

NexT-AGS: Next-Generation Oceanographic Survey Ship

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Military Sealift Command's (MSC) T-AGS ships perform oceanographic, acoustic, biological, bathymetric, and geophysical surveys to gather and provide data in support of undersea warfare and bottom mapping. However, the current lineup of ships are quickly approaching the end of their service life and do not adhere to new build requirements or take advantage of advancing technologies. There is additionally a two year backlog of surveys requested by combatant commanders, indicating a strong demand signal requiring continued presence.

The Next Generation T-AGS (NexT-AGS) project is sponsored by the Oceanography Capabilities and Requirements division of OPNAV (Office of the Chief of Naval Operations) in order to investigate a new design. This design is faster, more fuel-efficient, quieter, and augmented with organic unmanned capabilities while incorporating the following regulatory mandates: double-hulling in way of all oil and fuel tanks, tier-3 main engine exhaust gas treatment, sewage / garbage treatment, and ballast water treatment. To facilitate the launch/operation/retrieval of Autonomous Underwater Vehicles (AUVs), the NexT-AGS is fitted with a large moonpool which can take advantage of the benefits to surveys and scientific exploration while accommodating potential rapid advancements in autonomous vehicle capabilities.

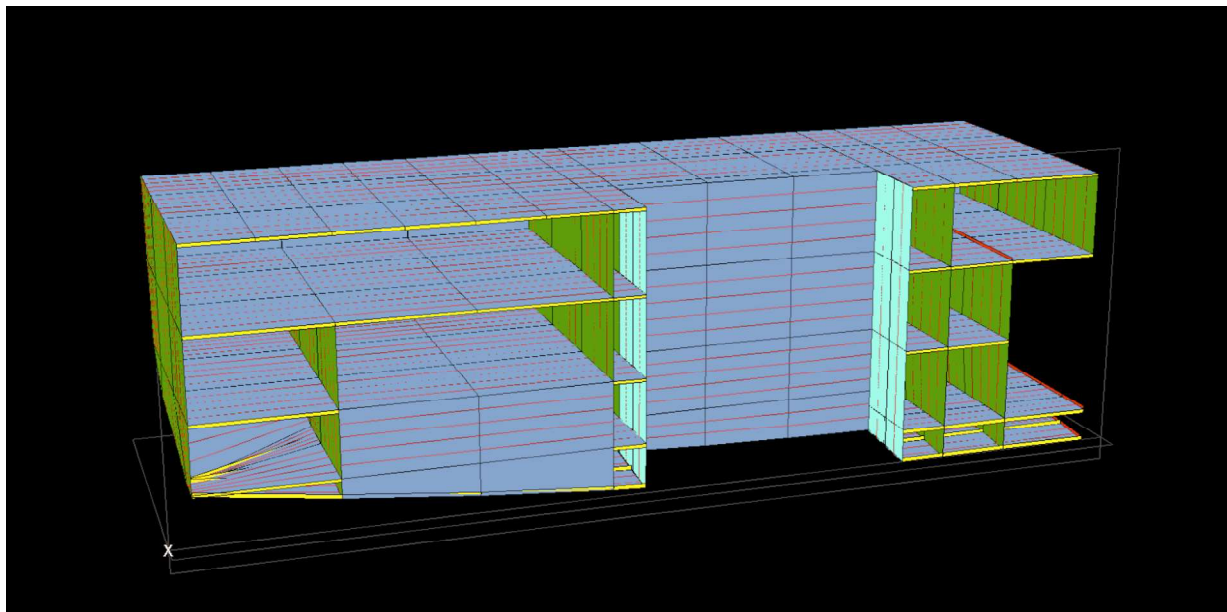
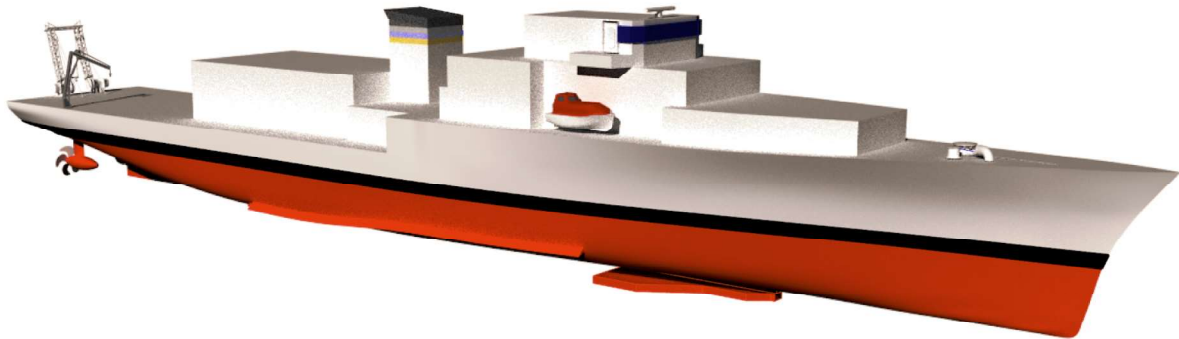
The current T-AGS 60 class required many changes since her contract was initially awarded in 1991, from the sonar gondola that was backfitted to reduce the sonar degradation from bubble sweepdown to the enlarged skeg that was backfitted to improve the poor directional stability due to the sonar gondola. These backfits were costly and added a significant resistance penalty to the T-AGS class. The challenge for the NexT-AGS was to develop a design that met all requirements and regulations and provided superior survey quality while also minimizing resistance.

The NexT-AGS design originated with the T-AGS hullform which was subsequently heavily modified and redesigned to meet regulatory mandates and American Bureau of Shipping (ABS) classification requirements. Key changes to the propulsion system include the use of more efficient electric drive azimuth pods with an optimized engine size and operating configuration for both transit and survey speeds. These changes provide an increase in survey coverage area by 17-47% over the baseline T-AGS at no additional fuel cost. A larger moonpool accommodates the largest variants of AUVs without the complex launch and recovery system currently in place and provides margin for future growth in AUV usage. The longer hullform allows moving the gondola towards midships which increases directional stability, allowing for the use of a smaller skeg.

Preliminary performance analyses on the NexT-AGS conclude that our initial design provides a feasible solution to meet the current sponsor demands. It improves survey coverage area without sacrificing quality and provides adequate margin for both power and AUV carrying capacity.

NexT-AGS Key Characteristics:

- LBP: 117 m
- Beam: 17.5 m
- Draft: 5.5 m
- Transit Speed: 15 knots
- Endurance Range: 13000 nm
- Displacement: 5994 mton
- Moonpool Size: 12' x 24'
- Dynamic Position: Level 1
- ABB Azipod CO 1250 Electric Podded Propulsors



Structural Analysis of the Moonpool section within Maestro Marine