

SURVEY VESSELS OF THE UNITED STATES NAVY

As a primary means for carrying out its mission of collecting detailed and accurate hydrographic information through original surveys, the United States Navy Hydrographic Office exercises technical control over two hydrographic survey groups and two oceanographic survey vessels. Hydrographic Survey Group One at present consists of :

U.S.S. <i>Maury</i> (AGS-16)	Survey ship.
U.S.S. <i>Allegheny</i> (ATA-179)	Auxiliary vessel.
U.S.S. <i>Stallion</i> (ATA-193)	Auxiliary vessel.

Hydrographic Survey Group Two is composed as follows :

U.S.S. <i>Tanner</i> (AGS-15)	Survey ship.
U.S.S. <i>Pursuit</i> (AM-108)	Auxiliary vessel.
U.S.S. <i>Requisite</i> (AM-109)	Auxiliary vessel.

The two oceanographic survey ships, which normally operate in company, are :

U.S.S. <i>San Pablo</i> (AGS-30).....	Survey ship.
U.S.S. <i>Rehoboth</i> (AGS-50)	Survey ship.

The *Tanner* and the *Maury* are sister ships, converted from attack cargo-type vessels in 1946. They differ only in certain minor details, such as the type and number of small boats and amphibious vehicles carried on board. The general description which follows can be considered applicable to both. The principal characteristics are listed below :

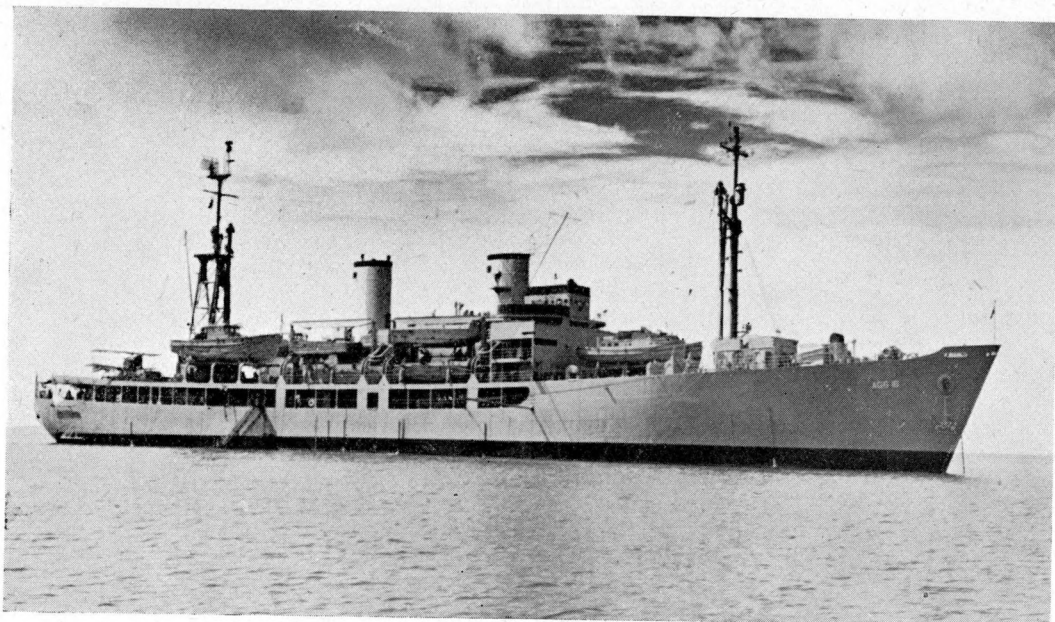
Length Overall	426 feet (130 metres)
Length at Waterline	400 feet (122 metres)
Breadth, moulded	58 feet (17.7 metres)
Depth, moulded to upper deck.....	37 feet (11.3 metres)
Draft	16 feet (4.88 metres)
Displacement, full load	6 200 tons
Speed, maximum sustained	16 knots
Cruising Range at 16 knots	7 500 miles
Survey Gear Stowage	79,900 cu.ft. (2260 m ³)
	3 080 tons
Largest Boom Capacity	30 tons
Twin Screw Turbo—Electric Drive.....	6 600 S.H.P.

The normal complement is 25 officers and a crew of 282, but total accommodations available are :

Officers and Civilian Engineers	32
Chief Petty Officers	22
Crew and Enlisted Passengers	354
Total.....	408

Below the main deck are the first and second platform decks and the hold. Above the main deck are the upper deck, superstructure deck, navigating bridge, and top of house. The cargo holds are converted to survey gear stowage, including racks particularly designed to hold steel triangulation towers, signal construction tool stowage, and other special bins, racks, and spaces. A drafting room 19 feet by 27 feet (5.8 × 8.2 metres) is fitted out on the after superstructure deck. In this space are located a vertical reflecting projector, drafting tables, light table, office furniture, files, drafting equipment, and supplies.

A combination photographic laboratory and lithographic print shop 28 feet by 32 feet (8.5 × 9.7 metres) is installed on the first platform deck abaft the mainmast. To permit rapid production of field charts by the photo-lithographic process on board the ships, this space is equipped with a large copying camera, dark room, contact printer, plate whirler, small lithographic offset press, and all of the other accessories, chemicals, and supplies required for reproduction. Adjacent to this space on the starboard side is a 12 by 20 foot



Hydrographic Survey Ship U.S.S. "Maury" (AGS-16)



Helicopter landing on flight deck of survey ship.



40-foot Sounding Boat.



52-foot Sounding Boat.

(3.66 × 6.10 metres) photogrammetric plotting room. These two spaces and the drafting room as well are air-conditioned in order to minimize cartographic errors due to distortion in paper, film, and other media. A surveying instrument storeroom is located below the drafting room on the upper deck.

The ships are provided with two modern echo sounding equipments. One indicates and records depths up to 2000 feet (610 m.) or fathoms (3658 m.) while the other has a recording range scale of 200 feet (61 m.) or fathoms (366 m.). Underwater echo ranging equipment is also available.

The ship's radar equipment is used for fixing position when beyond visual range of shore signals by ranging on two or more radar transponder beacons set up on control stations ashore. (See article "Use of Radar and Radar Beacons in Hydrographic Surveying", page 35, *International Hydrographic Review*, No. 44 for November 1948.)

Radio acoustic ranging equipment and a taut wire machine are carried aboard, but due to the highly satisfactory performance of the radar and transponder beacons, they are rarely used.

A flight deck was first installed to carry a reconnaissance seaplane by extending the upper deck aft. With the seaplane now replaced by a helicopter, this deck has been extended further aft to its present size of about 65 feet (19.8 m.) long with an average width of about 45 feet (3.7 m.). This space is quite adequate for safe take-offs and landings of the three place helicopter which is attached to each ship. The helicopter, both for reconnaissance and as a freight and passenger ferry, has performed outstandingly and has proved invaluable in all survey areas. It makes possible the occupation of some stations which would be inaccessible by other means and greatly facilitates the occupation of others.

To port and starboard of the forward cargo hatch, cradles are installed to carry the two 40-foot (12.2 m.) sounding boats. Two 52-foot (15.8 m.) sounding and dragging boats are similarly carried on board to port and starboard of the after cargo hatch, and between them on the hatch cover there is space for temporary stowage of a truck and a jeep, which are normally carried in the hold when not required for use ashore. An amphibious DUKW is carried in chocks on the starboard side of the upper deck amidships. This water and land operating vehicle proves highly useful in carrying men and equipment from the ship to inland points without the necessity for unloading on the beach. If operations require a second DUKW, it is carried on the port side.

Other boats carried on board vary considerably, but, as an example, might include the following :

- 1 - 36-foot (11 m.) twin screw motor launch.
- 2 - 36-foot landing craft—LCVP.
- 1 - 36-foot landing craft—LCP(L) with house.
- 1 - 36-foot landing craft—LCP(R).
- 1 - 26-foot (7.9 m.) motor whaleboat.
- 1 - 19-foot (5.8 m.) pulling surf boat.
- 4 - 12-foot (3.65 m.) dinghies.
- 4 - rubber boats.

These boats are carried in cradles on the upper deck and in davits on the port and starboard sides amidships.

The 40- and 52-foot sounding boats are especially designed for hydrographic surveying. All are powered by twin diesel engines turning opposite hand twin screws, and have twin rudders to provide sensitive control in holding course and to permit rapid maneuverability in restricted waters.

The 40-foot boats have an 11 foot (3.35 m.) beam and draw three feet (0.91 m.) of water at the stern. The forward cabin contains four berths, and there are two more in both the pilot house and the engine compartment. The enclosed pilot house is equipped with wheel, engine controls, and a 7 1/2 inch (190 millimetres) Navy standard magnetic compass. Between the pilot house and the engine compartment is a galley to starboard and a radio and sounding equipment space to port. The projector and receiver for the echo sounder are built into the hull, and the recorder is permanently mounted on the forward bulkhead. This recorder has a visual depth dial and also records depths on a special paper up to 200 feet or fathoms. The plotting and observing deck is over the galley and electronics spaces. It is equipped with a portable canvas canopy extending forward over the plotting board which is mounted on top of the pilot house.

The 52-foot boats have a beam of 13 1/2 feet (4.11 m.) and draw four feet (1.22 m.) of water at the stern. The forward cabin contains ten berths, a portable drop-leaf table and drop benches, and the galley. The enclosed pilot house is built over the forward portion of the engine compartment and is equipped with full width folding doors aft. In addition to the wheel, engine controls, and standard compass, the pilot house contains the sounding recorder, radio, and plotting board. Aft of the pilot house, the deck extends over the after portion of the engine compartment and a hold. Just aft of the pilot house and on the center-line, is a one-ton capacity boom for handling heavy wire-dragging equipment. On the starboard side of the after deck is a single drum hoist, aft of which is a roller chock on the stern for towing. These boats are capable of self-sustained operations away from the survey ship for periods of a week or more at a time.

The auxiliary vessels operating with the survey ships are converted fleet (ocean-going) tugs and mine vessels. They were not altered extensively for survey duty, but can easily be adapted for independent survey tasks if necessary. Their principal characteristics, complement, and accommodations are listed below :

<i>Principal Characteristics</i>	<i>ATA</i>	<i>AM</i>
Length Overall	143 feet (43.6 m.)	221 feet (67.4 m.)
Length at Waterline	134 feet (40.8 m.)	215 feet (65.6 m.)
Extreme beam	33 feet (10.1 m.)	32 feet (9.8 m.)
Depth, moulded	18 feet (5.5 m.)	17 feet (5.2 m.)
Draft, forward	12 1/2 ft (3.81 m.)	9 1/2 ft (2.89 m.)
Draft, aft	15 feet (4.57 m.)	10 1/2 ft (3.20 m.)
Displacement, full load	835 tons.	1100 tons
Speed, Maximum sustained	12 1/2 knots	17 knots
Cruising Range at above speed.....	7200 miles	4000 miles
Single screw Diesel—electric drive.....	1500 S.H.P.	
Twin screw Diesel—electric drive		3475 S.H.P.
<i>Complement (Accommodations)</i>		
Officers	3 (5)	8 (9)
Warrant Officers	2 (2)	0 (0)
Chief Petty Officers	2 (2)	4 (6)
Crew	38 (39)	92 (98)

The U.S.S. *San Pablo* and *Rehoboth* are also sister ships, converted in 1948 from small seaplane tender-type vessels. Two chemical analysis laboratories are installed, one on the port side of the main deck and the other below it on the second deck. The fantail was cleared for construction of a photographic laboratory shack and installation of a deep sea anchoring winch. A 500-pound (227 kg.) anchor has successfully held in 2100 fathoms (3840 m.) of water. A drafting room with about 250 square feet (23.25 m²) of deck space is installed, fitted out with four drafting tables, instruments, and supply stowage.

Special equipment is also available for handling and lowering the overside oceanographic instruments such as the bathythermograph. Nansen bottles, water sample bottles, and special equipment all have been allotted stowage space.

The principal characteristics of these vessels are :

Length Overall	311 feet (95 metres)
Beam	41 feet (12.5 metres)
Draft	13 feet (3.96 metres)
Displacement	1766 tons
Speed	18 knots
Twin screw Diesel—electric drive	6080 B.H.P.

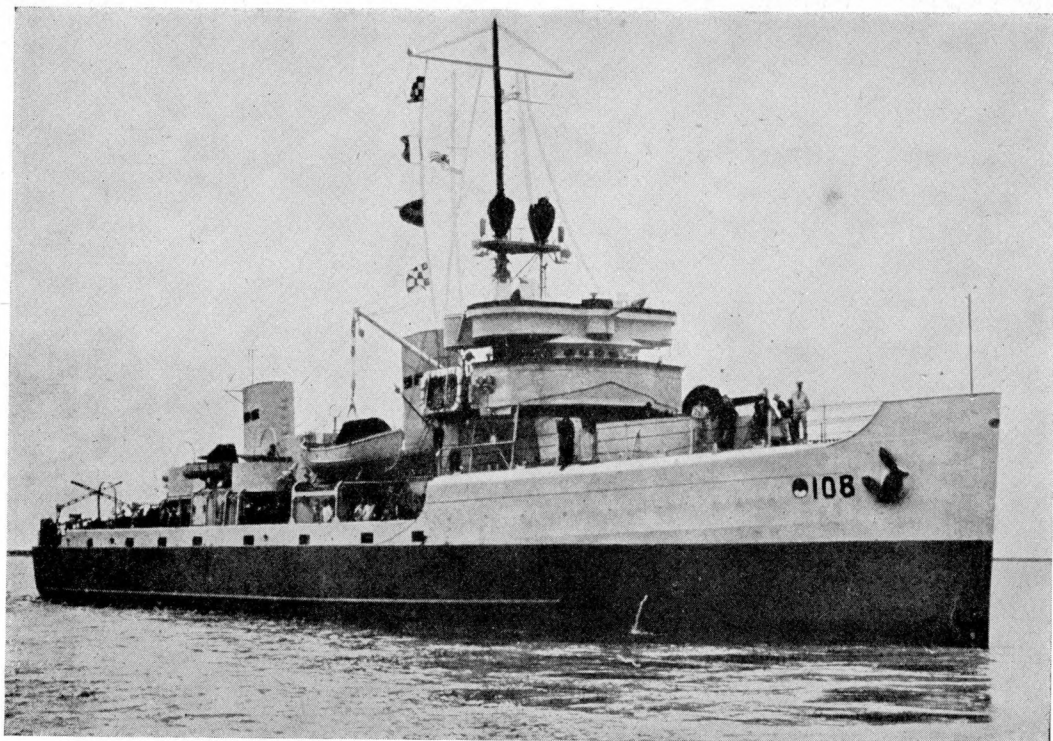
Complement :

Officers	10
Civilian Scientists	8
Chief Petty Officers	15
Crew	122

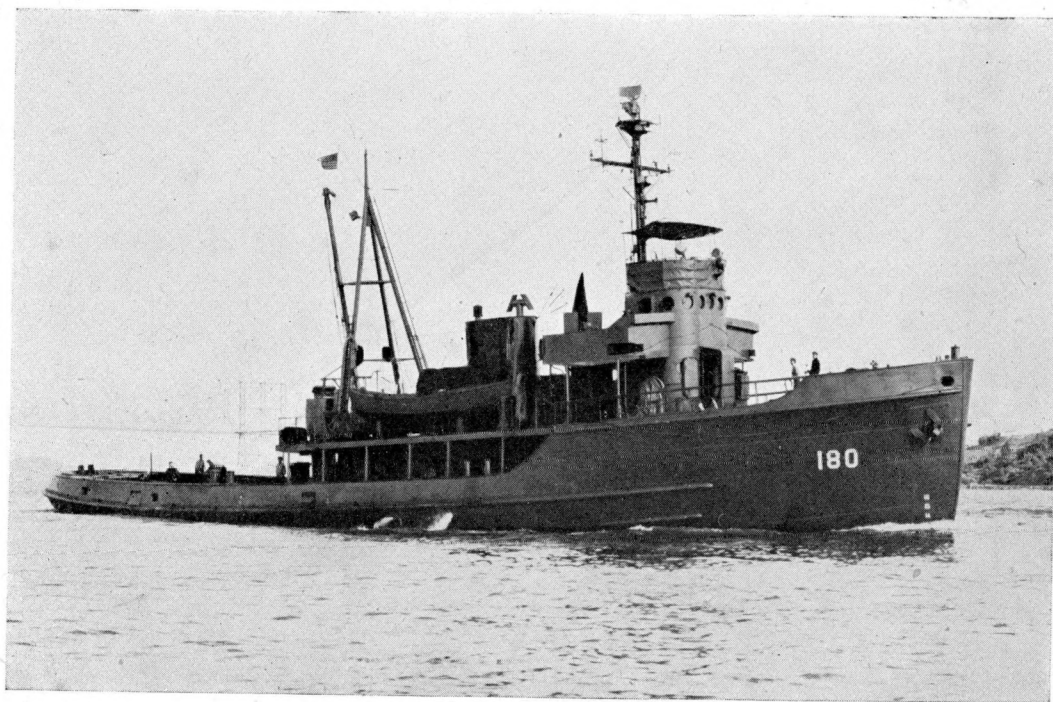
Two additional civilian scientists can be accommodated by doubling up with ship's officers.

The sea-going facilities of the United States Navy Hydrographic Office thus comprise a total of eight commissioned ships with an aggregate tonnage of almost 20,000 tons, manned by approximately 90 officers, 1100 crew members, and from 18 to 24 civilian engineers and scientists, equipped to operate wherever required in any portion of the world.

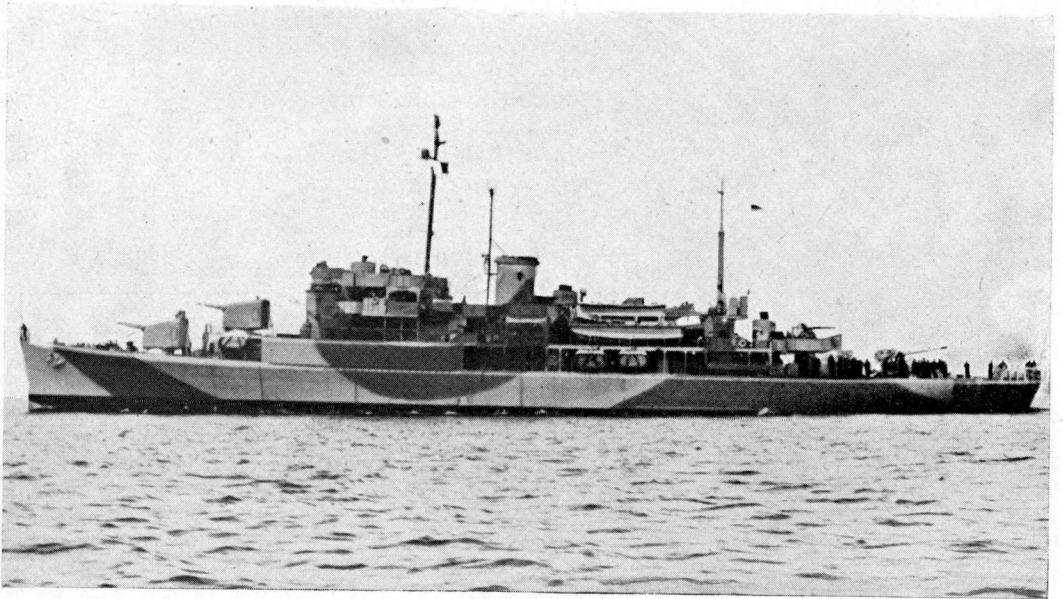




AM type Auxiliary.



ATA type Auxiliary.



Oceanographic Survey Ship U.S.S. "Rehoboth" (AGS-50).