

ARCHIVED REPORT

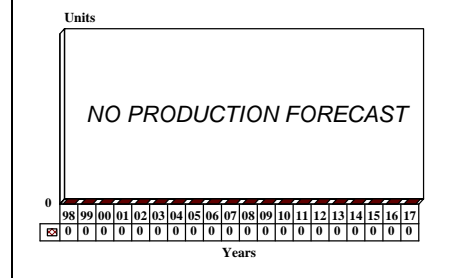
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T-AO-187 Kaiser Class - Archived 7/99

Outlook

- All ships of class now delivered
- Two incomplete ships laid up as possible surplus
- US budget downsizing reduced need for more ships of this type
- Additional construction very unlikely
- Last hope would be as stop-gap for planned replenishment vessel

20 Year Unit Production Forecast
1998-2017



Orientation

Description. The Kaiser class are fleet oilers operated by the Military Sealift Command with a mixed military and civilian crew. Their roles can include underway replenishment of fuel, as well as delivery and receipt of fleet freight and personnel to fleet combatants operating at sea.

Sponsor

US Navy
 Naval Sea Systems Command (NAVSEA)
 2531 Jefferson Davis Hwy
 Arlington, Virginia (VA) 22242-5160
 USA
 Tel.: +1 703 602 6920

Contractors

Avondale Industries Inc
 Shipyards Division
 PO Box 50280
 New Orleans, Louisiana (LA) 70150-0280
 USA
 Tel: +1 504 436 2121; 436 5393
 Fax: +1 504 436 5304; 436 5781; 436 5303
 Telex: 266070 avon ur

Licensees. No production licenses have been granted.

Status. Production and service.

Total Produced. A total of 16 have been built and two suspended incomplete, awaiting scrapping or sales.

Pennant List

<u>Ship</u>	<u>Builder</u>	<u>Ordered</u>	<u>Commissioned</u>
T-AO-187 <i>Henry J. Kaiser</i>	Avondale	1982	12/1986
T-AO-188 <i>Joshua Humphreys</i>	Avondale	1983	4/1987
T-AO-189 <i>John Lenthall</i>	Avondale	1984	6/1987
T-AO-190 <i>Andrew J. Higgins</i>	Avondale	1984	10/1987
T-AO-191 <i>Benjamin Isherwood</i>	Construction abandoned	1985	Suspended incomplete
T-AO-192 <i>Henry Eckford</i>	Construction abandoned	1985	Suspended incomplete
T-AO-193 <i>Walter S. Diehl</i>	Avondale	1985	9/1988
T-AO-194 <i>John Ericsson</i>	Avondale	1986	3/1991

<u>Ship</u>	<u>Builder</u>	<u>Ordered</u>	<u>Commissioned</u>
T-AO-195 <i>Leroy Grumman</i>	Avondale	1986	8/1989
T-AO-196 <i>Kanawha</i>	Avondale	1987	12/1991
T-AO-197 <i>Pecos</i>	Avondale	1987	7/1990
T-AO-198 <i>Big Horn</i>	Avondale	1988	7/1992
T-AO-199 <i>Tippecanoe</i>	Avondale	1988	3/1993
T-AO-200 <i>Guadalupe</i>	Avondale	1989	10/1992
T-AO-201 <i>Patuxent</i>	Avondale	1989	6/1995
T-AO-202 <i>Yukon</i>	Avondale	1989	4/1994
T-AO-203 <i>Laramie</i>	Avondale	1989	4/1996
T-AO-204 <i>Rappahannock</i>	Avondale	1989	11/1995

Mission. The primary function of the class in its present form is supporting forward-deployed prepositioning ships, under Military Sealift Command. That is done by transporting bulk petroleum products from shore depots to combatant and support ships underway, making those

ships as independent as possible of overseas fuel sources.

Price Range. Between US\$190 million and US\$200 million.

Technical Data

Specifications

<i>Maximum speed:</i>	20 knots
<i>Cargo Capacity:</i>	180,000 barrels (T-AO 201, 203-204: 159,500 bbl)
<i>Range:</i>	6,000 nm at 18 knots
<i>Crew:</i>	82 MSC civilian mariners (20 officers), and 23 naval (one officer) personnel.

Dimensions

	<u>Metric</u>	<u>US</u>
<i>Length overall:</i>	206.5 m	677.5 ft
<i>Beam:</i>	29.75 m	97.5 ft
<i>Draft:</i>	10.97 m	35 ft
<i>Displacement (light):</i>		9,500 tons
<i>Displacement (full load):</i>		40,900 tons

Electronics

	<u>Type</u>	<u>Quantity</u>
<i>Radar:</i>	LN-66	2
<i>Decoys:</i>	SLQ-25 NIXIE	2

Weapons

<i>Guns (for, but not with):</i>	Mark 15 Phalanx	1
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Propulsion

<i>Diesel Engines:</i>	Colt-Pielstick 10PC4.2 V570	2x32,540 shp
<i>Propellers:</i>	Controllable pitch	2

Design Features. The Kaiser class is a replenishment oiler capable of handling both liquid and solid cargoes. The ship is equipped with 32 tanks of total capacity 21,161 m³ capable of carrying 180,000 barrels of liquid cargo. This is usually made up of 86,400 barrels of fuel oil, 54,000 barrels of JP-5, 39,600 barrels convertible between these two types; 327 tons of feedwater and 390 tons of potable water. In addition the ships can accommodate 534 pallets of dry cargo and eight 20-foot refrigerated provisioning containers.

A total of five refueling stations (three to port, two to starboard) are provided with an additional solid cargo handling station per side. The ship is equipped with a helicopter landing platform for vertical replenishment operations but has no hangar. There are eight cargo pumps with a combined capacity of 5,448 tons per hour.

The propulsion plant comprises a mix of diesel and electric drives. The main propulsion is provided by two Colt-Pielstick 10PC4.2 V570 diesels with 32,540 shaft horsepower, driving two controllable-pitch propellers. These engines are normally used for propulsion at

normal steaming speed. The ship is also outfitted with electric drive for slow speed operations. The maximum sustained speed is 20 knots.

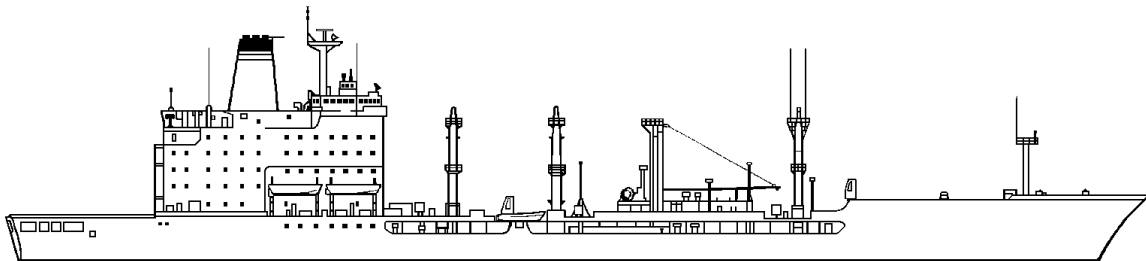
On the port side, there are three along-side fueling stations, with two on the starboard side, and each side has a solid transfer station.

The last three ships of the series have double hulls, to meet the requirements of the US Oil Pollution Act of 1990.

Operational Characteristics. The ship has a limited electronics and weapons outfit, because it normally operates in an escorted convoy or as part of a battlegroup in time of hostilities. The electronics consist

of two LN-66 radar units, a commercial fathometer and an SLQ-25 NIXIE torpedo decoy. They have space and weight reserved to mount two Mark 15 Phalanx close-in weapons systems when required.

All US Navy underway replenishment ships have a limited capability to handle all types of supplies required by combatants, regardless of the official classification of the vessel in question. This includes ammunition and explosives as well as fuel and solid goods. This operational philosophy includes the Kaiser class and requires the ship to have cargo handling capabilities substantially greater than those required for their nominal role.



T-AO-187 KAISER CLASS

Source: Forecast International

Variants/Upgrades

The first two ships of the class have main engines built by SEMT-Pielstick in France.

On sea trials, the early ships of the class experienced serious vibration at high speed and were extremely wet forward. Modifications to correct these problems included changes to the ship's structure and engine mountings. The tank deck originally extended well forward of the forecastle break; this area has now been plated in and the tank deck now terminates at the forecastle break (as shown in the diagram above).

The last three ships of the class (T-AO 201, T-AO 204 and T-AO 203) have been modified with double bottoms in accordance with the US Oil Pollution Act of 1990, itself an outgrowth of the MARPOL Annex III agreement of 1978. They are thus the first double-hulled

oilers deployed by the Navy. The double-hull structure reduces the amount of cargo space available, by 17 percent, although this can be reportedly recovered in an emergency. The hull separation is 1.83 m on the sides and 1.98 m on the bottom. The inclusion of double hulls also lengthened the construction time from 32 to 42 months.

Plans existed at one point to convert three ships to ammunition ships; this project has now been abandoned.

In 1996 it was suggested that the two incomplete hulls of this class should be converted to prototype Arsenal Ships. These would test the operational concept of the Arsenal Ship and/or act as an interim capability in that area until purpose-built hulls could be built. This proposal is regarded as unlikely, though.

Program Review

Background. The Kaiser class oilers were intended to provide a one-class replacement for all earlier AO, AOR and T-AO classes. They were to serve as the basic single product fleet oilers for the US Navy's underway replenishment force. The primary difference is,

however, that the Kaiser class can carry 180,000 barrels of oil versus 120,000 barrels by the predecessors. The ships are built to mercantile rather than warship standards. The Kaiser class also has revised

accommodation, since merchant marine unions require seamen to have more space than US Navy personnel.

On November 11, 1980, a design contract was awarded to George Sharp, Incorporated, for a new class oiler with a 180,000 barrel capacity. The ships were to be civilian-manned with Military Sealift Command personnel. In addition, a small US Navy detachment would provide communications and operational command/control capabilities. The US Navy required that the ships have a speed of 20 knots. The design chosen had several similarities to the AO-177 design, including highly automated refueling equipment for rapid handling of ships alongside. The US Navy intended to issue the initial design and construction contracts for the class in 1982, but these plans were delayed by congressional action.

On November 12, 1982, the US Navy awarded Avondale Shipyards a US\$123.9 million contract for detail design and initial lead ship construction of the new Kaiser class. The contract contained an option clause for four more oilers. The option was exercised on January 20, 1983, with a contract for one, and a contract for two additional ships was exercised on November 22, 1983.

The US Navy requested US\$524.6 million for three fleet oilers in the 1984 budget, but this was cut to US\$328.5 million for two ships. In November 1983, Avondale received two contracts, one for two ships, and the other for a domestic manufacture of the associated diesel engines. The 1985 budget request called for three ships of the class. Congress approved this request, saying that the ships must be competitively procured. In September 1985, the US Navy issued two contracts for Kaiser class oilers. Avondale received US\$116 million for T-AO-193, and Pennsylvania Shipbuilding was given US\$222 million for T-AO-191 and T-AO-192. This contract kept Pennsylvania Shipbuilding from being closed.

The keel for the first ship, *USNS Henry J Kaiser*, was laid in August of 1984. Congress voted to appropriate US\$266.3 million for the two oilers. The US Navy awarded the contracts for these ships on February 27, 1986. Contract N00024-85-C-2131 for US \$101.5 million went to Avondale, while contract N00024-85-C-2115, worth US \$96.9 million, went to Pennsylvania Shipbuilding. Avondale Shipyards established a domestic source for the T-AO-187 class diesel engines. The first two ships have French SEMT-Pielstick diesel engines supplied by Alsthom. All subsequent ships are receiving the Pielstick engine built under license by Colt Industries.

The *USNS Henry J. Kaiser* was commissioned in December 1986. The US Navy asked for US\$275.5

million for two ships in its 1987 budget request. Congress cut the US Navy's request, approving US\$259 million for two ships. On February 12, 1987, Avondale received a US\$100 million contract (N00024-85-C-2131) for T-AO-197, and Pennsylvania Shipbuilding received a US\$95 million contract (N00024-85-C-2115) for T-AO-196. The second ship, *USNS Joshua Humphreys* (T-AO-188) was commissioned in April 1987. The *USNS Andrew J. Higgins* was launched in January 1987. The Military Sealift Command commissioned *USNS John Lenthall* (T-AO-189) in August 1987.

The 1988 budget request asked for US\$279.1 million for two Kaiser class ships; Congress gave the US Navy US\$256.4 million for the two oilers. In March 1988, the US Navy announced that the Fiscal 1989 contracts for T-AO-187 class ships would be awarded on a two-yard basis. On June 20, 1988, the US Navy awarded Avondale a US\$109.6 million contract (N00024-88-C-2050) for one T-AO-187 class oiler. The contract had options for one ship per year in Fiscal 1989, 1990 and 1991.

During the autumn of 1987 and early 1988, Penn Shipbuilding had been experiencing increasing financial difficulties which severely delayed the first two ships it was building. As a result, in late June 1988, the US Navy canceled the contracts with Penn Shipbuilding (at the yard's request) for the construction of T-AO-196 and T-AO-198 and re-awarded them to Avondale. These difficulties reached crisis point when Penn Shipbuilding declared bankruptcy and was closed down. The two ships in its hands sat idle for many months (deteriorating seriously in the process) while a decision was taken on their future.

Eventually, in October 1989, a contract was awarded to Tampa Shipyards for refurbishing and completing the two oilers. The two hulls were towed to Tampa, the T-AO-191 running aground at Kitty Hawk en route. The convoluted history of these two ships received another twist during August 1993, when the US Navy terminated the contract with Tampa Shipbuilding because of the yard's "failure to make progress on completion of the ships". A cure notice was served on the yard but the company's response was "unsatisfactory with respect to working capital and management". Eventually, the two hulks were towed to an inactive reserve site at James River, Virginia, for lay-up. Brief consideration was even given to converting them to interim or prototype Arsenal Ships but this appears to have been abandoned since. No plans exist to finish the two ships today.

Original US Navy plans were for a single ship to be ordered in 1989, to be followed by two ships in 1990

and 1991. However, Congress elected to buy out the program in 1989 and all outstanding funding for the program was concentrated into that year. Construction of these ships was delayed when the Oil Pollution Act of 1990 (which effected into US law the provisions of Annex III of the MARPOL convention) required the provision of double bottoms and other spillage limiting measures. These were the subject of an additional

contract, valued at US\$125 million, and delayed the construction of the ships by approximately ten months.

In the first quarter of FY95, the first of this class, the T-AO-187, was scheduled to be laid up. It was to be followed by the T-AO-190 in the second quarter. Both ships are now in reserve at 30 days readiness. The T-AO-187 is now assigned to the Preposition Force at Diego Gracia, where it is loaded with aviation fuel.

Funding

The funding for this program is complete.

Recent Contracts

<u>Contractor</u>	<u>Award (\$ millions)</u>	<u>Date/Description</u>
Avondale	37.1	<i>June 1990</i> — FFPI modification for completing construction of T-AO 191 and T-AO 192 ships (N00024-90-C-2300).
Avondale	125.0	<i>Aug 1992</i> — Modification of design of last three ships of class to include double bottom required by MARPOL regulations.
Norfolk Ship	N/A	<i>Sept 1994</i> — Contract covering preparation of two incomplete ships, T-AO-191 and T-AO-192, for long-term storage in incomplete condition.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Nov	1980	Design contract awarded to George Sharp, Incorporated
Nov	1982	Detail design contract awarded to Avondale
Jan	1983	First contract awarded
Aug	1984	First keel laid
	1989	Funding appropriated for five ships, ending program
Mar	1989	Last ship ordered
Aug	1993	Navy terminates contracts for T-AO 187 and T-AO 191
Feb	1995	Settlement reached between USN, American Ship Building Co
	1996	T-AO 191-192 offered to Ecuador
	1996	Last ship scheduled to enter service

Worldwide Distribution

United States. (14 in service, two inactivated incomplete).

Ecuador. (Offered the two ships that were incomplete, in 1996).

Forecast Rationale

The 1989 buy-out of the Kaiser class program terminated the planned procurement of the class. Now

that the ships already funded are in service, there is little chance of any additional new construction. Indeed, the

first two ships are already being withdrawn from service (see Program Review). The rapid downsizing of the US fleet has so reduced the demands on the replenishment and transport forces that the existing fleet capacity is adequate for the present circumstances.

One slight possibility does exist, however. The US Navy had planned to start construction of a new class of fast fleet underway replenishment vessels, the AOE(V) class, to replace the existing mix of AE, AFs and AOR types. Sixteen such ships were planned, derived from the AOE-6 design, with the first to be delivered in 1997 and the last in 2021. This project has now been postponed to beyond 1997 and is likely to be canceled completely. If a perceived shortfall in capability does exist at that time, a modified version of the Kaiser class may be built as an economic means of fulfilling this requirement.

There have also been suggestions that the Kaiser class could be offered on the commercial market. This speculation appears partly inspired by a number of other nations (notably China and India) building fleet

underway replenishment ships and leasing them to the commercial sector when the ships are not required for fleet use. This concept, however, is only practical where shipping lines are state-owned and their operations are very heavily subsidized.

The other motivation appears to be a misunderstanding of the practice of building the Kaisers to mercantile standards. This means that they use merchant ship practices in their basic hull structure, not that they are commercial designs. The Kaisers are far too elaborate for use as standard tankers and cost more than three times the going price for a real commercial design. Their commercial operation would be simply uneconomic.

In short, although there is some prospect of additional construction of Kaiser class ships as low-cost replacements for the more elaborate AOE(V) program, it is not likely that this will take place. It is very hard to see any other justification for projecting additional orders for the Kaiser class, in the US or overseas. This report will be dropped in the future.

Ten-Year Outlook

No additional construction is forecast.

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