hulled fleet tankers to replace the existing TAO-187 class from 2022 onward. Due to the success of the T-AKE program, it has been suggested that the

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T-AKE may be used as the basis for the TAO-205. This would require a major redesign and would effectively be

a new class of ship. A new report is being generated to cover this project.



T-AKE-1 USNS *Lewis and Clark*

Source: U.S. Navy

Program Review

Background. The U.S. Navy's Combat Logistics Force capability has been shrinking since 1992, when decommissioning of the five-ship AE-21/23 class began. The five-ship-strong AO-177 class was decommissioned in FY99, and the T-AE, T-AFS, and AOE-1 classes were also retired when they reached the end of their designed operating lives. Meanwhile, the operational tempo of the Navy Fleet and unscheduled deployments remained constant, placing more strain on the existing vessels – and crews – in the Fleet.

The Auxiliary Dry Cargo program was first conceived in the early 1990s as a future replacement for a number of supply ships serving U.S. Navy surface combatants. It emerged in the Navy budget plans in 1992 but was then eliminated from the FY95 budget, only to be reinstated in the FY96 budget. It was deleted again, this time from the FY98 to FY03 five-year shipbuilding program, giving way to life extension overhauls to be performed on the T-AE-26 Kilauea class ammunition ships and AFS-1 Mars class stores ships.

Charter and Build Funding. By FY98, the program was gathering momentum to be turned into an experiment under a funding structure known as "Charter and Build." This procurement strategy was suggested as a remedy to the shortage of funds while still allowing the Navy to procure a ship class that was unquestionably needed. This method involves

contracting a private company to build a series of ships and leasing the ships from the company to the Navy on a long-term basis (25 to 30 years). This "leaseback" tactic alleviates the need to procure units up front using current naval shipbuilding funds while still allowing maintenance of a sizable fleet. It also results in a lower out-of-pocket cost throughout a program's lifetime, since the cost is spread out over the entire operating period of the ships, rather than having to be paid in larger installments in four to five years as is typical with ship procurement programs.

ADC(X) Reinserted

In 1999, however, the Navy opted against using the Charter and Build method in funding the ship series, not having received sufficient congressional support for the plan. Instead, it was decided that the class would be funded through traditional financing from the new-build budget. The ADC(X) program was reinserted into the plans at an accelerated rate of two units per year, later to be increased to three. All 12 ships were to be funded by FY06, with deliveries to be completed by about 2008.

Starting the Design Process. In launching Phase I of the project, the Navy, on August 31, 1999, issued four separate contracts to four competing shipyards for ship/cargo systems integration design studies. The shipyards were Ingalls Shipbuilding, Avondale

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Industries, National Steel and Shipbuilding Co (NASSCO), and Friede Goldman Halter. What was unusual about this group of prospective contractors was that two of them (Ingalls and Avondale) are owned by the same parent company, Litton. Friede Goldman Halter is the name of the company previously known as Halter Marine, now under a new corporate parent. The Navy said, however, that each company would be treated as a separate entity based on its own merits.

Funding Requested

The Naval Sea Systems Command issued a Request for Proposals on March 2, 2000, for 12 ships between at least two shipyards. All along, the congressional requirement was that at least two shipyards be involved in the construction of this class, both to maintain competition in the industry in terms of anti-trust measures and to ensure the best possible price for the client through natural industrial rivalry.

In early 2000, in preparation for the FY01 defense budget, the Navy requested funding for one ship at \$339 million, with \$439 million having already been allocated for another in FY00. Three each were to follow in FY02 and FY03, and two each in FY04 and FY05, thus completing the intended dozen units. The RFP released in March was based on that funding schedule.

Contract Award. In November 2001, the Navy awarded NASSCO a \$709 million contract for design and construction of the first two ships in the T-AKE program. The award included options that the Navy could exercise for 10 additional ships over the following six years, for a potential contract value of approximately \$3.7 billion. At the same time, the designation of the ships was changed from the task descriptor T-ADC(X) to the U.S. Navy nomenclature of T-AKE, with the lead ship being the T-AKE-1. The first two ships of the new class were named USNS *Lewis and Clark* and USNS *Sacagawea*.

Troubled Seas

The FY03 budget request apparently reflected a two-year stretch-out of the program schedule, with the delivery of the first vessel slated for 2005 versus an initial delivery in 2003, with the final vessel slated for delivery in 2010 versus a final delivery in 2008. The FY02 T-AKE is reflected in the Shipbuilding and Conversions, Navy (SCN) appropriation in the FY02 Appropriations Act. Pending approval, it was to be reprogrammed to the National Defense Sealift Fund in accordance with congressional preference that the NDSF be used for Combat Logistics Force ships. FY00 and FY01 ships had already been reprogrammed. In FY03, the Navy began requesting funding in the NDSF.

During the 2003 budget round, the Navy requested \$722 million to procure the fifth and sixth ships of the Lewis and Clark class. Initially, this funding request was denied by the Senate since construction of the first ships in the class had yet to start, and the program was suffering from significant delays. This funding was subsequently restored. Details of the U.S. Navy's long-term shipbuilding program were released during this debate. They showed that the building program for the class had been further stretched and that only 11 ships were included.

Doubts continued over the extent of the T-AKE program as debates over the FY05 and FY06 budgets gained momentum. Two T-AKE class ships were originally funded, but the funds were deleted, only to be restored in conference. The Navy's short-term shipbuilding plan deleted another T-AKE ship, this time from the FY06 building plan, reducing the number of ships in the class to 10. This ship was again reinstated but as part of the FY08 budget, effectively stretching the program out an extra year. During these debates, it was discovered that no construction work on any of the four ships authorized thus far had actually begun.

Picking Up Steam

This probably represented the nadir of the T-AKE program, and things rapidly improved after this point. The first T-AKE, the USNS *Lewis and Clark*, was launched in May 2005 and commissioned a year later. The second T-AKE, the USNS *Sacagawea*, was launched on May 23, 2006 and commissioned in February 2007. Construction of the third T-AKE, named the USNS *Alan Shepard* in honor of the first American in space, began in September 2005. That ship was followed by the T-AKE-4 and T-AKE-5, with construction of the T-AKE-6 starting in May 2007. The 10th T-AKE class ship was requested in FY08.

This request led to some significant maneuvering, with the House Armed Services Committee adding a second T-AKE class ship, the T-AKE-11, to the FY08 shipbuilding program. However, the final HASC markup provided \$1.866 billion, \$1.41 billion over the original request, for the NDSF to procure no fewer than four T-AKE Auxiliary Dry Cargo/Ammunition ships. This reflected a request by the U.S. Navy that an additional three T-AKE ships be added to the building program in order to provide cargo-carrying capacity for its planned Maritime Pre-positioning Force (Future). This would raise the total number of T-AKE ships on order to 14, 11 for the Combat Logistics Force and three for the MPF(F). This plan took an important step toward reality when the House and Senate agreed on a conference decision to significantly boost the Navy's shipbuilding accounts, increasing the funding for at least

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three major shipbuilding programs while trimming money from the Army's Future Combat Systems program. A beneficiary of the increased funding was the T-AKE program, to which \$300 million was added for advance procurement funding for three ships, all to be acquired in FY09.

This funding was translated into an agreement with NASSCO for the construction of five T-AKE ships, exercising the two remaining options and creating three new ones. The T-AKE-11 was included in the FY09 budget request, with the Navy listing the three MPF(F) ships as a high unfunded priority. With the FY10 financial request, the 14-ship T-AKE class was fully funded.

In late 2011, four of the T-AKEs were found to be suffering from accelerated wear of the stern tube bearings. This had caused a powertrain failure with the T-AKE-5, *Robert E. Peary*. The stern tube is the structure through which the propeller shaft passes to the outside of the hull. The propeller shaft is supported within the stern tube by bearings at the inner and outer ends of the tube. It appears that inadequate protective coatings and insufficient lubrication caused the bearings to erode much faster than expected. The fixes for this problem were relatively simple and would be implemented during the ships' routine maintenance periods.

Enter T-AO(X)

In 2010, the U.S. Navy started preparations for an analysis of alternatives (AoA) to refine the key attributes of the T-AO(X) fleet tanker. Under this analysis, various tradeoff analyses would be conducted to determine the optimal solution in terms of cost, cargo capacity, speed, and overall number of T-AO(X)s needed to meet Fleet requirements. Various quantities of bulk petroleum products (JP-5 and DFM) and dry stores/package cargo, fleet freight, mail, and other cargo, as well as personnel, would be evaluated to determine the optimum cargo capacities. A range of dry cargo capacities at least 20 percent greater than offered by the T-AO 187 class would be considered.

The FY11 30-Year Shipbuilding Plan indicated that the Combat Logistics Force would transition to a force composed of only two classes of ships, the T-AO(X) and the T-AKE. The AoA would also evaluate the

T-AO(X), when operating with a T-AKE, as a possible replacement for the T-AOE-6 class. This immediately led to speculation that the new T-AO(X) would be a derivative of the existing T-AKE design.

In mid-2013, the U.S. Navy awarded three contracts for the preliminary design of a new class of fleet replenishment oilers. The contracts were awarded to General Dynamics NASSCO, Huntington Ingalls Industries, and VT Halter Marine. Of the three, NASSCO was believed to be in a leading position due to its highly successful work on the T-AKE fleet replenishment ships. It seemed likely that NASSCO would be able to leverage much of the work that went into the T-AKE class in producing an economical and effective T-AO(X). The studies were expected to take six to 10 months to complete. The Navy plans to buy 17 oilers, taking delivery of the first one in 2020, according to the contract announcement.

In January 2015, the U.S. Navy decided to link the programs to build fleet oilers, a big-deck amphibious assault ship, and a new class of amphibious dock ships. The plan would allow only Huntington Ingalls Shipbuilding in Pascagoula, Mississippi, and General Dynamics' NASSCO in San Diego to bid on T-AO(X) fleet oilers, the LHA 8 assault ship, and the LX(R) class of amphibious ships. Under the plan, the shipyard that does not receive the T-AO(X) contract to design and build the first six oilers would build the assault ship.

Funding for the first T-AO(X) is included in the FY16 budget request. The Navy intends to ask for one ship in 2016, then one each year beginning in 2018. Plans call for at least eight ships to be ordered through 2024.

TAO-205 John Lewis Class

In 2015, the T-AO(X) program was formalized as the TAO-205 John Lewis class program to build a total of 17 fleet oilers for the U.S. Navy. The Navy wants to procure the first TAO-205 in FY16 and the remaining 16 ships at a rate of one per year during the period from FY18 to FY33. If this procurement schedule were implemented, the Navy projects that the lead ship would enter service in FY20 and that the remaining ships would enter service at a rate of one per year during the period from FY21 to FY36.

Funding

The T-AKE program utilized a two-phase acquisition process. Under Phase I, multiple contracts were competitively awarded for the conduct of ship/cargo systems integration design studies. The intent of these contracts was to develop innovative integrated ship concepts with life-cycle cost improvements by encouraging traditional builders of Navy ships to involve materials-handling firms in system development. Contracts were awarded to Avondale Industries, Friede Goldman Halter (formerly Halter Marine), Ingalls Shipbuilding, and NASSCO.

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On October 18, 2001, NASSCO was awarded a \$406,883,256 fixed-price-incentive (firm targets) contract for detail design and construction of the lead ship of the auxiliary cargo and ammunition ship class. Concurrent with the contract award, the Navy exercised an option for detail design and construction of the following ship for \$301,636,200. The contract also provided for spare and repair parts, special studies and analyses, engineering and industrial services, and technical data. The contract had options for 10 more ships that, if exercised, would bring its cumulative value to \$3,751,044,824. Work was to be performed in San Diego, California (75.7 percent); Iron Mountain, Michigan (9.3 percent); Waynesboro, Virginia (3.9 percent); Philadelphia, Pennsylvania (3.5 percent); Beloit, Wisconsin (3 percent); Belle Chasse, Louisiana (1.8 percent); Kingsford, Michigan (1.8 percent); Scarborough, Maine (0.5 percent); and Willis, Texas (0.5 percent), and was expected to be completed in 2006.

In 2015, the first ship in the TAO-205 program was funded in FY16 at a cost of \$674.2 million. The Navy's proposed FY17 budget requests \$73.1 million in advance procurement funding for the second ship, which the Navy wants to procure in FY18.

As part of its acquisition strategy for the TAO-205 program, the Navy issued a combined solicitation consisting of separate Requests for Proposals for the detailed design and construction of the first six ships of the TAO-205 class, and for the detailed design and construction of an amphibious assault ship called the LHA-8 that the Navy wants to procure in FY17. The Navy limited bidding on this combined solicitation to two bidders, Ingalls Shipbuilding and NASSCO, on the grounds that these are the only two shipbuilders that have the capability to build both TAO-205s and the LHA-8. One of these two shipyards will be awarded the first six TAO-205s, and the other will be awarded the LHA-8. The Navy anticipates announcing its decision on which yard has been awarded which program during the third quarter of FY16 (between April and June 2016).

As another part of its acquisition strategy for the TAO-205 program, the Navy plans to use a block-buy contract to procure the first six ships of the class. The Navy was granted authority for this block-buy contract by Section 127 of the FY16 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 each TAO-205 by an average of about \$45 million, compared to costs under the standard DoD approach of annual contracting.

Contracts/Orders & Options

<u>Contractor</u>	<u>Award (\$ millions)</u>	<u>Date/Description</u>
NASSCO	709.0	Nov 2001 – Construction of first two T-AKE class ships, with options for 10 more.
NASSCO	290.0	Jul 2002 – Order for third ship (exercise of option).
NASSCO	288.0	Jul 2003 – Order for fourth ship (exercise of option).
NASSCO	578.2	Jan 2004 – Order for fifth and sixth ships (exercise of option).
NASSCO	586.3	Jan 2005 – Order for seventh and eighth ships (exercise of option).
NASSCO	317.1	Feb 2006 – Order for ninth ship (exercise of option).
NASSCO	100.0	Jul 2007 – Long-lead items for T-AKE-10.
NASSCO	460.0	Jan 2008 – Construction of T-AKE-10 and long-lead items for T-AKE-11.
NASSCO	940.0	Dec 2008 – Construction of T-AKE-11 and -12, plus long-lead items for T-AKE-13 and -14.
NASSCO	824.6	Mar 2010 – Construction of T-AKE-13 and -14.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
	1992	Program first included in U.S. defense budget
FY	1995	Program dropped from defense budget
Jul	1995	Meetings with commercial ship owners and operators to discuss commercial ship acquisitions
Sep	1995	Milestone 0 Integrated Product Team meeting
Dec	1995	Program initiation (Milestone 0) approval
FY	1996	Program reinstated in defense budget
Sep	1997	Ingalls, Avondale team up on design, construction contract
FY	1998	Shipbuilding program (until 2003) deletes ADC(X) again, in favor of Kilauea class overhaul
FY	1999	Funds made available for up to 12 ADC(X) units by FY05
Aug	1999	Four competitive study contracts awarded for integration of onboard systems (Phase I)
Jan	2000	Navy solicits proposals for detail design and construction (Phase II) of ships
Mar	2000	Request for Proposals released
Apr	2000	USN requests that program be stretched out as far into future as possible
Nov	2001	Contract awarded to NASSCO
	2002	Third ship option confirmed
	2003	Fourth ship option confirmed
	2006	First ship completed
Feb	2007	Second, third, and fourth ships completed
Nov	2008	Three ships added to building program
	2012	Last ship delivered
	2015	T-AO(X) program redesignated TAO-205 John Lewis class

Worldwide Distribution/Inventories

United States. This is a U.S.-only program, with no exports projected.

Forecast Rationale

With the T-AKE class now complete and in service, attention has turned toward the companion TAO-205 John Lewis class program. The first study contracts have been awarded, with the next contract phase to cover detail design and construction of a planned FY16 lead ship. The current procurement plan is for a total of 17 ships, with the lead ship scheduled to be delivered in 2020.

The plan is to replace the legacy T-AOE fleet with a pair of ships, one being a T-AKE and the other, a TAO. This plan is being strongly challenged on the grounds that the proposed T-AKE/TAO combination is a 20-knot solution, too slow to keep up with the fast-moving aircraft carrier battle groups. It should be noted that the ability of these carrier groups to maintain

high transit speeds is a good defense against submarine attack and improves strategic mobility.

These criticisms are answered by proposing that the T-AKE/TAO pairing operates as a "station ship," accompanying and staying on station with a carrier strike group or amphibious readiness group to provide fuel as required. This concept increases the probability that the two ships will use a common design base. NASSCO's experience with the T-AKE is already being cited as a major advantage for the company toward winning the TAO-205 contract.

Because the T-AKE construction program is complete, no forecast is applicable at this time. This report will be archived next year.

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