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Surface Ships: Status of the Navy's Phased Modernization Plan

Briefing for Congressional Committees

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Objectives

- House Report 113-446 accompanying the National Defense Authorization Act for Fiscal Year 2015 included a provision for GAO to review the costs, cost savings, benefits, and risks associated with the Navy's Phased Modernization Plan.
- This briefing:

  (1) describes the implementation plans the Navy developed for phased modernization and

  (2) assesses the extent to which the Navy identified and analyzed alternatives for achieving the goals of phased modernization.

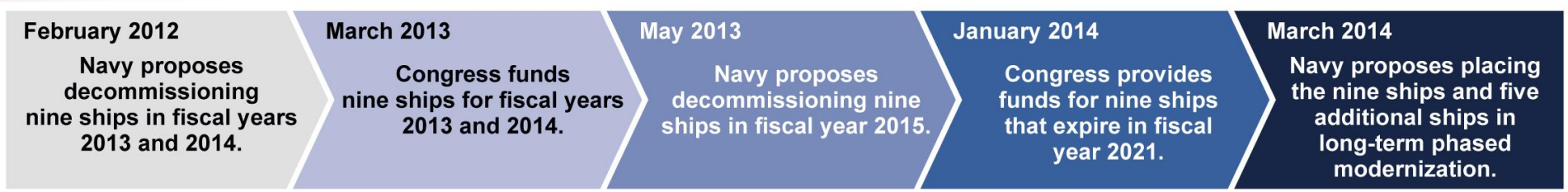
Scope and Methodology

- To describe the Navy's Phased Modernization Plan, we interviewed Navy headquarters and fleet officials and obtained testimonial evidence regarding the process the Navy followed in developing its Phased Modernization Plan. To the extent that documentation was available, we corroborated the testimonial evidence and discussed conflicting evidence with Navy officials.
- To assess the extent to which the Navy identified and analyzed alternatives for achieving the goals of phased modernization, we evaluated relevant Navy documentation, such as briefing slides and planning documents, and we interviewed Navy officials.
- For both objectives, we visited and spoke with experts on cruiser maintenance and modernization at two shipyards in Norfolk, Virginia, and San Diego, California, where the Navy anticipates work will be performed on the ships included in phased modernization. We also interviewed Department of Defense (DOD) and Navy officials, including officials from the Office of the Secretary of Defense, Cost Assessment and Program Evaluation; Office of the Chief of Naval Operations; Naval Sea Systems Command; Fleet Forces Command; and Naval Surface Forces. We did not validate the Navy's expected benefits and risks for the original Phased Modernization Plan.
- We obtained technical comments from the Navy and incorporated them as appropriate.

Background

- In March 2014, as part of the President's Budget for Fiscal Year 2015, the Navy proposed a Phased Modernization Plan that included placing 11 *Ticonderoga*-class cruisers (large surface combatants) and three dock-landing ships (amphibious ships) into a phased modernization and maintenance period to reduce near-term funding requirements and as a means to extend the life of the ships.
- This action followed a series of key Navy and congressional actions for cruisers and dock-landing ships as shown in figure 1.

Figure 1: Key Navy and Congressional Actions for Cruisers and Dock-Landing Ships



Source: Navy information and U.S. law. | GAO-15-510R

Summary

The Navy's Phased Modernization Plan placed 11 cruisers and three dock-landing ships into a reduced operating status for maintenance and modernization. The ships were to be minimally manned while in phased modernization for between 5 and 12 years and then returned to the fleet.

In February 2015, the Navy revised its original Phased Modernization Plan and put forth a new plan for its cruisers. The new plan stated that each year no more than two cruisers would be placed in phased modernization; no cruiser would remain in phased modernization for more than 4 years; and no more than six cruisers would be in phased modernization at the same time.

The Navy did not consider any formal alternatives to the original Phased Modernization Plan. Navy officials stated that the plan evolved over time and informal discussions were held within the Navy to determine the best plan. In addition, the Navy identified benefits and risks of its original Phased Modernization Plan. Under the new plan, some of the benefits and risks the Navy identified in its original plan may increase while others may decrease.

Objective 1: *What implementation plan did the Navy develop for phased modernization?*

- The Navy's Phased Modernization Plan placed 11 cruisers and three dock-landing ships into a reduced operating status for maintenance and modernization. The cruisers would be minimally manned while in the reduced status for between 5 and 12 years. The manning would allow essential tasks to be completed while reducing costs, according to Navy officials.
- According to Navy officials, under the Phased Modernization Plan, the planning efforts surrounding the dock-landing ships would not differ significantly from the normal long-term maintenance planning efforts. The modernization and maintenance period for the dock-landing ships is scheduled to be 4 years. However, unlike the cruisers, the dock-landing ships are to undergo phased modernization one at a time. Therefore, we focused on the Navy's Phased Modernization Plan as it relates to cruisers.
- The plan calls for six of the cruisers to reside in San Diego and five to be located in Norfolk during the maintenance and modernization period.
- Figure 2 shows the homeports for Phased Modernization Plan cruisers as of February 2015.

Objective 1: *What implementation plan did the Navy develop for phased modernization? (cont.)*

Figure 2: Homeports for Phased Modernization Plan Cruisers as of February 2015

Source: GAO analysis of Department of Defense data. | GAO-15-510R

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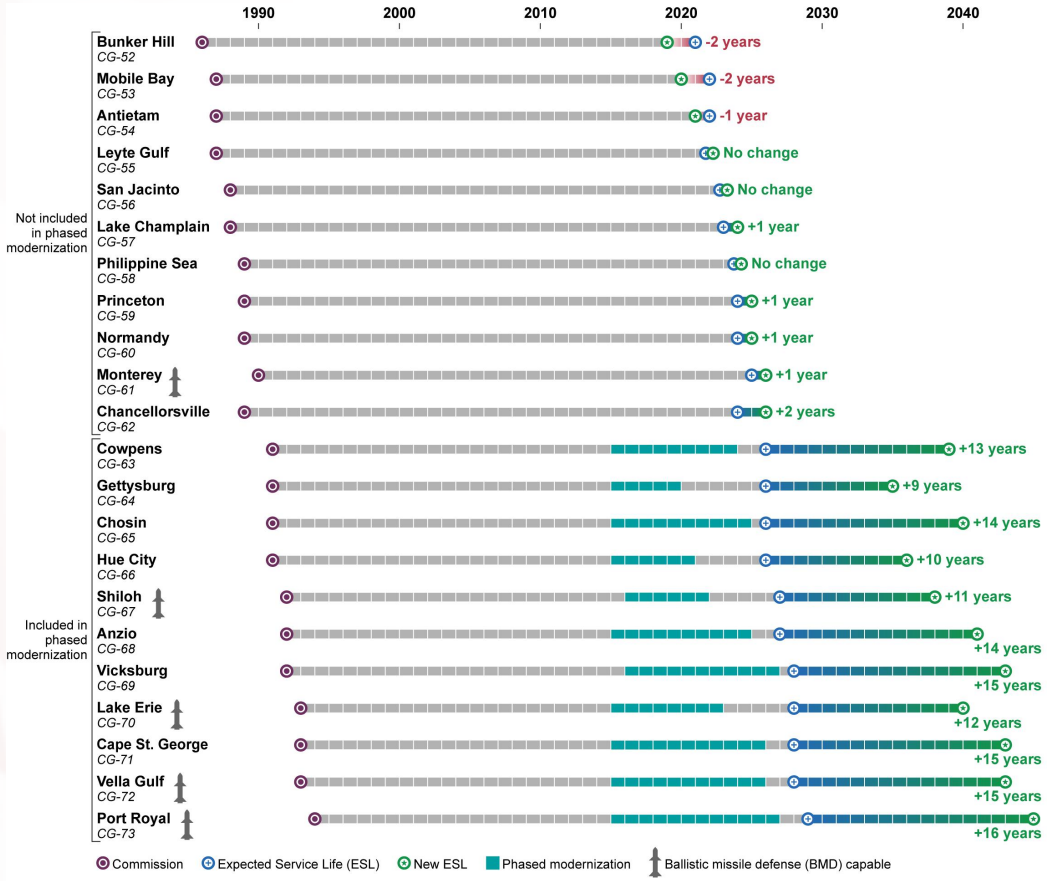
Objective 1: *What implementation plan did the Navy develop for phased modernization? (cont.)*

- The Navy's original plan identified, at a broad level, the work to be conducted as part of modernization efforts, equipment storage procedures, and roles and responsibilities.
- The plan did not define crew size for the ships during the modernization and maintenance period or fully identify expected costs during the maintenance period, according to Navy officials.[1]
- The plan did not fully establish guidance for "cannibalization" or rotatable pool equipment or identify all the parts that would be available for use in the rotatable pool.
- Figure 3 shows the expected effect on the service life of the cruisers included in the Phased Modernization Plan.

[1]In technical comments, Navy officials stated that they determined the crew size for the revised plan to be 45 billets per ship.

Objective 1: *What implementation plan did the Navy develop for phased modernization? (cont.)*

Figure 3: Navy's Expected Effect of Original Phased Modernization Plan on Service Life of Cruisers



Source: GAO analysis of Navy documents. | GAO-15-510R

Objective 1: *What implementation plan did the Navy develop for phased modernization? (cont.)*

Current Status

- Since March 2014, the implementation of the Phased Modernization Plan has been delayed as the Navy waited for congressional approval, according to officials.
- The National Defense Authorization Act for Fiscal Year 2015 requires the Navy to modernize two cruisers beginning in fiscal year 2015, subject to certain terms and conditions, and requires reporting on the modernization effort.
- The Navy plans to induct USS *Cowpens* (CG-63) and USS *Gettysburg* (CG-64) into modernization in fiscal year 2015 and USS *Vicksburg* (CG-69) and USS *Chosin* (CG-65) in fiscal year 2016. In 2014, the Navy placed the USS *Gettysburg* into an induction continuous maintenance availability period in preparation for transitioning the ship into phased modernization, according to Navy officials.
- In February 2015, as part of the President's fiscal year 2016 budget request, the Navy introduced a new "2-4-6" version of the Phased Modernization Plan. The 2-4-6 plan stipulates that each year no more than two cruisers will be placed in phased modernization; no cruiser will remain in phased modernization for more than 4 years; and no more than six cruisers may be in phased modernization at the same time.

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Objective 2: *To what extent did the Navy identify and analyze alternatives for achieving the goals of phased modernization?*

- According to Navy officials, the Navy did not consider any formal alternatives to the original Phased Modernization Plan submitted as part of the President's Budget for Fiscal Year 2015. Navy officials stated that the Navy's Phased Modernization Plan evolved after Congress rejected the Navy's earlier proposal to decommission nine ships and that there were discussions held to determine the best plan.
- The Navy discussed the details of phased modernization in telephone and e-mail correspondence, according to Navy and DOD officials. As these communications are largely undocumented, it is unclear the extent to which the Navy considered formal alternatives associated with the plan.
- The Navy identified benefits and risks of its original Phased Modernization Plan. The following tables show these benefits and risks as well as GAO's analysis of the likely effect of the new 2-4-6 version of the plan, which was part of the Navy's budget submission for fiscal year 2016.
- According to Navy officials, because Congress did not approve its Phased Modernization Plan, the Navy made further modifications to the plan and adopted the 2-4-6 plan, which the officials believe is consistent with congressional intent.

Objective 2: *To what extent did the Navy identify and analyze alternatives for achieving the goals of phased modernization? (cont.)*

Table 1: Expected Benefits of Initial Phased Modernization Plan and Revised 2-4-6 Plan, as Identified by Navy Officials and GAO

Original plan to remove 11 cruisers all at once	*Expected benefit identified by Navy*	*Change in expected benefit under 2-4-6 plan identified by GAO*
Long-term benefits to cruiser fleet	• Expected service life of cruisers will increase by approximately 5 years. By placing cruisers in storage; performing hull, mechanical, and electrical maintenance, and modernizing combat systems, the Navy anticipates it will be able to extend expected operational service life from 35 to 40 years. • The Air Defense Commander platform for 11 carrier strike groups is sustained into the 2040s. This means cruisers can retain their role in leading and coordinating the defense of the carrier strike group.	**Reduced benefit** • Navy anticipates it will be able to extend expected service life, but this will not sustain the cruisers into the 2040s as under the original plan.
Supports ship-building industry	• Navy officials stated phased modernization will provide the shipbuilding industry with a more predictable, sustained workflow.	**Reduced benefit** • Shipbuilding industry workflow is less predictable due to shortened time frames to complete work.
Cost avoidance	• The Navy estimates a short-term cost avoidance of about $3.8 billion for cruisers. Specifically, the Navy anticipates avoiding $1.6 billion in personnel and $2.2 billion in operations and maintenance costs from fiscal year 2015 through 2019.	**Reduced benefit** • The Navy will not achieve anticipated cost avoidance. Navy originally planned to have a combined total of 99 years of cost avoidance. Under the revised plan, it will have a maximum of 44 years of cost avoidance.
Rotatable pool equipment	• Parts would be removed from cruisers when they enter phased modernization and placed in a rotatable pool where they are available for other cruisers that were not part of the Phased Modernization Plan.	

Source: Navy information and GAO analysis.

Objective 2: *To what extent did the Navy identify and analyze alternatives for achieving the goals of phased modernization?*

Table 2: Expected Risks of Initial Phased Modernization Plan and Revised 2-4-6 Plan, as Identified by Navy Officials and GAO

Original plan to remove 11 cruisers all at once	*Expected risk identified by Navy*[a]	*Change in risk under 2-4-6 plan identified by GAO*
Returning cruisers to the fleet quickly	• Navy officials stated concerns about the ability to quickly return cruisers to the fleet, in the event of an emergency. They estimated it would take about 12 to 24 months to return a ship to operational status depending on factors such as where the cruiser is in the modernization process and how quickly a new crew could be assembled and trained.	**Reduced risk** • Cruisers will be removed from the fleet in a staggered fashion and returned more quickly. • Cruisers will remain in reduced operational status for shorter time frames. • At most, the Navy would need to bring back 6 cruisers rather than 11.
Dry-dock availability	• Phased modernization ships receiving hull, mechanical, and electrical upgrades in San Diego and Norfolk require a dry-dock period of about 120 days and will compete for dry-dock space with other ships receiving scheduled maintenance. • The *Optimized Fleet Response Plan* (O-FRP) places pressure on the Navy to complete maintenance on time so ships can deploy on schedule. • San Diego has two dry-docks capable of supporting cruisers, and Navy officials in San Diego stated that over the course of the next 2 years, dry-docks in San Diego have no more than 5 day periods where the docks are not scheduled for use.	**Increased risk** • Phased modernization ships receiving hull, mechanical, and electrical upgrades will continue to compete for dry-dock space, but the risk will increase as the work must be completed in shorter time frames. • Due to shorter time frames for modernization and the limited openings in the dry-dock schedule, the Navy risks either taking more than the required 4 years to complete modernization or causing other Navy ships to miss their O-FRP timelines.

Source: Navy information and GAO analysis.
[a]While risk factors have been identified by the Navy, they have not been quantified or subjected to a risk or sensitivity analysis.

Objective 2: *To what extent did the Navy identify and analyze alternatives for achieving the goals of phased modernization? (cont.)*

Table 2: Expected Risks of Initial Phased Modernization Plan and Revised "2-4-6" Plan, as Identified by Navy Officials and GAO

Original plan to remove 11 cruisers all at once	*Expected risk identified by Navy*	*Change in risk under 2-4-6 plan identified by GAO*

Effects on non-phased modernization cruisers (CGs 52 – 62)	• Cruisers not included in phased modernization may experience increased demand to meet the needs of the fleet. These demands may lead to the following:
	  • Additional costs to maintain cruisers that must operate at a higher tempo.
	  • Reduced time to perform continuous maintenance availabilities.
		Reduced risk
		• Cruisers will be returned to the fleet more quickly, increasing the Navy's flexibility by making more cruisers available to meet demands and potentially reducing the operational tempo of non-phased-modernization cruisers.

Fewer cruisers available for independent operations	• Each of the 11 non-phased-modernization cruisers will be matched on a one-to-one basis to a carrier strike group and may have less flexibility to deploy independently.	**Reduced risk** • Cruisers will be returned to the fleet more quickly. More active cruisers gives the Navy greater flexibility to deploy cruisers independent of carrier strike groups.
Ballistic missile defense capability	• As the four cruisers with ballistic missile defense capability enter phased modernization, there will be fewer ballistic missile defense ships in the fleet.	**Reduced risk** • Fewer ballistic missile defense capable cruisers will be removed from the fleet at one time. • No reduction in ballistic missile defense capable cruisers in fiscal year 2015 and fiscal year 2016.
Rotatable pool equipment		**Increased risk** • There will be fewer available parts for a larger number of ships that remain in the operational fleet. • There is a potential increase in costs to procure unavailable parts. • Ships awaiting parts have potentially lower operational availability.

Source: Navy information and GAO analysis.