



March 12, 2024

MEMORANDUM FOR: Richard Spinrad, Ph.D.
Under Secretary of Commerce for Oceans and Atmosphere and
NOAA Administrator
National Oceanic and Atmospheric Administration

A handwritten signature in black ink, appearing to read "F. Meny, Jr.", written over a horizontal line.

FROM: Frederick J. Meny, Jr.
Assistant Inspector General for Audit and Evaluation

SUBJECT: *Management Alert: NOAA Must Take Action to Address Significant Ship
Fleet Recapitalization Risks*
Final Report No. OIG-24-016-I

Attached is an alert to inform management of the current risks to the National Oceanic and Atmospheric Administration's (NOAA's) ship fleet recapitalization program.

While conducting a risk assessment to inform our *Fiscal Year 2024 Top Management and Performance Challenges Facing the Department of Commerce* report, we concluded that the ship construction program NOAA is currently undertaking is insufficient to fully meet the requirements outlined in the bureau's fleet plan. Further, the lack of an up-to-date fleet plan has negatively impacted NOAA's ability to communicate its capability needs and required funding. In addition, we highlight a significant challenge in ensuring that the agency has sufficient staff with the required skills to simultaneously acquire three new classes of ships. We also identify a need for increased programmatic oversight of these complicated and expensive acquisition programs.

In response to the draft of this alert, NOAA's Director, Office of Marine and Aviation Operations and Director, NOAA Corps provided technical comments regarding issuance procedures for NOAA's fleet plan and comments for each of the proposed actions for change. We considered the technical comments and made changes to this final alert where appropriate. Also, we have summarized NOAA comments for each of the proposed actions and added our own comments in the final alert. The full response is included in an appendix.

Please note that we are not requesting a formal action plan for the proposed actions for change. However, any action NOAA takes as a result of this alert will inform our ongoing oversight of its ship programs, including plans for future audits.

We will post this final management alert on our public website. If you have any questions or concerns, please contact me at (202) 793-2938; Kevin Ryan, Director for Audit and Evaluation, Systems Analysis and NOAA Programs, at (202) 750-5190; or Robert Tetreault, Director for Audit and Evaluation, Marine and Aviation Programs, at (443) 842-5293.

Attachment

cc: Jainey K. Bavishi, Assistant Secretary of Commerce for Oceans and Atmosphere and Deputy NOAA Administrator
Michael C. Morgan, Assistant Secretary of Commerce for Environmental Observation and Prediction, NOAA
Benjamin Friedman, Deputy Under Secretary for Operations, NOAA
Karen Hyun, Chief of Staff, NOAA
Rear Admiral Nancy Hann, Director, NOAA Office of Marine and Aviation Operations and Director, NOAA Commissioned Officer Corps
Mark Seiler, Chief Financial Officer, NOAA



Management Alert

NOAA Must Take Action to Address Significant Ship Fleet Recapitalization Risks

March 12, 2024

Final Memorandum No. OIG-24-016-I

Key Issues

The National Oceanic and Atmospheric Administration's (NOAA's) current ship construction program is insufficient to fully meet the requirements outlined in the bureau's fleet plan. Further, the lack of an up-to-date fleet plan has negatively impacted NOAA's ability to communicate its capability needs and required funding. In addition, NOAA faces a significant challenge in ensuring that the agency has sufficient staff with the required skills to simultaneously acquire three new classes of ships. We also identify a need for increased programmatic oversight of these complicated and expensive acquisition programs.

Proposed Actions for Change

To mitigate significant risk to its ship fleet recapitalization efforts, we propose that NOAA:

1. Annually update its fleet plan to identify year-over-year changes to planned ship retirements, new ship construction needs, major repairs or service life extensions, updated condition assessments/inspections, new observational collection capability requirements, and any associated changes to funding requirements, and submit this update as part of its Congressional budget justification.
2. Annually report metrics and impacts to NOAA line office missions of the data collected by NOAA ships (including loss of data collection due to ship retirements).
3. Develop and implement a plan to ensure that the agency has staff with sufficient expertise to manage its ship fleet recapitalization efforts.
4. Design and implement increased programmatic oversight of its ship fleet recapitalization programs.

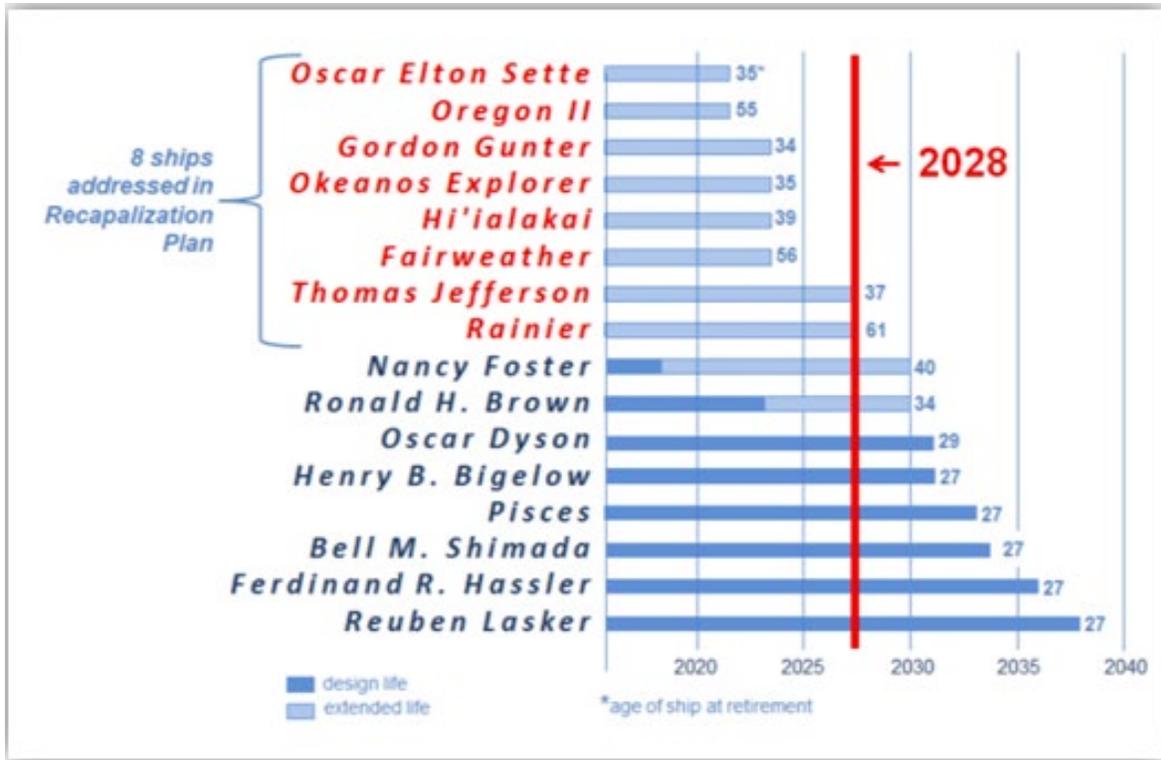
Background

NOAA's Office of Marine and Aviation Operations (OMAO) operates and maintains NOAA's fleet of coastal, regional, and open-ocean vessels dedicated to oceanographic research, charting and surveying, marine wildlife surveys and research, and fisheries management. NOAA's fleet of 16 ships was reduced to 15 after it decommissioned one ship (*Hi'ialakai*) due to material condition and age in 2020.¹ According to NOAA's fleet plan, eight of its ships (including *Hi'ialakai*) needed to be replaced by 2028 to avoid significant degradation to

¹ Another ship, the *Rainier*, is at least temporarily out of service due to a fire that occurred in September 2023. NOAA has not yet decided whether to repair or decommission the ship.

NOAA data collection missions.² In addition to the decommissioned ship, five of these vessels have already exceeded their service lives, and two other ships' service lives will expire in 2028, as shown in Figure I.³

Figure I. Estimated Service Life of NOAA Ships



Source: NOAA Fleet Plan (p. 24)

Note: According to the plan, the first eight ships in figure I needed to be replaced by 2028. However, due to its material condition, NOAA decommissioned *Hi'ialakai* in December 2020.

OMAO is undertaking a fleet recapitalization⁴ that will deliver four new ships by 2028. The projected cost for the four ships under contract is nearly \$600 million.

NOAA's 2016 Fleet Plan

The NOAA Fleet Plan, dated October 2016, is the foundational planning document for the ships that NOAA operates. It articulates a long-term strategy for recapitalization with new ships, fleet management best practices, tasking of ships to fulfill missions for line offices, and extending the service lives of existing ships. The plan identifies eight ships that must be replaced by 2028 to avoid impacts on mission activities. It depicts the percentage loss of capability across a variety of mission areas and the geographic locations that will be affected

² U.S. Department of Commerce National Oceanic and Atmospheric Administration, October 31, 2016. *The NOAA Fleet Plan: Building NOAA's 21st-Century Fleet*. Silver Spring, MD: NOAA, 25. Available online at <https://oeab.noaa.gov/wp-content/uploads/2020/Documents/NOAA-Fleet-Plan.pdf> (accessed June 12, 2023).

³ DOC NOAA Fleet Plan, 24.

⁴ In this context, "recapitalizing" or "recapitalization" is the process of retiring old ships and replacing them with new ships that are optimized for current requirements and missions.

if NOAA’s oldest ships are not replaced. Figure 2, excerpted from the plan, shows the expected impact to various regions, with the Pacific region being the most severely affected.

Figure 2. Lost At-Sea Capability by 2028

			Regions							
			Northeast	Mid-Atlantic	Southeast Atlantic	Gulf of Mexico	Tropical Atlantic & Caribbean	West Coast	Alaska & Western Arctic	Pacific Islands & Tropical Pacific
Mission & At-Sea Activities	Charting & Surveying	Navigation, Observations and Positioning	H	H	H	H	L	VH	VH	VH
		Coastal Science and Assessment	M	M	M	M	M	M	VH	VH
	Assessment and Management of Living Marine Resources	Protected Resource, Science and Management	M	M	M	VH	VH	L	L	VH
		Fisheries Science & Management	M	L	M	H	L	L	L	VH
		Habitat Conservation & Restoration	M	M	M	M	M	L	H	VH
	Oceanographic & Modeling Monitoring, Research	Climate Research	M	H	M	M	M	M	H	H
		Weather & Air Chemistry	M	H	M	M	M	M	H	H
		Ocean, Coastal and GL Research	M	H	M	M	M	M	H	H

Score		Capability Loss
L	Low	0-29%
M	Moderate	30-59%
H	High	60-89%
VH	Very High	90-100%

Source: NOAA Fleet Plan (p. 26; information abridged and adapted for Section 508 compliance)

Our Previous Related Work

In fiscal year (FY) 2020, we issued a report that addressed the need to improve planning and governing of OMAO’s ship fleet recapitalization effort.⁵ In FY 2021, we issued a report that found OMAO lacked a disciplined requirements management process to ensure future acquisitions meet user needs.⁶ The 2020 report recommended establishing a reporting mechanism to notify Congress and other key stakeholders proactively of significant updates or changes to the current fleet recapitalization plan. The 2021 report recommended that OMAO develop and regularly update a long-range vessel acquisition plan that lays out the dependencies between fleet objectives, funding, inventory, technology, and sustainment costs, among other things, and supports program milestone requirements. To date, NOAA has not met either of these

⁵ DOC Office of Inspector General, November 12, 2019. NOAA’s Office of Marine and Aviation Operations Needs to Improve the Planning and Governing of Its Ship Fleet Recapitalization Effort, OIG-20-006-A. Washington, DC: DOC OIG.

⁶ DOC OIG, May 25, 2021. OMAO Must Define and Implement a Disciplined Requirements Management Process to Ensure Future Acquisitions Meet User Needs, OIG-21-027-I. Washington, DC: DOC OIG.

recommendations because implementation was dependent upon issuing an updated fleet plan, the development of which has been prolonged and is currently pending approval from OMB.

Our Observations

OMAO's ship fleet recapitalization program is at high risk of cost growth, schedule delays, and fleet capability gaps due to inadequate communication to Congress regarding program and funding requirements in its fleet plan, staffing challenges, and insufficient oversight.

Lack of an up-to-date fleet plan threatens NOAA's ability to secure sufficient funding and obscures capability gaps

NOAA has not requested funding and authorization to contract for all eight ships needed to meet the requirements in its 2016 fleet plan. To mitigate the risk of capability loss, NOAA must obtain funds and construct four additional ships (beyond the acquisition of four ships already underway)—a process that typically requires 5–6 years from funding to be operationally available.

The 2016 fleet plan does not reflect the current status of NOAA's fleet, including

- the projected sustainment costs of aging vessels;
- the planned retirement dates of aging vessels⁷;
- current status of recapitalization plans and projected costs;
- a long-term profile of funding requirements to deliver the new construction ships within the required timeline; or
- the net impact to NOAA missions and the public of the loss of data collection capability by these obsolete vessels.

While the fleet plan identified specific areas of lost capability that would result from a failure to replace its oldest ships (see Figure 2, above), NOAA has not articulated the greater impact to its line offices and the public if it fails to accomplish these missions, especially to its surveying and charting mission in the Pacific region.

Further, OMAO's recent recapitalization efforts do not appear to address these potential capability gaps with the same priority depicted in the plan. Since the 2016 fleet plan was issued, NOAA has initiated the acquisition of only four ships to be delivered by 2028: two "Class A" ships—general oceanographic research vessels—with expected delivery in 2025 and 2026, and two "Class B" ships—hydrographic charting and survey vessels—with expected delivery in 2027 and 2028. The Class A ships' primary mission is the least threatened of NOAA's three mission areas depicted in Figure 2, yet they are the first ships it is replacing.

In addition, OMAO has begun a process to identify and validate top-level requirements and key attributes for "Class C" vessels, which will be shallow draft vessels for the assessment and management of living marine resources. Delivery dates for Class C vessels are not yet known; however, given the acquisition timeline, it is unlikely NOAA would take delivery of these vessels by 2028.

⁷ NOAA has contracted to extend the service life of one ship and has delayed the retirement of others due to the lack of new ships.

Without an up-to-date fleet plan, there has been insufficient communication to Congress regarding the funding requirements to meet the 2016 fleet plan objectives. NOAA's annual budget requests from FYs 2022 through 2024 have sought \$75 million per year for ship acquisitions. However, each new Class A and Class B ship has cost an average of nearly \$150 million. Only four new ships have been funded, out of the eight that the fleet plan identified as being required by 2028. NOAA's failure to identify and communicate the technical scope, full estimated cost, and required FY funding for each new ship to the Department, OMB, and Congress threatens its ability to obtain the funding necessary to sufficiently recapitalize its fleet within the next 5 years.

Without an annual update of its fleet plan with its Congressional budget justification, NOAA misses an opportunity to communicate changes to requirements and associated funding needs. To be effective, the plan should include year-over-year changes to planned ship retirements, new ship construction needs, major repairs or service life extensions, updated condition assessments/inspections, new observational collection capability requirements, and any associated changes to funding requirements. Considering the lead time required to fund, design, build, accept, and deliver ships or other capital assets, NOAA's infrequent updates of its fleet plan are insufficient to respond to emerging needs, new missions, and changed economic conditions. While there is no statutory requirement for NOAA to do so, the U.S. Navy is required by 10 U.S. Code § 231 to submit an annual 30-year shipbuilding plan to Congress. A senior analyst at the Congressional Budget Office has testified about the importance of these plans, stating:

The 30-year ship and aircraft plans benefit Congressional oversight and decisions about funding in at least three different ways:

- Thirty-year plans may reveal cumulative long-term effects of annual appropriation decisions that may not be apparent from a shorter perspective.
- Such plans may also reveal imbalances between long-term objectives for inventories and projected budgetary resources.
- The plans provide information on the U.S. Department of Defense's assumptions about the service lives of major weapons systems and how those assumptions may affect its inventory goals.⁸

Staff with sufficient expertise are needed to manage ship recapitalization efforts

OMAO also faces a significant challenge in ensuring that the agency has sufficient staff with the required skills to simultaneously acquire three new classes of ships. It last procured a ship without Navy assistance in 2012. The current efforts require a significant NOAA investment in human capital for program management and shipbuilding quality assurance oversight. The acquisition of Class A ships is being led by the Navy's Naval Sea Systems Command (NAVSEA), which is providing program management, design management, cost estimating, construction quality assurance, contracting, and testing/acceptance for the new ships. OMAO is leading the acquisition of Class B ships, with technical and cost estimating support from NAVSEA as needed. OMAO will also lead the acquisition of Class C ships. However, these acquisition approaches are not reflected in the 2016 fleet plan. An up-to-date fleet plan should include a well-defined, long-term ship construction plan and schedule that supports OMAO's efforts to obtain, train, and retain a shipbuilding workforce.

⁸ Congressional Budget Office, June 1, 2011. *The Value of 30-Year Defense Procurement Plans for Congressional Oversight and Decisionmaking* (testimony of Eric J. Labs before the U.S. House of Representatives Subcommittee on Oversight and Investigations). Washington, DC: CBO, 3.

Programmatic oversight needs to increase to match the scale and importance of these capabilities

Recently, the Class A acquisition program indicated that delivery of its second vessel, *Discoverer*, may be delayed by up to 1 year with a yet-to-be-negotiated increase in cost. In January 2021, a NOAA line office⁹ identified that *Discoverer* as designed would not fully replicate the deep ocean observational capabilities of the ship it is replacing, *Okeanos Explorer*, and subsequently communicated that to OMAO in August 2021. Since August 2021, OMAO has worked with NAVSEA to identify solutions to mitigate this observational gap, but it did not present this matter to the NOAA Program Management Council until August 2023—2 years after OMAO learned of the gap.

Further, the NOAA Program Management Council is only briefed on the full status of the fleet recapitalization program on a quarterly basis, despite significant problems in multiple ship class acquisitions (overall assessment of “Red” for 4 consecutive months, August 2023 through November 2023, for Classes A and C). In addition, the Program Management Council agenda only allocates 10 minutes each month to discuss the fleet recapitalization program. The at-risk shipbuilding programs, Classes A and C, are briefed quarterly, while the lone program reporting “Green,” Class B, is briefed monthly.

Proposed Actions for Change

To mitigate significant risk to its ship fleet recapitalization efforts, we propose that NOAA:

1. Annually update its fleet plan to identify year-over-year changes to planned ship retirements, new ship construction needs, major repairs or service life extensions, updated condition assessments/inspections, new observational collection capability requirements, and any associated changes to funding requirements, and submit this update as part of its Congressional budget justification.
2. Annually report metrics and impacts to NOAA line office missions of the data collected by its ships (including loss of data collection due to ship retirements).
3. Develop and implement a plan to ensure the agency has staff with sufficient expertise to manage its ship fleet recapitalization efforts.
4. Design and implement increased programmatic oversight of its ship fleet recapitalization efforts.

Our objective was to inform management of the current risks to NOAA’s ship fleet recapitalization program. We conducted our fieldwork from June 2023 to December 2023. Our conclusions are based on evidence obtained from NOAA documentation, Congressional testimony, and our prior reports. We conducted our work in accordance with Quality Standards for Inspection and Evaluation issued by the Council of the Inspectors General on Integrity and Efficiency. Those standards require that the evidence must sufficiently and appropriately support our findings and provide a reasonable basis for our conclusions. We believe that the evidence obtained provides a reasonable basis for our observations and conclusions. We will post this final management alert on our public website.

⁹ The Office of Atmospheric Research, Office of Ocean Exploration and Research.

Summary of Agency Response and OIG Comments

On December 22, 2023, we discussed the contents of this management alert with OMAO officials. On February 26, 2024, we provided NOAA with a draft of the alert for comment. In response, NOAA's OMAO provided technical comments regarding issuance procedures for its fleet plan and comments for each of the proposed actions for change.

We have considered the technical comments and made changes to this final alert where appropriate. Summaries of NOAA's comments on the proposed actions and OIG comments are provided below.

- **Proposed action 1:** OMAO indicated that NOAA will produce an updated fleet plan on a 2-year cycle—once every session of Congress. NOAA intends to evolve strategies in the plan over time.
 - OIG Comment: While we propose annual updates, if NOAA does update the plan on a 2-year cycle and refines the plan in accordance with our proposed action, it will significantly improve the posture of its recapitalization efforts.
- **Proposed action 2:** OMAO indicated it was not the appropriate NOAA office to report metrics and impacts to NOAA line offices of the data collected by its ships. Rather, NOAA line offices are best suited to this task.
 - OIG Comment: This proposed action should be coordinated among NOAA line offices.
- **Proposed action 3:** OMAO indicated that NOAA has been building an internal ship recapitalization team in OMAO and a large-contract team in NOAA's Acquisition and Grants Office to manage OMAO contracts.
 - OIG Comment: We emphasize the need for additional plans to meet the considerable challenge NOAA has in obtaining sufficient expertise.
- **Proposed action 4:** OMAO stated that it follows the Department's major system acquisition framework, which requires programmatic plans and baselines. OMAO also noted that for its Class B and C programs, it has established a program management office with relevant acquisition experience.
 - OIG Comment: While the Department's framework helps establish programmatic plans and baselines, our alert describes challenges with the ongoing oversight of these programs that is conducted by NOAA itself. Similarly, the establishment of a program management office does not address the need for adequate oversight.

The full response is included in the appendix. We appreciate NOAA's comments and cooperation as we prepared this alert.

Our Future Work

The concerns presented in this management alert and any action NOAA takes as a result will inform our ongoing oversight of NOAA's ship-related programs.

Appendix: Agency Response

NOAA's response to our draft management alert follows on p. 9.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OFFICE OF MARINE AND AVIATION OPERATIONS
Silver Spring, Maryland 20910-3282

February 29, 2024

MEMORANDUM FOR: Frederick J. Meny, Jr
Assistant Inspector General for Audit and Evaluation
U.S. Department of Commerce

FROM: RADM Nancy L. Hann, NOAA
Director, Office of Marine and Aviation Operations and
Director, NOAA Corps

SUBJECT: Response to Draft Management Alert: NOAA Must Take Action to
Address Significant Ship Fleet Recapitalization Risks

HANN.NANCY.LYN
.1088955338
Digitally signed by
HANN.NANCY.LYN.1088955338
Date: 2024.02.29 20:09:47 -05'00'

In response to Draft Management Alert regarding Ship Recapitalization Risks, we have the following comments:

- NOAA's updated Fleet Plan (update to the 2016 Fleet Plan) has cleared NOAA and DOC. After releasing the President's Budget in March, NOAA/DOC anticipates briefing the White House Office of Management and Budget (OMB) on the updated Fleet Plan. Once OMB clears the Plan, the document can be made public. The statement on page three that NOAA has "chosen" to provide the plan to DOC, OMB, and Congressional staff before releasing the plan is incorrect. The Plan will be presented to the Hill and be made publicly available after OMB clears the document. This is the standard procedure for clearing a Congressional report.
- Proposed Action for Change #1 – Given that a typical fleet plan takes 18-24 months to clear through NOAA, DOC, and OMB, it is unrealistic that NOAA updates its fleet plan on an annual cycle as the Navy does. NOAA has a fraction of the budget and staffing that the Navy does for developing a shipbuilding plan. NOAA states in the updated plan that it will present an updated plan on a two-year cycle, thus a new fleet plan will be available once every session of Congress. NOAA will continue to evolve the plan across all strategies identified in the plan, including assessment and utilization of uncrewed systems, small boats, and NOAA ships to meet NOAA's days at sea requirements.
- Proposed Action for Change #2 – NOAA's Office of Marine and Aviation Operations (OMAO) is not in a position to report on the impacts of data collected by the ships nor the impacts of loss of data due to ship retirements. While OMAO operates the ships, it does not identify the at-sea requirements, prioritize the at-sea requirements that are scheduled on the NOAA ships, design the science plans, or process the data into products



and services. Those decisions are made by the other NOAA Line Offices and they are best suited to report on the impacts that loss of data collection has on NOAA missions, products and services.

- Proposed Action for Change #3 – NOAA identified and has been methodically building an internal ship recapitalization and construction management team in OMAO and a large-contract team in AGO to manage OMAO large contracts, including ship building contracts. NOAA agrees additional staff and support will be required. The current team includes a combination of OMAO Federal Employees and contractor support (ECS Federal).
- Proposed Action for Change #4 – OMAO in partnership with AGO follows the DOC Scalable Acquisition Framework, which requires milestone documents, such as Management Plans, Project Baselines, Acquisition Strategies, and Risk Reports, to be approved by the OMAO Assistant Administrator and NOAA Administrator. The DOC milestone documents establish the baseline for funding and resources, including personnel required to execute each new construction program fully. For the Class B and C programs, the OMAO team has established a Program Management Office (PMO) that is comparable to a Navy PMO executing a program at a similar Acquisition Category (ACAT) level. The OMAO PMO includes personnel that have served in NOAA, Navy, Army, and US Coast Guard acquisitions. Our team is leveraging Class A experience during our Class B and future programs.