RISING TO A NEW CHALLENGE

For the past century, the United States Navy has been the most powerful force on the seas and has played a critical role in the nation’s security. As military technologies and adversaries become increasingly advanced, Department of Defense (DoD) leaders are working mightily to maintain that position—today and in the future.

But staying ahead in a high-speed, low-cost environment presents a new set of challenges for today’s fleet. Naval platforms have traditionally taken a long time and large budgets to create. Meanwhile, systems in the field must maintain continuous combat capability, regardless of budget pressures or age. An “elbow-grease” approach simply will not keep pace in the modern defense landscape.

To overcome the obstacles and meet these new demands, the DoD must lean heavily on advanced technology to reduce costs while expediting delivery of new ships. And it must use this technology to quickly address maintenance and training issues for long-term combat effectiveness and viability of existing platforms.

WHERE EXPERIENCE & TECHNOLOGY MEET

As one of the largest naval architecture firms in the world, Alion is at the forefront of developing innovative design approaches and engineering solutions to address the challenges facing the 21st-century fleet. We apply artificial intelligence (AI) technology to advanced developmental systems, including autonomous vessels, to progress the state of the art in efficient force projection.

Our experience in total integrated ship system design is unparalleled, having supported nearly every major U.S. Navy ship design program for the past 40 years as well as a number of international shipbuilding programs. We are the Prime contractor on the Surface Combatant Ship design program for the U.S. Navy and delivered a cutting-edge plan, with various unique system and design features.

With a vendor-agnostic approach and agile engineering methodology, we are known and trusted partners to our government clients. We apply this proven process to support watercraft programs across every branch of service, on time and under budget.
ALION’S NAVAL & MARITIME SOLUTIONS

For us, success means more than financial results; it means returning the men and women of the U.S. Armed Forces to their loved ones, safe and sound. Protecting the people who dedicate their lives to defending us is at the heart of everything we do. Our engineers, technologists, program managers, and other first-class experts apply this philosophy to deliver naval and maritime solutions that support today’s missions.

NAVAL ARCHITECTURE
Our naval architects are experts in the design, development, and verification of complex ships and marine structures against today’s distinct and exacting performance specifications.

MARINE ENGINEERING
We lead design and integration of mission-critical systems and components to optimize function, space, weight, ruggedness, survivability, maintainability, cost, and performance.

STRUCTURAL ENGINEERING
Structural integrity is key to longevity and safety. We design the hull and internal structure for strength as well as other factors, including weight, producibility, cost, survivability, and more.

COMPREHENSIVE LIFECYCLE SUPPORT
Alion engineers provide inspection, performance evaluation, support, repair, maintenance, and ownership cost evaluation of systems and component equipment items.

SPOTLIGHT: SSDG/GAS TURBINE DUCTING

The flat, oval-design ship service diesel generator and gas turbine exhaust uptakes on LHD 8 have experienced recurring cracking and structural failures. Both LHA 6 and DDG 1000 uptake installations were based on the LHD 8 designs and were at risk of similar failures.

As part of the government team, our engineers investigated how these failures could be resolved. We helped to develop a thermal data test plan, analyzed recorded thermal and dynamic response data, and determined that the root causes were related to thermal transients in the gas turbine duct and pressure fluctuations in the diesel generator duct.

Using these insights, we presented design alternatives that led to a revision of the requirements and that will, ultimately, prevent failures of this nature in the future.

About Alion Science and Technology

At Alion, we combine large company resources with small business responsiveness to design and deliver mission-critical engineering solutions. With an 80-year technical heritage and an employee-base comprised of more than 30% veterans, our engineers, technologists, and program managers bring together an agile engineering methodology and the best tools on the market to deliver mission success faster and at lower costs. Based just outside of Washington, D.C., we help clients turn big ideas into real solutions. Learn more at www.alionscience.com/navalandmaritime.

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