

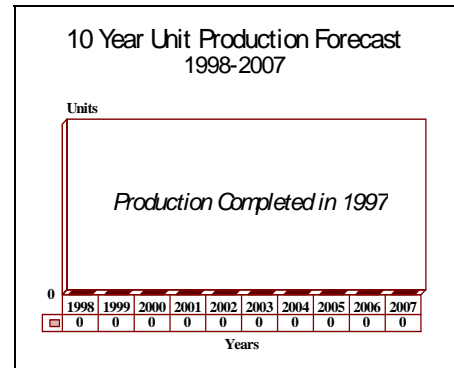
ARCHIVED REPORT

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AGOR-23 Thompson Class - Archived 1/99

Outlook

- Generic, purpose-built oceanographic research ship design
- Exact classification varies according to crew and role
- Not likely to be expanded beyond the four existing hulls
- Long life expectancy anticipated; plays a PR role with academia
- Closely related to surveillance ship programs, their future



Orientation

Description. Oceanographic research ship.

Sponsor

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

Contractor

Halter Marine Group, Inc.
 13085 Seaway Road
 Gulfport, Mississippi (MS) 39503
 USA
 Tel: +1 601 896 0029
 Fax: +1 601 897 4866
 Telex: 682 1246

Licensees. None.

Status. Production and service.

Total Produced. Four.

Pennant List

<u>Name</u>	<u>Builder</u>	<u>Launch Date</u>	<u>Commission Date</u>
AGOR-23 <i>Thomas G. Thompson</i>	Halter (Moss Point)	7/1990	6/1992
AGOR-24 <i>Roger Revelle</i>	Halter (Moss Point)	4/1995	12/1996
AGOR-25 <i>Atlantis</i>	Halter (Moss Point)	2/1996	4/1997
AGOR-26 ^(a) <i>Ronald H. Brown</i>	Halter (Moss Point)	5/1996	8/1997

^(a) *ex-Researcher*

Application. Used for oceanographic and coastal research, including collection of hydrographic data.

Price Range. In FY89 dollars, the unit price for the lead ship was US\$60.87 million. The FY93 contract for the

second ship was valued at US\$34,682,182. A contract announcement in late 1996/early 1997 indicated a unit price of US\$33.6 million for two ships.

Technical Data

Specifications

Speed: 15 kts in 8 foot seas
Range: 11,300 nm at 12 kts + 29 days @ 3 kts
Crew: 5 officers, 17 enlisted, 37 scientists

Dimensions

	<u>Metric</u>	<u>US</u>
<i>Length:</i>	83.5 m	274.0 ft
<i>Beam:</i>	16.0 m	52.5 ft
<i>Draft:</i>	5.2 m	17.0 ft

Displacement:

Light: 2,100 tonnes
Full load: 3,300 tonnes

Electronics

	<u>Type</u>	<u>Quantity</u>
<i>Radar:</i>	RASCAR 2500A	1
<i>Sonar:</i>	Atlas Elektronik: multibeam bathymetric system	1

Power

<i>Main propulsion power:</i>	Caterpillar 3516TA diesel gensets	3x1500 kW
<i>Ship's service power:</i>	Caterpillar 3508TA diesel gensets	3x715 kW
<i>Emergency power generation:</i>	Caterpillar 3406TA diesel genset	1x250 kW
<i>Z drives:</i>	Split bus, fixed pitch, Schottel-Lips	2
<i>Propulsion motors:</i>	General Electric CD6999	2
<i>Bow thruster:</i>	Azimuthing jet; Elliot Gill	1x880 kW
<i>Propulsion motor:</i>	General Electric CD6887	1

Design Features. The AGOR research ships are outfitted with the latest electronic equipment. The radar installed on the lead ship of the class was a RASCAR 2500A operating in either the E/F-band or I/J-band. The class has a state-of-the-art beam bathymetric sonar system built by STN-Atlas Elektronik of Germany. The sonar allows scientists to measure the contour of the ocean floor across a swath equal in radius to the depth of the ocean at the point of measurement. Other data released on the sonar is very limited.

The propulsion, ship's service power, and thruster arrangement is unique. The ship has six diesel generators serving both the propulsion units and the ship's service power needs. The generators can be brought on-line, synchronized, and shut down by computer. Power from any combination of generators can be dedicated to either propulsion or service power. The generators normally provide power to twin 2,238 kilowatt (3,000 horsepower) electric propulsion motors.

Those motors, built by General Electric, provide power to two Z-drive propulsion units developed by the Dutch Shottel-Lips. Their propellers can be rotated a full 360 degrees, eliminating the need for a rudder and allowing full power to be dedicated to the propeller movement. To provide for additional control, a 820.6 kilowatt (1,100 horsepower) bow thruster forces a jet of water

outward from the bow at a precisely calculated angle. The ship's speed is 15 kts.

The ship is equipped with a dynamic positioning system that allows the ship to "hover" above a specific point on the ocean floor. This system is built by Robertson Shipmate Incorporated. It correlates the speed and angle of the propellers and bow thrusters to a precise position. The system also automatically allows the ship to maintain a "track line" circular course within a 91.44 meter (300 foot) radius in 3.35 meter (11 foot) seas and through 50 kilometer per hour (27 knot) winds. The ship has 315 square meters (3,500 square feet) of laboratory space. It is capable of accommodating four self contained laboratory vans.

Operational Characteristics. The AGOR-23 class has a primary mission of carrying out research on physical, chemical and biological oceanographic and atmospheric processes, including mapping, charting and geodesy. The ships are designed and built by the US Navy, but upon their delivery have been transferred to either the Military Sealift Command (MSC) or private organizations/academic institutions for operation, depending on the case. Under their new operators, the ships participate in US Navy-sponsored programs under the Chief of Naval Research.

The AGOR-25 completes the Navy's academic fleet modernization program that was initiated in 1984. The ships of this class are used for global ocean research with scientists onboard for different type of missions. Unlike the AGS class ships, which are used for surveillance purposes against underwater threats, these ships are purely academic in their mission, providing data about the sea water, streams, seabed conditions, bathymetric states, life forms in water etc. Any

applications for defense purposes are derived from the scientific research these ships perform, under a great deal of public and academic observation and publicity.

Laboratory spaces on these ships include a 232 m² main laboratory, a 16.8 m² wet lab, a 32.5 m² staging bay adjacent to a 325 m² working deck and to the wet lab, a 5.9 m² darkroom, a 7.4 m² climate controlled chamber and generous volumes available for support, conference and library purposes.

Variants/Upgrades

AGOR-25, 26. These last two ships are 9 feet longer than the first pair and can carry the Alvin DSV 2. The *Atlantis* (AGOR-25) is operated by the Woods Hole Oceanographic Institution, and the *Ronald H Brown* (AGOR-26) by NOAA.

Gyre Class. These two oceanographic research ships date back to the early 1970s, and have a displacement of only 1,427 and 1,853 tonnes. Based on a commercial ship design, they have large deck spaces in aft with fittings for vans that can configure the ships rapidly for different missions.

Melville Class. The predecessor class of AGOR ships, also operated by Woods Hole Oceanographic

Institution. The ships have facilities for handling small research submersibles as well. Problems with the propulsion system have led to conversion from straight diesel to diesel-electric and insertion of an extension in the mid-hull. Highly maneuverable ships for precise location control.

T-AGX A new-generation survey and oceanographic research ship to be ordered in FY99. Current reports suggest that this ship will be an ice-strengthened derivative of the T-AGS-60 surveillance ships design.

Thomas G. Thompson Class. The alternative name for this class, named after the lead ship of the series.

Program Review

Background. In the early 1980s, the US Navy decided to convert additional ships to the role of acoustic research vessels. The growing importance of the ocean's depths and the US Navy's need for more knowledge were the rationale behind this decision. The US Navy was aware that it had no ship properly configured to conduct acoustic research. The two ships then serving in that role had been built during World War II and were serving as a hydrographic research and a navigation research ship, respectively. In FY86, the service asked Congress for funding for conversion of an oceanographic research ship to the acoustic research role. Congress approved the US Navy's request, giving the service \$54 million.

In the FY89 budget, the US Navy requested funding to build a new class of oceanographic research ship. In June 1988, a contract was awarded to Halter Marine for the construction of the first ship of a new class, the AGOR-23. The keel was laid on March 23, 1989, and the ship was launched in July 1990. The ship was commissioned in July 1991. The second ship of the class, the AGOR-24 *Roger Revelle*, was ordered in January 1993 from the same yard. Two further ships

were ordered in early 1994 for service entry in 1997. The first of these, the *Atlantis*, was commissioned in April and the second, the *Ronald H. Brown*, in August of the same year.

Despite the warming of East-West relations, the US Navy still has a major need to increase its knowledge of the oceans as part of its anti-submarine warfare programs. The Russian Federation as well as at least one nation of the former Soviet Union still have sizable submarine fleets; to this must be added the growing submarine fleets of the People's Republic of China and nations of the Middle East. The AGOR ships help increase this knowledge by conducting various oceanographic and acoustic research efforts. These efforts also have the support of the scientific community, which operates many of the AGOR ships.

The AGOR-23 class is a portion of a much larger program of oceanographic research ships that will be designated either T-AGOR, AGOR, T-AGS, or AGS depending on the type of ship and/or its operator. If the ship is operated by the US Navy or a university, it will be designated either AGS or AGOR. On the other hand, if the ship is operated by a Military Sealift Command, it

will be designated T-AGOR or T-AGS. At present ships of this general type are being built under the AGOR designation (the AGOR-23 class) and the T-AGS denominator (the T-AGS-60 class). Maritime Administration ships are larger due to the higher

accommodation standards required for non-Navy crews. The first ship of the AGOR-23 design is being operated by the University of Washington as a part of the University-National Laboratory System.

Funding

	US FUNDING					
	FY92		FY93		FY94	
	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>
Oceanographic Research Ship	2	108.7	-	-	2	110.0

All dollar amounts are in millions. In addition, there was a FY93 request for US\$19.5 million to convert one ship to an oceanographic ship. The FY90 funding was US\$310.6 million for three ships.

Recent Contracts

<u>Contractor</u>	<u>Award (\$ millions)</u>	<u>Date/Description</u>
Halter Marine	34.68	<i>Jan 11, 1993</i> - Contract number N00024-93C-2302 for one AGOR-23 class ship and an option for two more
Halter Marine	68.0	<i>March, 1994</i> - The above option for two more ships of this class exercised
Halter Marine	67.2	<i>1996</i> - Ongoing build contract for two ships with projected completion March 1997 (probably refers to the last two ships of the series, i.e., the <i>Atlantis</i> and the <i>Ronald H. Brown</i>)

Timetable

	Jun	1988	First AGOR-23 class ship ordered
	Mar	1989	Keel laid for AGOR-23
	Jul	1990	AGOR-23 launched
	May	1991	AGOR-23 delivered
	Jan	1993	AGOR-24 ordered
	Mar	1994	AGOR-25 and AGOR-26 ordered
16	Aug	1994	Keel laid for AGOR-25
1	Feb	1996	AGOR-25 (<i>Atlantis</i>) christened, launched
	Aug	1997	The last ship of the class commissioned

Worldwide Distribution

US (Four AGOR-23 class ships in service)

Forecast Rationale

The US Navy's FY92 Six Year Shipbuilding Plan showed a need for seven oceanographic research ships from FY92 through FY95. This broke down to two ships per year in FY92 through FY94 and one ship in FY95. These would have been a mixture of T-AGS-60 and AGOR-23 class ships. The plan was actually carried through more or less on schedule, with aggregate construction of the two classes conforming to the projected plans. In fact, these targets were slightly exceeded when an eighth member of the class was brought forward from an out-year (FY96) to FY94. Two options were added to the schedule, probably in anticipation of replacing two old T-AGS-26 class ships.

This strong support for a low-profile program is interesting since it shows, contrary to many printed assertions, that both the US Navy and its funding authorities are well aware of the importance of these unglamorous yet fundamental and very necessary functions. Over the last few years, the oceanographic survey fleet has been modernized so that it now consists mostly of modern, low-maintenance-cost hulls. The AGOR ships previously in service were converted from other types of vessels, and they were not totally suited to the oceanographic or acoustic role. These new ships have expected service lives in the Navy for a great number of years.

It is possible that the Navy could acquire two more Thompson class hulls, beyond the four that have already been bought. However, this is not very likely, since the Pathfinder, Victorious and Impeccable class AGS ships are being procured in fairly strong numbers. The four Thompson class ships now in use are probably sufficient, or at least adequate, for the time being. It is also worth noting that the Thompson class is the one tasked with the academic research of the qualities of the "water itself," while the other classes are concerned more with the surveillance side. The Thompsons are closely affiliated to the scientific community and their operation is closely reported and publicized by oceanographers, marine biologists and others with professional interest for research of the seas.

By the time the replacement and/or expansion of this fleet becomes current, the earlier mentioned AG(X) derivative of the Pathfinder class is likely to be available. The alternative is that the future design will be an amalgamation of both the Pathfinder and the Thompsons. Regardless, it is probable that the Thompson class has for now run its course and that the procurement for what is termed as research or surveillance vessels intermittently in the defense budget in fact refers to the latter type.

Ten-Year Outlook

No new production is forecast; the chart is therefore omitted.

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