



May 2022

NAVY SHIPS

Applying Leading Practices and Transparent Reporting Could Help Reduce Risks Posed by Nearly \$1.8 Billion Maintenance Backlog

Accessible Version

GAO Highlight

Highlights of [GAO-22-105032](#), a report to the Committee on Armed Services, House of Representatives

Why GAO Did This Study

To keep its fleet of surface ships, aircraft carriers, and submarines ready, the Navy requires ships to undergo regular, intensive depot-level maintenance. Yet at times the Navy has deferred required depot-level maintenance due to operational demands or limited shipyard capacity and funding. This has created a backlog of deferred maintenance. Navy leaders stated maintaining the ships it currently has is a cost-effective way to help achieve its goal of growing the fleet.

House Report 116-442 included a provision that GAO review Navy deferred depot maintenance. GAO examines the Navy's (1) extent of deferred depot maintenance on surface ships, aircraft carriers, and submarines; (2) use of leading practices in managing deferred maintenance; and (3) reporting on the costs of deferred maintenance.

GAO examined deferred depot-level maintenance for surface ships, aircraft carriers, and submarines, and the associated backlog; reviewed Navy data and documents, including financial documents; and interviewed Navy officials. GAO evaluated Navy practices against leading practices GAO had identified for managing public-sector deferred maintenance backlogs.

What GAO Recommends

GAO is making nine recommendations to incorporate leading practices for managing deferred maintenance and to improve Navy reporting on the depot maintenance backlog. DOD generally concurred with the recommendations.

View [GAO-22-105032](#). For more information, contact Diana Maurer at (202) 512-9627 or MaurerD@gao.gov.

May 2022

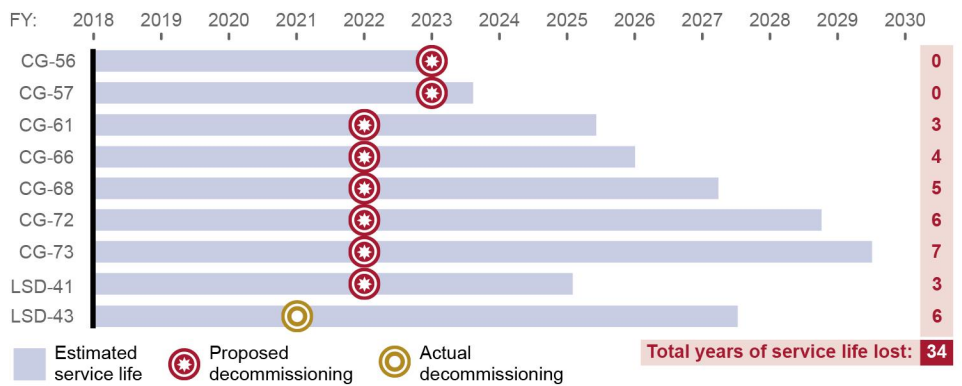
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What GAO Found

In the past decade, surface ships have accounted for nearly all of the Navy's deferred depot maintenance backlog. Aircraft carriers have experienced minimal increases in backlog, and maintenance is rarely deferred for submarines. At GAO's request, the Navy developed an estimate of its maintenance backlog that totaled nearly \$1.8 billion, comprising nearly \$1.7 billion for surface ships and nearly \$100 million for carriers. The surface ship maintenance backlog included \$1.2 billion for deferred maintenance on ships the Navy proposed to decommission early in its fiscal year 2022 budget request. The accumulated maintenance backlog contributed to the Navy decisions to decommission nine ships, according to officials, which will result in the loss of 34 years of ship service life (see figure). Early decommissioning leads to a smaller fleet and could hinder efforts to meet operational and presence requirements.

Proposed or Actual Decommissioning of Ships with Deferred Maintenance Backlog



CG - Cruiser LSD - Dock Landing Ship
Source: GAO analysis of U.S. Navy information. | GAO-22-105032

Managing the surface fleet's depot maintenance backlog, the Navy met six of the nine leading practices that GAO has previously identified as effective strategies for managing deferred maintenance backlogs. Specifically, it has not established comprehensive performance measures for reducing the backlog; identified the full range of risks posed by a lack of timely investment; or identified the funding needed to address the backlog of deferred depot maintenance. Doing so would help the Navy better manage its surface fleet.

The Navy understated the amount of its ship deferred depot maintenance in its 2021 financial reports by about \$1.6 billion. The Navy reported only about \$181 million in unfunded ship deferred maintenance in its 2021 annual financial report even though estimates it prepared for GAO show a nearly \$1.8 billion backlog. The Navy has not established clear guidance for required information on ship deferred maintenance in financial reports. Having quality information on the costs of deferred maintenance—and the effects on maintenance backlogs—would

provide the Navy and Congress with greater transparency about the Navy's efforts to maintain ships and would promote improved operational readiness.

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Abbreviations

CPA	Carrier Planning Activity
DOD	Department of Defense
FY	fiscal year
NAVSEA	Naval Sea Systems Command
OPNAV	Office of the Chief of Naval Operations
PEO	Program Executive Office
SSEOC	Surface Ship Engineered Operating Cycle
SUBMEPP	Submarine Maintenance Engineering, Planning and Procurement
SURFMEPP	Surface Maintenance Engineering Planning Program

TYCOM Type Commanders

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May 9, 2022

The Honorable Adam Smith
Chairman
The Honorable Mike Rogers
Ranking Member
Committee on Armed Services
House of Representatives

To keep its fleet of surface ships, aircraft carriers, and submarines ready, the Navy requires ships to undergo regular, intensive maintenance at shipyards throughout their expected service lives, which range from 25 to 50 years. The Navy has established maintenance requirements and a notional depot maintenance schedule for each ship class intended to cost-effectively maintain the ships. At times, however, the Navy has deferred required maintenance due to operational demands or limited shipyard capacity and funding, creating a backlog of deferred maintenance.¹ Over the past decade the Navy has taken several steps to address the persistent backlog of deferred maintenance that has accumulated on its surface ships, such as establishing life cycle maintenance planning and developing more detailed maintenance plans. At the same time, in response to the increasing naval capability of potential adversaries, the Navy plans to grow the size of the fleet. Navy leadership has said that the most cost-effective way to grow the fleet is to maintain the ships it currently has so that they reach their full service life as new ships are added.

We have previously reported on the Navy's challenges in maintaining its fleet, including the perennial challenge of completing depot-level

¹"Deferred maintenance" is maintenance not performed when required or scheduled and that is subsequently delayed to a future maintenance period. Federal Accounting Standards Advisory Board, *Definitional Changes Related to Deferred Maintenance and Repairs: Amending Statement of Federal Financial Accounts Standards 6, Accounting for Property, Plant and Equipment* (May 11, 2011).

maintenance on time.² We made several recommendations to help the Navy bolster its efforts to address its maintenance challenges, and the Navy has generally agreed with these and taken steps to implement them, including updating shipyard workforce requirements and working to improve shipyard conditions and performance.

House Report 116-442, accompanying a bill for the fiscal year (FY) 2021 National Defense Authorization Act, included a provision for us to review the Navy's deferred depot-level ship maintenance.³ In our report we evaluate the Navy's deferred depot-level maintenance, specifically, (1) the extent of deferred depot-level maintenance on surface ships, aircraft carriers, and submarines; (2) the extent to which the Navy used leading practices in its management of deferred maintenance; and (3) the extent to which the Navy's reporting on the costs of deferred maintenance meets federal accounting standards.

For our first objective, we analyzed data on completed depot-level maintenance periods on the Navy's fleet of surface ships, aircraft carriers, and submarines since FY2009, where available.⁴ We also analyzed Navy data on the estimated surface ship deferred maintenance backlog over this time frame. For our second objective, we applied nine leading practices GAO previously identified for managing maintenance backlogs to the Navy's management of the backlog of surface ship depot-level maintenance, evaluating the extent to which the Navy implements each

²Previous reports include GAO, *Navy and Marine Corps: Services Continue Efforts to Rebuild Readiness, but Recovery Will Take Years and Sustained Management Attention*, [GAO-21-225T](#) (Washington, D.C.: Dec. 2, 2020); *Navy Shipyards: Actions Needed to Address the Main Factors Causing Maintenance Delays for Aircraft Carriers and Submarines*, [GAO-20-588](#) (Washington, D.C.: Aug. 20, 2020); *DOD Depot Workforce: Services Need to Assess the Effectiveness of Their Initiative to Maintain Critical Skills*, [GAO-19-51](#) (Washington, D.C.: Reissued with revisions on Dec. 26, 2018); and *Naval Shipyards: Actions Needed to Improve Poor Conditions That Affect Operations*, [GAO-17-548](#) (Washington, D.C.: Sept. 12, 2017). See the Related GAO Products section at the end of this report.

³H. R. Rep. No. 116-442, at 90 (2020).

⁴We focused our review on Navy warships, defined as commissioned ships built or armed for naval combat—that is, surface ships, aircraft carriers, and submarines. We excluded from our scope ships that the Navy does not consider warships, such as mine warfare, patrol craft, and other support ships.

practice.⁵ We also evaluated the Navy's process for canceling or deferring maintenance against Department of Defense (DOD) criteria for managing risks and federal standards for internal control.⁶ For our third objective, we reviewed the Navy's annual disclosures on deferred maintenance in agency financial reports and interviewed officials to understand these reports. We compared financial reporting on deferred maintenance against requirements in the Federal Accounting Standards Advisory Board's *Statement of Federal Financial Accounting Standards 42* and DOD's *Financial Management Regulation*.⁷ For more information, see appendix I.

We conducted this performance audit from February 2021 to May 2022 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

⁵In 2014 we reported on leading practices for managing public infrastructure maintenance and repair backlogs. GAO, *Federal Real Property: Improved Transparency Could Help Efforts to Manage Agencies' Maintenance and Repair Backlogs*, [GAO-14-188](#) (Washington, D.C.: Jan. 23, 2014). In 2019 we applied these leading practices to the Coast Guard's deferred maintenance backlog, which includes vessels. GAO, *Coast Guard Shore Infrastructure: Applying Leading Practices Could Help Better Manage Project Backlogs of at Least \$2.6 Billion*, [GAO-19-82](#) (Washington, D.C.: Feb. 21, 2019).

⁶Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3105.01A, *Joint Risk Analysis Methodology* (Oct. 12, 2021) and GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: Sept. 10, 2014). DOD's risk management framework directs decision makers to appraise, manage, and communicate risks to achieve goals. We determined that the risk assessment component of internal control is significant to this objective, along with the underlying principles that management should define objectives clearly and should identify, analyze, and respond to risks.

⁷FASAB, *Statement of Federal Financial Accounting Standards 42: Deferred Maintenance and Repairs: Amending Statements of Federal Financial Accounting Standards 6, 14, 29 and 32* (Apr. 25, 2012), and DOD 7000.14-R, *Financial Management Regulation* (Dec. 2021).

Background

Types of Navy Ships

U.S. Navy warships—224 commissioned ships built or armed for naval combat—make up 76 percent of the Navy’s fleet of battle force ships.⁸ The Navy’s inventory consists of surface ships, aircraft carriers, and submarines (see fig. 1).

⁸Battle force ships are commissioned United States Ship (USS) warships capable of contributing to combat operations, or a United States Naval Ship that contributes directly to Navy warfighting or support missions. The Navy’s fleet consists of 294 battle force ships—surface combatants, amphibious warfare ships, aircraft carriers, submarines, combat logistics ships, and some support ships. Other Navy combatant and support craft, such as patrol coastal (PC) combatant craft, are not part of the Navy’s battle force inventory. Secretary of the Navy Instruction (SECNAVINST) 5030.8C, *General Guidance for the Classification of Naval Vessels and Battle Force Ship Counting Procedures* (June 14, 2016).

Figure 1: Type and Number of U.S. Navy Warships as of November 2021



Source: DOD documentation; prior GAO reports; (CG) Defense Imagery Management Operations Center/Seaman J. Grandin; (DDG) U.S. Navy; (LCS, top) U.S. Navy/D. Baso Silvers; (LCS, bottom) U.S. Navy/Petty Officer 2nd Class M. Garrison; (LHA) U.S. Navy/Petty Officer 3rd Class D. Langer; (LHD) U.S. Navy/Seaman D. Newell; (LPD) U.S. Navy/Seaman T. Welsh; (LSD) U.S. Navy/Mass Communication Specialist 1st Class R. Chang; (CVN) U.S. Navy/Naval Air Crewman 1st Class W. Bennett; (SSN) U.S. Navy/Lieutenant Commander M. Smith; (SSBN) U.S. Navy/Chief Petty Officer D. Holmes; (SSGN) U.S. Navy/Petty Officer 2nd Class I. Beaufort. | GAO-22-105032

Note: The letter “N” in the ship classification symbol denotes nuclear propulsion.

Unless otherwise noted, we collectively refer to surface ships, aircraft carriers, and submarines as ships and submarines in this report. We refer to surface combatant and amphibious warfare ships collectively as surface ships.

Depot-Level Ship and Submarine Maintenance

This report examines depot-level maintenance periods for surface ships, aircraft carriers, and submarines.⁹ Depot-level maintenance is performed during designated periods in a ship's life cycle, through a schedule of planned maintenance, training, and deployment periods. The Navy spends over \$8 billion a year on depot-level maintenance for all ships and submarines. The Navy's *Maintenance Policy for Navy Ships* defines three levels of ship maintenance—organizational, intermediate, and depot.¹⁰ The lowest level—organizational-level maintenance—consists of all maintenance actions within the capability of the ship's force. Intermediate-level maintenance requires a higher capacity than organizational-level maintenance and is normally performed by Regional Maintenance Centers and other intermediate maintenance facilities.

Depot-level maintenance consists of tasks that require specialized facilities, tooling, and support equipment; personnel with higher technical skill; and processes beyond the scope or capacity of the intermediate maintenance activities. These can include major repair, overhaul, or the complete rebuilding of systems needed for all ships to reach their expected service lives, and involve complex structural, mechanical, and electrical repairs. For aircraft carriers and submarines the Navy performs depot-level maintenance at the four public shipyards. For surface ships the Navy generally contracts for this maintenance with private companies and shipyards. The Navy generally schedules depot-level maintenance periods for every 4 to 6 years for submarines and for every 2 to 3 years for surface ships and aircraft carriers. The level of complexity of ship repair, maintenance, and modernization can affect the length of a depot-

⁹The Navy refers to these regularly scheduled depot-level maintenance periods as Chief of Naval Operations availabilities. For the purposes of this report, we refer to them as depot-level maintenance periods.

¹⁰Chief of Naval Operations Instruction (OPNAVINST) 4700.7M, *Maintenance Policy for Navy Ships* (May 8, 2019).

level maintenance period, which can range from 6 months to about 3 years for more complex and involved maintenance.¹¹

Key Navy Maintenance Organizations

A number of organizations and commands within the Navy share responsibilities for

- setting maintenance policies and planning,
- developing depot maintenance requirements,
- scheduling and executing ship maintenance,
- formulating budget requests for depot maintenance, and
- reporting on the extent of deferred maintenance.

Key organizations include the following:

Office of the Assistant Secretary of the Navy (Financial Management and Comptroller). This office includes subordinate offices that manage the budget and financial statements. The Office of Budget directs the formulation, justification, and execution of the Navy budget—which includes budgets for depot-level maintenance—as assigned by law, instruction, and regulations. The Office of Financial Operations leads the Department of the Navy’s efforts to produce auditable financial statements, enable robust internal controls, and provide full integration of Navy financial management services that comply with accounting standards, support leadership decision-making, and demonstrate proper stewardship of taxpayer dollars, according to the office’s mission statement.

Office of the Chief of Naval Operations (OPNAV). The Chief of Naval Operations is the senior military officer of the Department of the Navy and is responsible to the Secretary of the Navy for the command, utilization of resources, and operating efficiency of the operating forces of the Navy and of the Navy shore activities assigned by the Secretary. OPNAV is a large organization that includes nine subordinate Deputy Chief of Naval Operations offices identified by N codes. OPNAV N8, the Deputy Chief of

¹¹Intermediate maintenance periods occur between depot-level maintenance periods and have a higher frequency and much shorter duration. GAO, *Navy Ship Maintenance: Actions Needed to Monitor and Address the Performance of Intermediate Maintenance Periods*, [GAO-22-104510](#) (Washington, D.C.: Feb. 8, 2022).

Naval Operations for Integration of Capabilities and Resources, allocates and integrates the Navy's resources and requirements in the Planning, Programming, Budgeting and Execution System, including the depot-level maintenance resource planning process. The Navy reports that OPNAV N8 consolidates and reviews inputs from Naval Sea Systems Command, Fleet Commanders, and Type Commanders, validates this information, and formulates the ship maintenance funding requirement that is included in the annual budget request.

Type Commanders. The Navy's Type Commanders are responsible for maintaining, training, and ensuring the readiness of the ships (e.g., surface, aircraft carrier, or submarine) assigned to each fleet. The Navy's Type Commanders for surface ships—Commander, Naval Surface Force, U.S. Pacific Fleet, and Commander, Naval Surface Force, U.S. Atlantic Fleet—are responsible for maintaining the surface ships assigned to the Commander, U.S. Pacific Fleet and the Commander, U.S. Fleet Forces, respectively. Aircraft carriers and submarines also have Type Commanders with similar responsibilities.

Naval Sea Systems Command (NAVSEA). NAVSEA is responsible for providing expertise in maintaining ships, submarines, and combat systems to meet the fleet's operational requirements. The command determines the workforce and funding requirements for maintenance periods, and includes these requirements in the Navy's budget submissions. NAVSEA develops several planning documents to determine these requirements, such as the technical foundation papers and ship sheets. These planning documents include information on the expected duration and timing of ship maintenance periods, labor and material requirements for each ship maintenance period, and allowances for unplanned work.

NAVSEA comprises directorates and warfare centers that specialize in these areas of expertise. NAVSEA reports to the Chief of Naval Operations, but also supports the shipbuilding program offices. The Navy's dedicated maintenance planning activities—Surface Maintenance Engineering Planning Program (SURFMEPP), Carrier Planning Activity (CPA), and Submarine Maintenance Engineering, Planning and Procurement Activity (SUBMEPP)—monitor adherence to ship class maintenance plans. See table 1.

Table 1: Navy Organizations Involved in Depot-Level Ship and Submarine Maintenance

Organization	Responsibility
Program Executive Office (PEO) Carriers	Focuses on the design, construction and delivery, and life-cycle support of all aircraft carriers and the integration of systems into aircraft carriers.
Carrier Planning Activity (CPA)	Provides primary centralized aircraft carrier life-cycle management, maintenance, and modernization planning.
Ship Maintenance and Modernization	Responsible for life-cycle management of the Navy's surface ships and for managing critical modernization, maintenance, training, and inactivation programs.
The Naval Systems Engineering and Logistics Directorate	Provides the engineering and scientific expertise, knowledge, and technical authority necessary to design, build, maintain, repair, modernize, certify, and dispose of the Navy's ships, submarines, and associated warfare systems.
Commander, Naval Regional Maintenance Center	Responsible for coordinating the depot- (and intermediate-) level maintenance of the Navy's surface fleet through Regional Maintenance Centers in the United States and overseas.
Surface Maintenance Engineering Planning Program	Provides life-cycle management of maintenance requirements for surface ships, including providing centralized class maintenance and modernization planning and management of maintenance strategies. Established in 2010 and modeled after CPA and SUBMEPP, with similar functions.
PEO Submarines	Focuses on the design, construction, delivery, and conversion of submarines and advanced undersea and anti-submarine systems.
Submarine Maintenance Engineering, Planning and Procurement (SUBMEPP)	Provides engineering, program management, and information technology support throughout the entire life-cycle maintenance process.

Source: GAO analysis of Navy documents. | GAO-22-105032

Key Navy Maintenance Documents

The Navy develops and uses certain key documents to manage the long-term maintenance requirements of ships.

Class maintenance plans contain the repair and assessment tasks at all levels (organizational, intermediate, and depot) that are required to be performed for a class of ships over the course of their expected service lives and to maintain their material readiness. Navy leaders have stated that accurate class maintenance plans and effective execution of class maintenance plan requirements are absolutely essential to the economical achievement of the intended ship service life.

Technical foundation papers developed by Navy engineers align the class maintenance plan requirements with depot-level maintenance periods over a ship's life and provide estimates of the work conducted during these maintenance periods.

Ship sheets detail the depot-level maintenance requirement for each individual ship and depot-level maintenance period for the future, and inform depot maintenance budget requests including for any deferred maintenance. Ship sheets are developed by the life cycle planning activities (CPA, SUBMEPP, and SURFMEPP) and are reviewed by the cognizant technical authorities and provided to OPNAV N83 to resource these requirements.

Navy policy establishes a clear linkage between completing maintenance requirements and ensuring fleet readiness. The Navy's *Maintenance Policy for Navy Ships* states that timely completion of required maintenance is vital to achieving expected service life, deferring maintenance can increase risk in the ability to achieve expected service life for a given ship, and executing required maintenance on time is a vital part of current and future force readiness.¹²

Deferred Maintenance and the Deferral Process

The DOD *Financial Management Regulation* cites FASAB's definition of "deferred maintenance," which is maintenance that is not performed when required or scheduled and is delayed to a future period.¹³ SURFMEPP generally defines "deferred maintenance" as any mandatory technical requirement that was not completed as initially scheduled in the ship maintenance plan and is reprogrammed to a future maintenance opportunity, according to officials. SURFMEPP defines a "mandatory technical requirement" as a maintenance task or minimum assessment necessary for a ship to reach its expected service life, according to these officials.

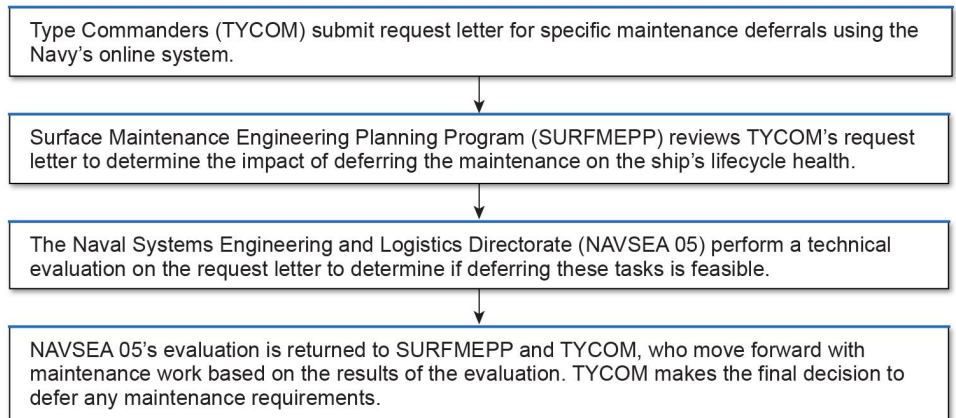
To illustrate the deferral process, we provide details in the remainder of this section that are applicable to the surface ship depot-level maintenance period deferral process only, rather than for aircraft carriers and submarines. Cancellation or deferral of mandatory technical requirements for surface ships require an evaluation by NAVSEA 05, the Naval Systems Engineering and Logistics Directorate. Type Commanders

¹²OPNAVINST 4700.7M.

¹³DOD 7000.14-R cites as authoritative guidance FASAB, *Definitional Changes Related to Deferred Maintenance and Repairs: Amending Statement of Federal Financial Accounts Standards 6, Accounting for Property, Plant and Equipment* (May 11, 2011).

submit deferral requests to NAVSEA 05 via SURFMEPP. The approval process for deferring maintenance for surface ships is outlined in figure 2.

Figure 2: Navy Process for Approving the Deferred Maintenance of Surface Ships



Source: GAO analysis of Navy documents, interviews with Navy officials. | GAO-22-105032

The Type Commanders (Commander, Naval Surface Force, Atlantic, and Commander, Naval Surface Force, U.S. Pacific Fleet) decide whether to defer any maintenance requirements. In contrast to surface ship Type Commanders, the Type Commanders for aircraft carriers and submarines are guided by the Navy's maintenance policy, which directs that maintenance and repair work essential for safe and reliable nuclear propulsion plant operations will not be deferred from one depot-level maintenance period to the next.¹⁴

Management of Maintenance Backlogs

Federal agencies create a backlog of deferred maintenance and repairs when they delay in performing maintenance and repair activities. Deferred maintenance backlogs can be caused by a number of factors, including insufficient funding allotted for maintenance and repair, and the increasing age of assets, as we reported in 2021.¹⁵ According to OPNAV officials, two options for addressing backlogs include performing deferred maintenance and repairs, and replacing assets through new construction.

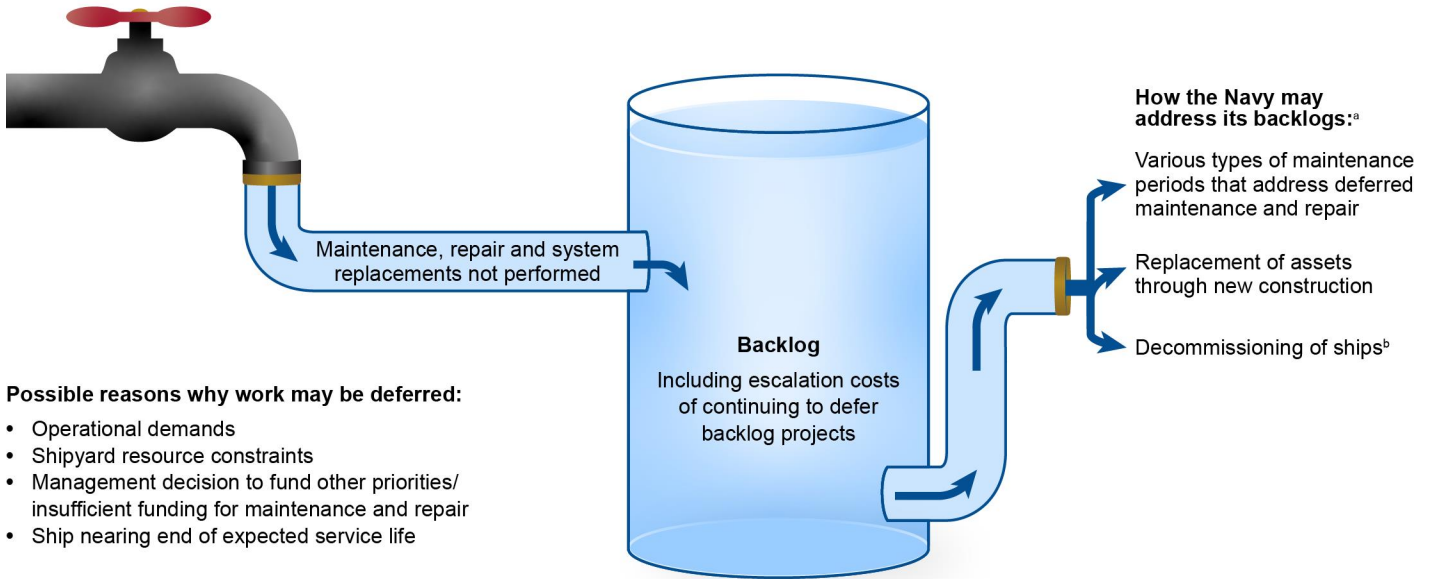
¹⁴OPNAVINST 4770.7M.

¹⁵GAO, *Overseas Real Property: Prioritizing Key Assets and Developing a Plan Could Help State Manage Its Estimated \$3 Billion Maintenance Backlog*, [GAO-21-497](#) (Washington, D.C.: Sept. 15, 2021).

Figure 3 shows possible reasons why the Navy may defer maintenance work and some steps the Navy may take to address backlogs.

Figure 3: Reasons for Deferred Maintenance and Steps Navy May Take to Address Backlogs

Origins of the Navy's deferred maintenance



Possible reasons why work may be deferred:

- Operational demands
- Shipyard resource constraints
- Management decision to fund other priorities/ insufficient funding for maintenance and repair
- Ship nearing end of expected service life

Source: GAO analysis of Navy documents; interviews with Navy officials; prior GAO report. | GAO-22-105032

^aThis is not a comprehensive list. The Navy could take other steps to address a backlog.

^bWhen deciding to decommission a ship the Navy considers overall ship condition; age; amount of modernization required to bring the ship up to usable configuration; and obsolescence of major ship components, such as engines and radar, according to officials. The National Defense Authorization Act for Fiscal Year 2022 included a provision limiting the Secretary of the Navy from decommissioning or inactivating a battle force ship before the end of the expected service life of the ship without a waiver to do so. Pub. L. No. 117-81, § 1014 (2021), codified at 10 U.S.C. § 8678a.

Navy Reports on Ship Deferred Maintenance

At the end of each fiscal year, NAVSEA submits the Surface Ship Engineered Operating Cycle (SSEOC) Deferred Tasks Annual Report. The report is shared with the Fleet Readiness Division, Expeditionary Warfare, and the Surface Warfare Directorate via the appropriate fleet commanders.¹⁶ The report assists with future budgeting and programming

¹⁶OPNAVINST 3120.47, *Surface Ship Engineered Operating Cycle Program* (May 2, 2013).

requirements.¹⁷ DOD also requires that each agency head, including the Navy, submit an annual Agency Financial Report. Each Agency Financial Report consists of annual financial statements and other reports, including information on deferred maintenance.¹⁸ In its Fiscal Year 2021 Agency Financial Report, the Navy described the purpose of its financial report as outlining how the Navy has used federal resources, highlighting accomplishments, and representing its financial position. In the past, the Navy has also included some limited information about ship deferred maintenance in its annual congressional budget requests, and occasionally in related reports, such as unfunded priorities lists and reports to the Congress on long-range maintenance plans.

Deferred Depot Maintenance Concentrated in the Surface Fleet

In the past decade, surface ships have accounted for nearly all of the Navy's deferred depot maintenance backlog. Aircraft carriers have experienced minimal increases in backlog, and maintenance is rarely deferred for submarines due to strict safety requirements.

Surface Ships: Maintenance Backlog Estimated at Nearly \$1.7 Billion

The Navy does not maintain an estimate of the current surface ship deferred maintenance backlog, but at our request the Navy developed an estimate of its aggregate maintenance backlog. The Navy estimated that it has nearly \$1.7 billion of required depot-level maintenance planned but not completed for surface ships. This estimate is the amount of funding

¹⁷Budgeting and programming are part of DOD's Planning, Programming, Budgeting, and Execution process, which is a cyclic process that establishes the framework and processes for decision making on future programs. Prior decisions are also examined and analyzed through the process. The ultimate objective of the process is to provide operational commanders the best mix of forces, equipment, and support within fiscal constraints.

¹⁸DOD's *Financial Management Regulation* implements OMB Circular A-136, *Financial Reporting Requirements* (Aug. 10, 2021), which requires the submission of Agency Financial Reports from agency heads. Agency Financial Report deferred maintenance reporting is done in accordance with Federal Accounting Standards Advisory Board, *Definitional Changes Related to Deferred Maintenance and Repairs: Amending Statement of Federal Financial Accounts Standards 6, 14, 29 and 32, Accounting for Property, Plant and Equipment* (Apr. 25, 2012).

the Navy estimates it would need to complete all of the surface ship deferred maintenance. The Navy based this estimate on ship sheets it used to support the FY2022 budget request, which contains the depot-level maintenance requirements for each ship in the surface fleet.¹⁹ The estimate includes \$455 million for deferred maintenance for ships not proposed for decommissioning, and \$1.2 billion for deferred maintenance on seven guided missile cruisers and two dock landing ships that the Navy proposed to decommission.²⁰

In addition to estimating the current cost of the backlog, at our request the Navy also calculated the difference in the days of labor between depot-level maintenance periods completed and required by class maintenance plans for FY2009 through FY2020.²¹

We analyzed the Navy days of labor data to determine whether there were any trends over time. Our analysis found that the cumulative backlog compared with class maintenance plan requirements fell by 34 percent from FY2009 through FY2016 and increased by 15 percent from FY2016 through FY2020. Officials attribute the FY2009 through FY2016 decrease to the service's focus on developing and using more specific class maintenance plans as well as to leadership commitment to maintenance, and the FY2016 through FY2020 increase to fleet commanders reducing or canceling maintenance to cope with operational demands and limited shipyard capacity. These factors are reflected in the Navy's maintenance performance during this period in which they performed more work than planned earlier in the decade, which helped reduce the maintenance backlog that existed at the time. Conversely, the

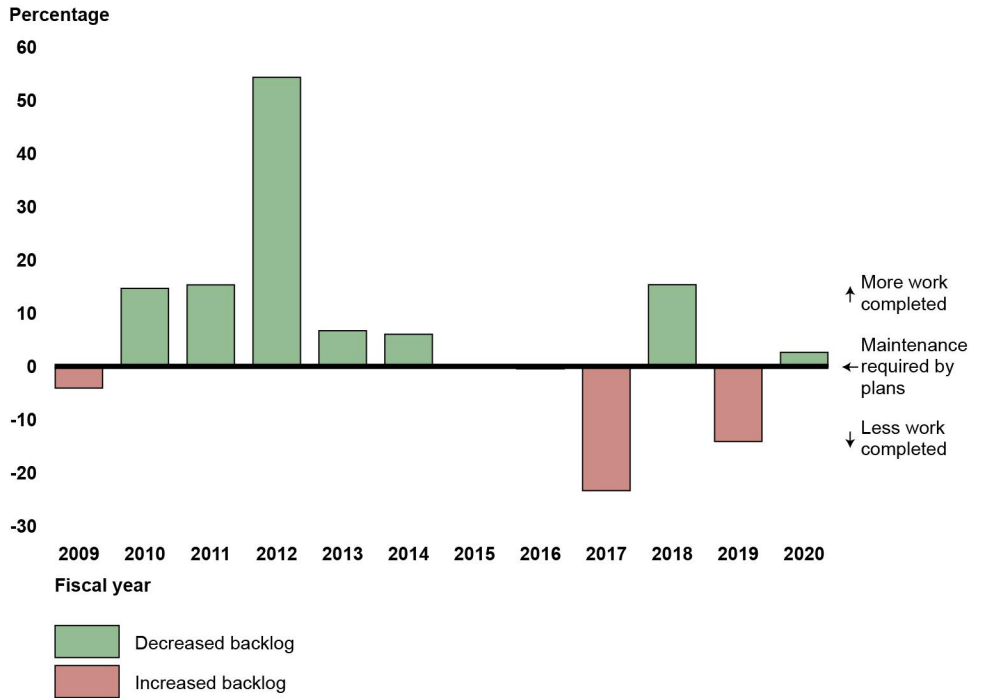
¹⁹The Navy surface ship maintenance enterprise (OPNAV, NAVSEA 21, and SURFMEPP) developed this estimate by aggregating the deferred maintenance amounts contained in each surface ship's ship sheet.

²⁰According to OPNAV officials, the Navy does not complete depot maintenance on ships scheduled for decommissioning. The FY2022 National Defense Authorization Act contained two provisions addressing decommissioning and the retirement of guided missile cruisers. The first directs that the Secretary of the Navy may not decommission or inactivate a battle force ship before the end of its expected service life without a waiver. The second directs that none of the funds authorized to be appropriated or otherwise made available for FY2022 for DOD may be obligated or expended to retire, prepare to retire, inactivate, or place in storage more than five guided missile cruisers. See also GAO, *Surface Ships: Navy Needs to Revise Its Decommissioning Policy to Improve Future Decision Making*, [GAO-14-412](#) (Washington, D.C.: June 11, 2014).

²¹Although the Navy uses the industrial term "manday" when referring to ship maintenance, for the purposes of this report we use the term "days of labor." Both refer to the industrial unit of production equal to the work one person can produce in a day.

Navy performed less work than planned in 2017 and 2019 which added to the maintenance backlog (see fig. 4).

Figure 4: Depot Maintenance Completed Compared with Planned Depot Maintenance, Fiscal Years 2009–2020



Source: GAO analysis of Navy data. | GAO-22-105032

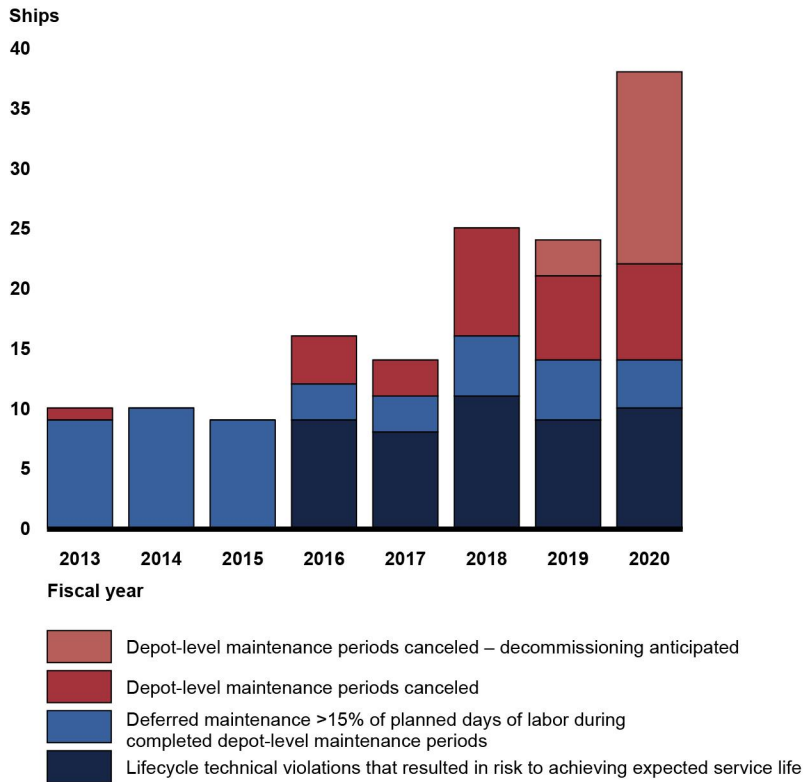
Accessible Data Table for Figure 4

	Backlog
2009	-4.05651
2010	14.6011
2011	15.2688
2012	54.1233
2013	6.68899
2014	6.01373
2015	-0.08242
2016	-0.46671
2017	-23.2671
2018	15.3034
2019	-14.0429
2020	2.61594

Note: The backlog estimate is based on available data from Surface Maintenance Engineering Planning Program (SURFMEPP), which includes active cruisers, destroyers, dock landing ships, and amphibious assault ships (multi-purpose). The data exclude six cruisers and two dock landing ship (LSD) amphibious ships that followed a different maintenance plan. The data also exclude littoral combat ships, amphibious assault ships (general purpose), amphibious transport docks, Zumwalt-class destroyers, and decommissioned ships.

In addition, the Navy has been increasingly deferring maintenance on critical systems or canceling depot-level maintenance periods altogether for surface ships in recent years. According to the FY2020 Surface Ship Engineered Operating Cycle (SSEOC) report, deferred maintenance on critical systems—referred to as lifecycle technical violations—increases the likelihood that the ship’s future maintenance periods will take longer and cost more than expected. Deferred and canceled maintenance may impact a ship’s ability to reach the expected service life. According to the FY2020 SSEOC report, in FY2018 through FY2020, the Navy canceled 16 more maintenance periods than it did in the 5 preceding fiscal years combined. See figure 5.

Figure 5: Number of Surface Ships with Critical Maintenance Violations Reported in the Navy’s Fiscal Year 2020 Surface Ship Engineered Operating Cycle Report



Source: Navy Surface Ship Engineered Operating Cycle Report for FY2020. | GAO-22-105032

Accessible Data Table for Figure 5

	Lifecycle technical violations that resulted in risk to achieving expected service life	Deferred maintenance >15% of planned days of labor during completed depot-level maintenance periods	Depot-level maintenance periods	Depot-level maintenance periods cancelled – decommissioning anticipated
2013	0	9	1	0
2014	0	10	0	0
2015	0	9	0	0
2016	9	3	4	0
2017	8	3	3	0
2018	11	5	9	0
2019	9	5	7	3
2020	10	4	8	16

Note: Critical maintenance violations are canceled depot-level maintenance periods, deferred maintenance greater than 15 percent of planned days of labor during completed depot-level maintenance periods, and deferred maintenance tasks on critical systems.

While Navy officials acknowledge the surface fleet faces challenges related to deferred maintenance, they told us that SURFMEPP is continuing its work helping the Navy to reduce the overall amount of deferred maintenance, critical maintenance violations, and canceled maintenance periods. For example, the Navy reported that it reduced the estimated class maintenance backlog for surface ships by 23.5 percent from FY2009 through FY2020.

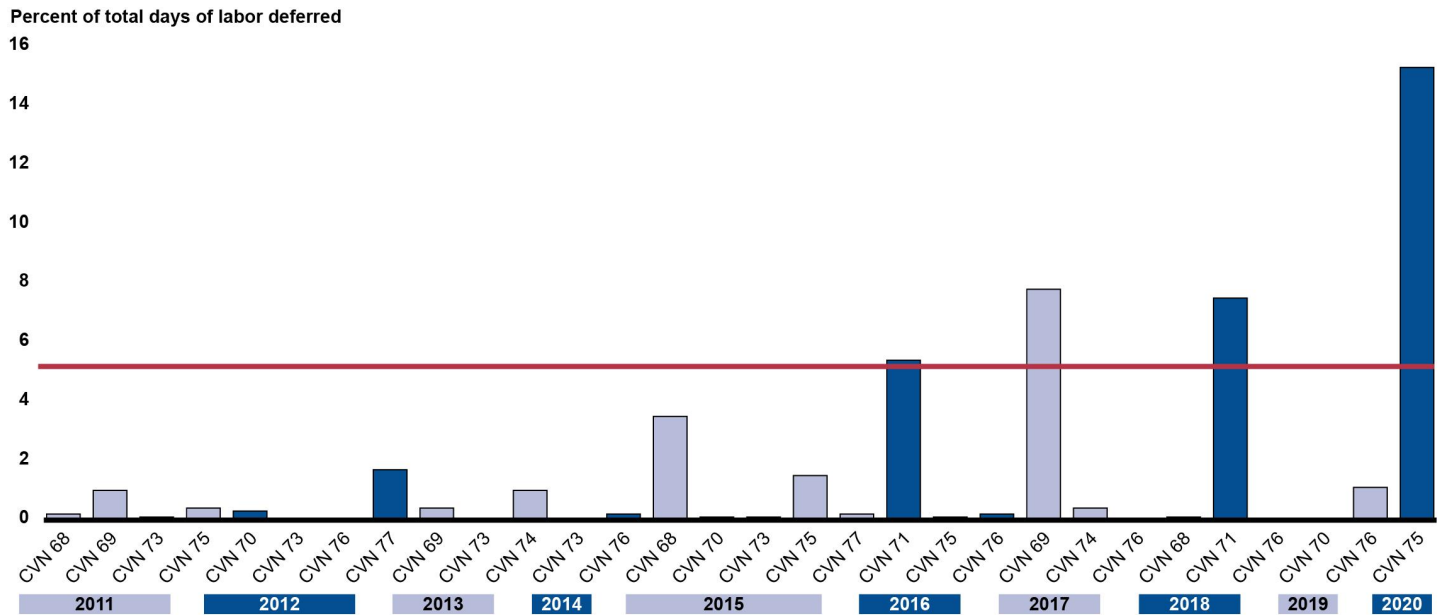
Aircraft Carriers: Minimal Increase in Deferred Maintenance Attributed to Industry Capacity Constraints

Navy Carrier Planning Activity (CPA) data show that the total backlog of deferred maintenance for aircraft carriers is about 99,164 days of labor, estimated to cost about \$92.4 million, as of October 2021. According to officials, carriers have recently experienced an increase in deferred maintenance that officials attribute to resource constraints at the public

shipyards and a lack of industry capacity to perform corrosion prevention on the ships' tank and void areas.²²

Over the past decade, the Navy did not cancel any aircraft carrier depot-level maintenance periods, according to CPA officials. For carriers, the Navy plans to defer less than 5 percent of scheduled maintenance per carrier and is generally able to do so, although there has been an increase in deferrals over the last 5 years. From FY2011 through FY2015, the Navy deferred no more than 3.5 percent of total days of labor for each of its 18 aircraft carrier depot-level maintenance periods. From FY2016 through FY2020, 4 out of 12 maintenance periods exceeded 5 percent of the total planned days of labor. See figure 6.

Figure 6: Percent of Total Days of Labor Deferred During Depot-Level Aircraft Carrier Maintenance Periods, Fiscal Years 2011 through 2020



Source: GAO analysis of U.S. Navy data. | GAO-22-105032

²²The Navy has found that tanks and voids may deteriorate from rust if they do not receive timely repairs, and that tank and void maintenance has a direct impact on ship service life. See, for example, Fleet Review Panel, *Final Report: Fleet Review Panel of Surface Force Readiness* (Feb. 26, 2010). Ballast tank spaces include seawater tanks for ballast and damage control, compensated fuel tanks, potable water storage, and combined holding tanks. Voids are compartments that may be designed for reserve buoyancy, or to limit the extent of flooding after underwater hull damage or provide physical separation between two different types of tanks. Voids may also simply be unusable volumes or areas in a ship resulting from ship design and layout.

Accessible Data Table for Figure 6

	Percent of total days of labor deferred
CVN68	0.2
CVN69	1
CVN73	0.1
CVN75	0.4
CVN70	0.3
CVN73	0
CVN76	0
CVN77	1.7
CVN69	0.4
CVN73	0
CVN74	1
CVN73	0
CVN76	0.2
CVN68	3.5
CVN70	0.1
CVN73	0.1
CVN75	1.5
CVN77	0.2
CVN71	5.4
CVN75	0.1
CVN76	0.2
CVN69	7.8
CVN74	0.4
CVN76	0
CVN68	0.1
CVN71	7.5
CVN76	0
CVN70	0
CVN76	1.1
CVN76	15.3

Note: Aircraft carriers are listed by the fiscal year in which the depot-level maintenance period started. CVN denotes aircraft carrier.

Table 2 shows more detailed information about the four depot-level maintenance periods during which the Navy deferred over 5 percent of total planned days of labor.

Table 2: Aircraft Carrier Maintenance Periods with Deferred Maintenance Over 5 Percent of Planned Days of Labor, Fiscal Years 2011 through 2020

Aircraft carrier	Maintenance period start and completion date	Deferred maintenance	Reason
<i>USS Harry S. Truman</i> (CVN 75)	Start: July 2020 Completion: May 2021	49,303 days of labor out of 321,421 planned total days of labor (15.3%)	<ul style="list-style-type: none"> Capacity constraints at Norfolk Naval Shipyard Operational demand Regional resource constraints due to multiple simultaneous aircraft carrier maintenance periods
<i>USS Dwight D. Eisenhower</i> (CVN 69)	Start: September 2017 Completion: March 2019	26,718 days of labor out of 342,707 planned total days of labor (7.8%)	<ul style="list-style-type: none"> Lack of industry capacity for tank and void preservation work
<i>USS Theodore Roosevelt</i> (CVN 71)	Start: July 2018 Completion: December 2018	18,505 days of labor out of 247,112 planned total days of labor (7.5%)	<ul style="list-style-type: none"> Lack of industry capacity for tank and void preservation work
<i>USS Theodore Roosevelt</i> (CVN 71)	Start: June 2016 Completion: December 2016	16,814 days of labor out of 313,843 planned total days of labor (5.4%)	<ul style="list-style-type: none"> Lack of industry capacity for tank and void preservation work

Source: GAO analysis of Navy data; interviews with Carrier Planning Activity officials. | GAO-22-105032

Note: CVN denotes aircraft carrier, multi-purpose, and nuclear-powered.

According to CPA officials, elevated levels of deferred maintenance can lengthen the duration of future planned maintenance periods. For example, the *USS Dwight D. Eisenhower* (CVN 69) had 7.8 percent of its maintenance deferred in its maintenance period ending in March 2019. This resulted in the Navy’s extending the *USS Dwight D. Eisenhower’s* FY2021 maintenance period to 10 months instead of 6 months. Navy officials told us that despite the recent increase in deferrals, they believed that the current level of deferrals poses a low risk to the material health of the Navy’s aircraft carriers. They also stated that all aircraft carriers are on track to meet their expected service lives. According to Navy analysis of aircraft carrier life-cycle health assessment data, aircraft carriers are generally in good material condition and are expected to reach full service lives.

Submarines: Navy Rarely Deferred Required Maintenance

We found the Navy generally does not defer depot-level maintenance on its submarines due to strict safety requirements.²³ According to Navy officials, when depot-level maintenance work is performed on submarines, it is performed in full because submarines must have their required depot-level maintenance completed before they can be certified to submerge. We examined Navy data provided to us by NAVSEA's Industrial Operations office that manages the naval shipyards and found that, in the 31 submarine depot-level maintenance periods from FY2015 through FY2019, only three submarines had any deferred depot-level maintenance, with the highest being 502 days, or .007 percent of labor deferred from the total days of labor planned.

SUBMEPP officials told us that the Navy rescheduled the deferred items in subsequent intermediate-level maintenance periods after a technical review.²⁴ SUBMEPP officials told us that the amount of deferred submarine maintenance is so low it has no significant impact on maintenance schedules or resource requirements. SUBMEPP officials stated that engineering and maintenance officials closely scrutinize any deferral requests during the stringent certification process for authorizing submarines to submerge.

Navy officials told us that this minimal amount of deferrals does not affect service life, and that submarines generally meet or exceed their expected service lives. The documentary evidence provided by the Navy that we reviewed supports this. For example, despite the USS *Greeneville's* being the submarine with the highest level of deferred depot-level maintenance we reviewed—502 days of labor, or .007 percent of total days—according to SUBMEPP officials, the Navy identified it as one of seven submarines

²³Following the loss of the USS *Thresher* and its crew, in the 1960s the Navy established the SUBSAFE program, which, according to Navy officials, requires submarines to adhere to strict maintenance schedules and pass material condition assessments before they are allowed to submerge.

²⁴The three submarines with deferred maintenance were the USS *Greeneville* (SSN 772), with 502 days of deferred labor from a maintenance period with 67,616 actual days of labor completed; the USS *Hampton* (SSN 767), with 425 days of deferred labor from a maintenance period with 332,306 actual days of labor completed; and the USS *Olympia* (SSN 717), which deferred 20 days of labor from a maintenance period with 85,124 actual days of labor completed.

whose material condition met engineering criteria to allow the Navy to significantly extend the submarines' service life through refueling.²⁵

In some cases submarines experience extended wait times (i.e., idle time) for their depot-level maintenance due to capacity limitations at the public shipyards. This idle time totaled 1,188 days in FY2020 and 1,457 days in FY2021—days that a submarine is not available for operations. The 1,457 days was the equivalent of losing the use of four out of 68 submarines for a year. Submarines may also experience maintenance delays while at the shipyards. For maintenance periods completed from FY2015 through FY2019, we previously estimated that submarines had their depot-level maintenance completed 225 days late, on average.²⁶ We previously reported that idle time and maintenance delays reduce time available for training and operations and incur costs in a resource-constrained environment without providing operational capability.²⁷

Navy's Management of Backlog Uses Most Leading Practices, but Could Be Improved

Navy's Management of Surface Ship Backlog Is Consistent with Six of Nine Leading Practices

We evaluated the Navy's management of the surface ship deferred maintenance backlog using leading practices GAO had previously

²⁵According to SUBMEPP officials, due to the material health of the submarines, the Navy plans to extend the service life of these submarines by 10 to 15 years.

²⁶[GAO-20-588](#). Delays are based on the examination of maintenance periods that were completed on time or late between 2015 and 2019. We reported in February 2022 that submarines also experience delays during intermediate maintenance. For intermediate-level maintenance periods during fiscal years 2015 through 2020 we reported that the Navy completed 223 of 414 (54 percent) on time or early, and 191 of 414 (46 percent) late. We also reported that during this time period submarines accumulated 2,525 days of maintenance delay for completed intermediate maintenance periods, with a 13-day average delay for late intermediate maintenance periods. Days of maintenance delay per year declined from 638 days in fiscal year 2018, to 374 days in fiscal year 2019, and then to 172 days in fiscal year 2020. See [GAO-22-104510](#).

²⁷[GAO-21-225T](#).

identified for managing public-sector deferred maintenance backlogs.²⁸ Managing the surface ship depot-level maintenance backlog, the Navy met six of these nine leading practices (see table 3).

²⁸GAO, *Federal Real Property: Improved Transparency Could Help Efforts to Manage Agencies' Maintenance and Repair Backlogs*, [GAO-14-188](#) (Jan. 23, 2014). We focused our evaluation on the surface ship community because of the size of the backlog. We did not examine the extent to which the Navy's Carrier Planning Activity or SUBMEPP could also benefit from aligning management of deferred maintenance with these leading practices.

Table 3: Extent to Which the Navy Met Leading Practices for Managing Surface Ship Deferred Maintenance

Establish clear maintenance and repair investment objectives and set priorities among outcomes to be achieved	Met
Identify assets that are mission-critical and mission-supportive	Met
Conduct condition assessments as a basis for establishing appropriate levels of funding required to reduce, if not eliminate, any deferred maintenance and repair backlog	Met
Establish performance goals, baselines for outcomes, and performance measures for reducing the deferred maintenance backlog	Not met
Identify the primary methods to be used for delivering maintenance and repair activities	Met
Employ models for predicting the outcome of investments, analyzing trade-offs, and optimizing among competing investments	Met
Align ship classes with mission needs and dispose of unneeded assets	Met
Identify the types of risks posed by lack of timely investment	Not met
Structure budgets to specifically identify funding allotted (1) for maintenance and repair and (2) to address any backlog of deferred maintenance deficiencies, because insufficient levels of such funding can cause agencies' backlogs to increase	Not met

Source: GAO analysis of Navy documents and interviews. | GAO-22-105032

Note: These nine leading practices were derived from reports published by the National Research Council of the National Academies and analyzed in a 2014 GAO report. GAO, *Federal Real Property: Improved Transparency Could Help Efforts to Manage Agencies' Maintenance and Repair Backlogs*, [GAO-14-188](#) (Washington, D.C.: Jan. 23, 2014).

The Navy has taken actions over the past decade that are consistent with six of these leading practices. For example, the Navy introduced the Life Cycle Health Assessment program for the surface fleet that provides an overall health score and a condition assessment for each ship. Navy officials have a process to incorporate the estimated deferred maintenance based on these material assessments into ship depot maintenance budgets. The Navy also developed a Surface Ship Engineered Operating Cycle (SSEOC) program to help identify priority repair work that could affect ship service life. Taken together, these efforts have helped the Navy make some progress in reducing the backlog since 2009. For a full analysis of the extent to which Navy management of the surface ship deferred maintenance backlog is consistent with leading practices for managing public-sector maintenance backlogs, see appendix II.

However, the Navy has not taken some key actions that leading practices show could help it make further progress in managing the deferred depot-level maintenance backlog. Specifically, the Navy has not established performance goals, baselines for outcomes, and performance measures for reducing the backlog; identified the full range of risks posed by a lack of timely investment; or structured the budget specifically to identify the funding needed to address the backlog of deferred depot-level maintenance.

Navy Does Not Have Performance Goals or Measures for Reducing the Depot Maintenance Backlog

After reviewing Navy documents and interviewing Navy officials, we found that the Navy does not have performance goals, baselines for outcomes, and performance measures for reducing the existing surface ship deferred depot-level maintenance backlog. According to leading practices, establishing performance goals, baselines for performance outcomes, and performance measures allows agencies to track the effectiveness of maintenance and repair investments, provide feedback on progress, and indicate where investment objectives, outcomes, or procedures require adjustment (see sidebar).

Definitions of Common Performance Management Terms

Performance goal. A target level of performance expressed as a tangible, measurable objective against which actual achievement can be compared, including a goal expressed as a quantitative standard, value, or rate. A performance goal comprises a measure, a time frame, and a target.

Performance measure. A tabulation, calculation, recording of activity or effort, or assessment of results compared with an intended purpose that can be expressed quantitatively or in another way that indicates a level or degree of performance.

Performance target. A quantifiable or otherwise measurable characteristic typically expressed as a number that tells how well or at what level an agency or one of its components aspires to perform.

Baselines for performance outcomes. A quantifiable point at which an effort began and from which a change in outcomes can be measured and documented.

Source: Government Performance and Results Act of 1993 (GPRA), National Academy of Public Administration, Office of Management and Budget Circular A-11, and the National Research Council. | GAO-22-105032

When we asked Navy officials about the Navy's performance goals, baselines for outcomes, and performance measures, the officials pointed us to the performance goal to defer 5 percent or less of maintenance per ship per maintenance period. However, we found this metric to be incomplete for several reasons:

- This metric is not a reliable performance goal or measure for reducing the aggregate backlog because, according to officials, it does not include maintenance deferred due to canceled maintenance periods. As we discussed earlier, the Navy has increasingly canceled entire maintenance periods in recent years. By not including the deferred maintenance from canceled maintenance periods, the 5-percent metric is not an accurate measure of the true level of deferred maintenance.
- This metric is not relevant to the aggregate backlog across the fleet. According to SURFMEPP, the metric is a target ceiling for individual maintenance periods. NAVSEA officials told us that they along with OPNAV and fleet leadership established and monitor this 5-percent goal to limit the amount of deferred maintenance on an individual ship during planned depot-level maintenance. Navy officials said they developed this metric based on their observations that the deferral of 5 percent or less of depot-level maintenance on an individual maintenance period can be absorbed in the maintenance cycle without causing a major disruption. According to Navy officials, any deviations were intended to be approved on an exception basis and not become routine across the fleet. As such, the 5-percent deferral limit was not intended to apply to the size of the fleet-wide maintenance backlog.

- This metric normalizes deviation from standards, in this case the class maintenance plans that Navy leaders have said must be strictly followed to achieve acceptable material condition and expected service life. The Navy's 2017 Strategic Readiness Review described a culture of normalization-of-deviation that is detrimental to readiness.²⁹ Deviations from the standard where ships were employed, ready or not, became accepted and normalized. We reported in 2017 that the Navy had increased deployment lengths, shortened training periods, and reduced or deferred maintenance to meet high operational demands, which had resulted in declining ship conditions and a worsening trend in overall readiness.³⁰

We found that the Navy had not developed performance goals, baselines for outcomes, and performance measures to reduce the deferred maintenance backlog that are transparent to senior Navy leadership and the Congress because, until our request, the Navy had not developed an aggregate backlog estimate. Now that the Navy has developed a backlog estimate, the service is better positioned to develop performance goals, measures, and baselines for outcomes to reduce the existing backlog. By doing so, the Navy could promote improved operational readiness.

NAVSEA Has Not Identified Full Range of Risks Associated with Deferred Maintenance

The Navy's current risk assessment process does not provide senior Navy leadership an assessment of the full range of risks to its fleet associated with surface ship deferred maintenance. Based on our review of relevant Navy documents and our discussions with knowledgeable Navy officials, we found that the Navy's risk assessments discuss some technical risks to individual ships, but these assessments are limited, overly optimistic, and do not adequately identify or assess fleet-wide

²⁹Department of the Navy, *Strategic Readiness Review* (Dec. 3, 2017). In 2017, the Navy had four significant mishaps at sea, including two collisions that resulted in the loss of 17 sailors' lives and hundreds of millions of dollars in damage to Navy ships. The Navy completed two internal reviews to identify and correct the root causes of the mishaps, ultimately compiling 111 recommendations to improve surface fleet readiness. See GAO, *Navy Readiness: Actions Needed to Evaluate the Effectiveness of Changes to Surface Warfare Officer Training*, [GAO-20-154](#) (Washington, D.C.: Nov. 14, 2019).

³⁰GAO, *Navy Readiness: Actions Needed to Address Persistent Maintenance, Training, and Other Challenges Affecting the Fleet*, [GAO-17-809T](#) (Washington, D.C.: Sept. 19, 2017).

economic and operational risks associated with ship deferred maintenance.³¹

SSEOC Report Provides Limited and Optimistic Assessment of Technical Risk

The Navy's reporting on technical risk focuses on the individual ship and provides overly optimistic projections for improvement that do not fully address the risks posed to the fleet by the deferred maintenance backlog. Navy's internal annual deferred maintenance report to key Navy decision makers—the Surface Ship Engineered Operating Cycle (SSEOC) report—does not identify and assess the full extent and risks to ship service life posed by the aggregate deferred maintenance backlog. Instead, the SSEOC report includes information on deferred maintenance, ship health, and technical violations that result in risks to achieving expected service life on an individual ship basis. Navy officials said they also discuss this technical risk during the ship sheet review process.

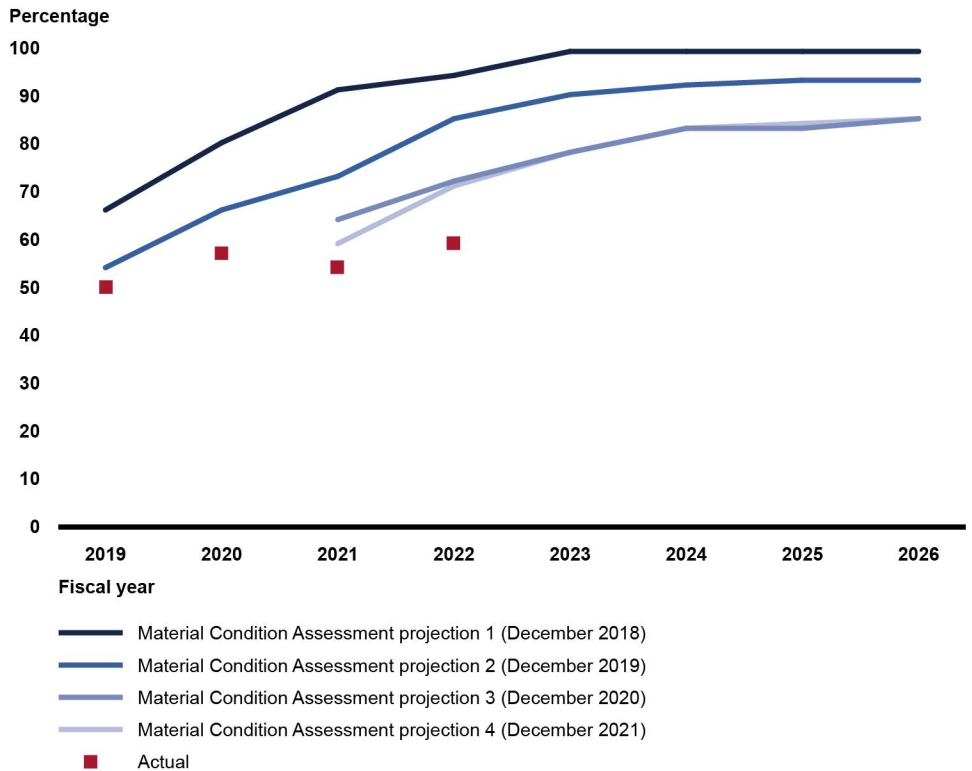
To monitor the technical risk to ships, the Navy developed a Life Cycle Health Assessment that identifies ships' technical health and projects when ships will be on track to meet their expected service life. The Navy reports the overall Life Cycle Health Assessment score for the surface fleet in its SSEOC report. The score is expressed as a percentage of ships assessed as satisfactory. However, we found no discussion in the SSEOC report of the overall technical risk posed by the percentage of unsatisfactory ships or the extent to which the Navy is meeting its projections for improving the scores.

Navy engineers have established thresholds for ships based on a set of criteria, such as the amount of maintenance deferred for mandatory technical requirements. Recent Navy material condition reviews indicate approximately 40 percent of surface ships do not meet the Navy's criteria for satisfactory life cycle material health and, therefore, are at risk of not reaching their expected service life.

³¹“Technical risk” refers to the risk of a catastrophic material failure of a part or parts of the ship. Economic risk, as used in this context, refers to the risk posed to a ship's service life by allowing costly repairs to accumulate. Operational risk refers to the risk of not meeting a legitimate operational need for the vessel to deploy. We asked SURFMEPP officials to review and comment on the accuracy of these definitions in the context of this report, and they concurred.

In addition, the Navy’s projections for returning these ships to satisfactory health were overly optimistic. When we analyzed Life Cycle Health Assessment projections for FY2019 through FY2021, we found that the Navy has repeatedly fallen short of projections and extended the dates for when ships will achieve satisfactory life cycle health. As figure 7 shows, the percentage of the fleet the Navy projects will meet satisfactory life cycle health by FY2026 has consistently declined since FY2019.

Figure 7: Navy Projections for the Percentage of the Fleet Achieving Satisfactory Material Condition Assessment Scores, Fiscal Years 2019 through 2026



Source: GAO analysis of U.S. Navy data. | GAO-22-105032

Accessible Data Table for Figure 7

	Assessment 1	Assessment 2	Assessment 3	Assessment 4	Actual
2019	66	54			50
2020	80	66			57
2021	91	73	64	59	54
2022	94	85	72	71	59
2023	99	90	78	78	
2024	99	92	83	83	
2025	99	93	83	84	
2026	99	93	85	85	

Note: The Navy’s monthly Material Condition Assessment overall scores includes the mine counter measures and patrol craft class of ships, which the Navy does not consider to be warships.

SSEOC Report Does Not Assess Economic Risk of Deferred Maintenance

The Navy could also improve its management of the backlog by identifying and assessing the economic risk of the backlog. We found that Navy does not consider the full extent of economic risk posed by the accumulating deferred maintenance backlog. Economic risk, as used in this context, refers to the risk posed to a ship’s service life by allowing costly repairs to accumulate. Navy officials told us that they use a factor of 6 percent, referred to as the fester factor, to anticipate how the cost of deferred maintenance may compound (see sidebar).

Fester Factor

In a study completed for the Navy in 2013, the Center for Naval Analyses calculated a growth factor of 6 percent per year for deferred maintenance due to the effects of corrosion that worsens over time. The Navy refers to this increase in the cost of repairs that arises from deterioration as the “fester factor,” the work required compounding with deferral.

In its study, the Center for Naval Analyses stated that the extent of deterioration varies by equipment type. For example, deferring corrosion prevention work might have a high fester factor, because it could result in significant metal loss from rusting. Tanks and voids may deteriorate from rust if they do not receive timely repairs. Delaying shaft seals and bearing replacement also could have a high fester factor.

Source: Center for Naval Analyses, *Ship Depot Maintenance and Expected Service Life* (February 2013). | GAO-22-105032

However, this approach is also focused on individual ships, according to officials, rather than on the entire fleet and therefore may fail to consider the fleet’s aggregate backlog. Furthermore, Navy officials stated that some ships fester at a higher rate than 6 percent, due to other factors, such as corrosion. A cover letter to the 2016 SSEOC report calls for better risk assessment, including economic risk, stating, “The fiscal year 2017 report [the next annual report] should include more discussion quantifying impact. For example, this year’s report shows ships that completed availabilities (i.e., maintenance periods) with 40 or more major departures from specification. A discussion of impact on expected service life, lost operational capacity due to degraded systems, and increased operational risk to the ship and crew throughout ships’ service life is

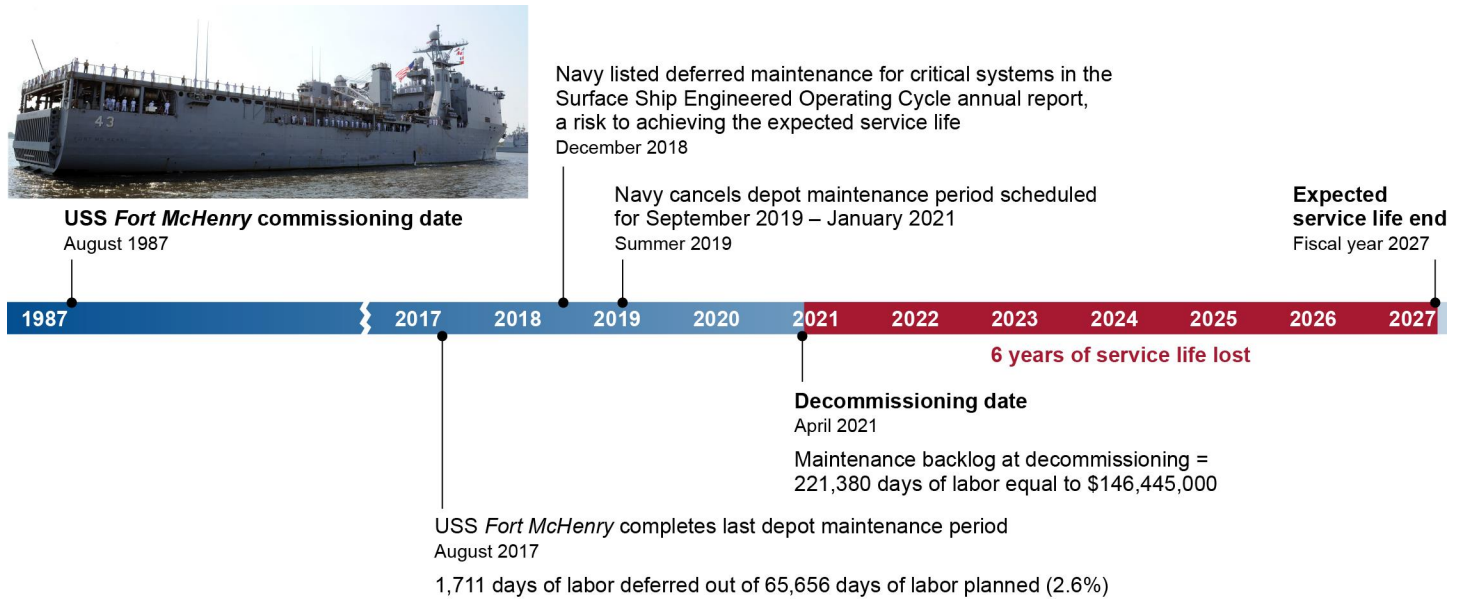
relevant to the SSEOC program and should be visible to leadership.”³² However, the FY2017 through FY2020 annual reports did not include such an assessment.

A ship’s accumulated deferred maintenance can sometimes make it an increasingly attractive candidate for decommissioning before reaching the full service life. While it makes little sense for the Navy to maintain a ship that it plans to decommission, choosing to defer maintenance can also result in decommissioning ships earlier than planned and therefore reduce the chances that the Navy can extend ships beyond their service lives if new ships are not built according to schedule.³³ For example, the Navy recently decommissioned the USS *Fort McHenry* 6 years before it reached its expected service life. Navy maintenance officials described the USS *Fort McHenry* as a poorly maintained ship that had accumulated a significant backlog (i.e., approximately \$146 million) of deferred maintenance at the time of decommissioning (see fig. 8).

³²NAVSEA, *Fiscal Year 2016 Surface Ship Engineered Operating Cycle Deferred Task Annual Report* (April 19, 2017).

³³We reported in 2018 that Navy ships have routinely cost more and taken longer to build than expected. GAO, *Navy Shipbuilding: Past Performance Provides Valuable Lessons for Future Investments*, [GAO-18-238SP](#) (Washington, D.C.: June 6, 2018).

Figure 8: Timeline of USS Fort McHenry’s Decommissioning

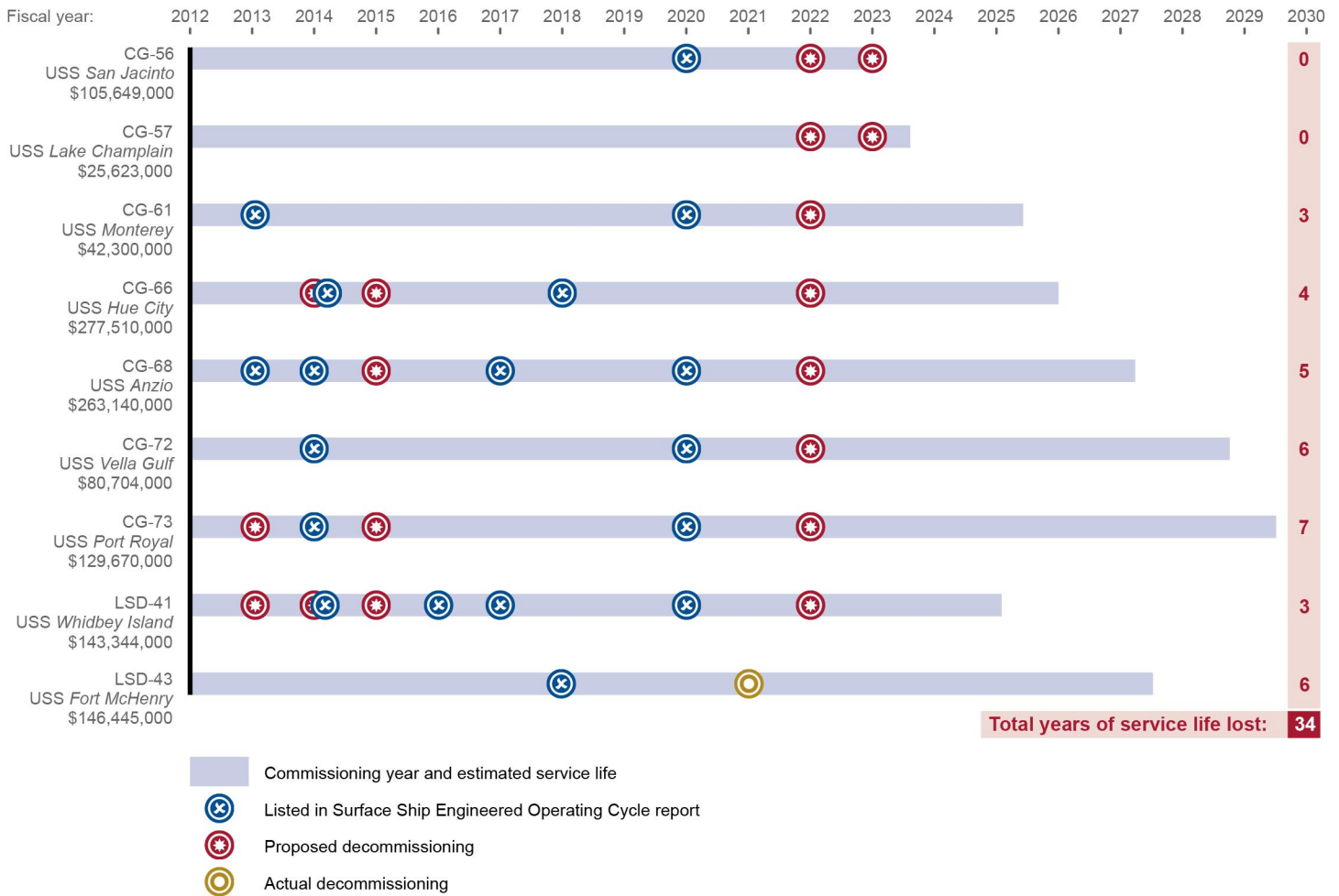


Source: GAO presentation of Navy depot maintenance close-out data; Naval Vessel Registry and Navy documents (text); U.S. Navy/Mass Communication Specialist 2nd Class D. Berg (photo). | GAO-22-105032

SURFMEPP officials told us that the Navy decides to decommission a ship based on many variables, such as a ship’s military value, scheduled modernization, and maintenance requirement. Officials said that although military value is the main consideration in deciding whether to decommission a ship early, the budgetary savings resulting from avoiding large maintenance costs for some older ships factors into decommissioning decisions.

We reviewed data on the nine ships the Navy proposed in its FY2022 budget request for early decommissioning—prior to reaching full service life. If approved, these decommissionings will result in the fleet losing 34 years of ship service life. Our analysis of these nine ships and their accumulated backlog illustrates the economic risk of mounting deferred maintenance that makes a ship an increasingly attractive candidate for decommissioning before reaching full service life. We found that all but the USS *Lake Champlain* had appeared at least once in the Navy’s annual SSEOC report for technical violations, some multiple times, and all nine ships had a multi-million dollar deferred maintenance backlog at the time of the FY2022 budget request (see fig. 9).

Figure 9: Ships Proposed for Early Decommissioning in FY2022 Budget, with an Accumulated Deferred Maintenance Backlog



Source: GAO analysis of U.S. Navy information. | GAO-22-105032

Although the Navy included these ships in several SSEOC reports on an individual basis, we found no evidence of an aggregate risk assessment of the accumulated backlog on these ships or other ships.

SSEOC Report Does Not Assess Operational Risk of Deferred Maintenance

The Navy could also improve its management of the backlog by identifying and assessing the operational risk of the backlog. The aggregate backlog poses the operational risk that ships will be decommissioned early, leading to a smaller fleet. We have previously

reported that the Navy's efforts to meet operational and presence requirements with a smaller fleet were not sustainable, eroded readiness, and may have contributed to safety issues.³⁴ OPNAV and NAVSEA officials explained that the current depot maintenance requirement review process does not include a requirement that SURFMEPP provide an estimate of the deferred maintenance backlog (i.e., depot-level maintenance requirements) for ships that Navy proposed to be decommissioned. Congress can choose not to accept the Navy's proposals, so it is important that the Navy continue estimating the depot-level maintenance requirements for these ships until Congress accepts the Navy's proposals. According to these officials, these requirements would represent an engineered estimate of known regular maintenance and known backlog for each ship. Without requiring that SURFMEPP continue estimating depot-level maintenance requirements until Congress has accepted Navy decommissioning proposals, senior Navy leadership do not have quality information about the backlog for ships that Navy proposes to be decommissioned.

Additional Risks Include the Impact on Limited Shipyard Capacity

The aggregate impact of mounting deferred maintenance extends to industrial capacity. The backlog places additional pressure on the already strained public and private shipyard industrial base that performs ship repairs and modernization, according to our prior work and a Navy report.³⁵ Continued strain manifests as increased workload that is likely to exacerbate the Navy's persistent maintenance delays. These delays reduce ship availability for training and operations thereby affecting overall fleet readiness.

Ships delayed in maintenance also occupy limited space in dry docks and the labor of a limited supply of shipyard workers. For example, the Navy reported the deferred maintenance from the USS *Arlington's* (LPD 24) canceled depot maintenance period in FY2019 will add an estimated 18,406 days of labor to the FY2023 depot maintenance period. For aircraft carriers, the Navy extended the USS *Harry S. Truman's* FY2022 depot maintenance period by 4 months as a result of deferred maintenance during the depot-level maintenance period completed in

³⁴GAO, *Navy Readiness: Actions Needed to Address Persistent Maintenance, Training, and Other Challenges Facing the Fleet*, [GAO-17-798T](#) (Washington, D.C.: Sept. 7, 2017).

³⁵[GAO-21-225T](#) and U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Maintenance and Modernization of Naval Vessels for Fiscal Year 2020*.

May 2021. The Navy also extended the USS *Dwight D. Eisenhower's* FY2021 depot maintenance period by 4 months as a result of deferred maintenance during a depot-level maintenance period that ended in March 2019.

We asked Navy officials why the SSEOC report does not include information on the full extent, causes, and risks of deferred maintenance. OPNAV and NAVSEA officials acknowledged that although the SSEOC annual report includes a list of depot maintenance periods that the Navy canceled, the report does not include an estimate of the fleet-wide backlog stemming from ships with canceled depot-level maintenance periods.³⁶ Officials said that they have not included this information in the past because they have focused on using the report to inform ship-specific maintenance planning decisions. They said that they have not considered how this information could be used to provide a fleet-wide perspective to senior leaders on the full extent, causes, and risk of deferred maintenance. As our past work has shown, accurate reporting on deferred maintenance is important for key decision makers, not just maintenance managers at the job execution level.³⁷ According to the NAVSEA Commander, stakeholders including NAVSEA, Fleet Commanders, and Type Commanders need to coordinate closely to mitigate the maintenance backlog risks across the fleet. Without identifying and assessing the full range of fleet-wide risks—including technical, economic, and operational risks—associated with deferred surface ship depot-level maintenance, and including the assessment in the SSEOC annual report, the Navy may not be able to take action to mitigate these risks.

Navy's Position on Risks Associated with Deferred Maintenance

Navy officials stated they believed that their existing policies and practices for assessing the risks from deferred maintenance were adequate. Officials said the Navy accounts for economic risk by applying

³⁶Officials with SURFMEPP told us that maintenance work not completed within the ship's maintenance cycle will add directly to its backlog. Therefore, including an estimate of the amount and dollar value of deferred maintenance resulting from both completed and canceled maintenance periods in the report would provide a more accurate picture of the aggregate level of deferred maintenance across the surface fleet.

³⁷GAO, *Financial Management: Issues to Be Considered by DOD in Developing Guidance for Disclosing Deferred Maintenance on Ships*, GAO/AIMD-98-46 (Washington, D.C.: Feb. 6, 1998).

the fester factor to deferred maintenance requirements spanning multiple Optimized Fleet Response Plan cycles during the ship sheet development process.³⁸ They also noted that the SSEOC reports call out ships with technical violations and that they discuss ranges of risks in correspondence between SURFMEPP, NAVSEA05, Fleet Leadership, and Type Commanders. Some officials we interviewed downplayed the risks of deferred maintenance. For instance, Navy officials at U.S. Pacific Fleet told us they do not consider the backlog to be a risk for the fleet. However, the FY 2019 SSEOC report indicated that recent deferred maintenance trends do pose increasing risks. NAVSEA commented that the report highlighted some significant departures from Surface Ship Class Maintenance Plans and that if current trends continue with respect to deferred maintenance, SEA 05D holds that surface ships will be at risk of not meeting their expected service lives. The report also acknowledged that continued deferral of maintenance makes subsequent availabilities (i.e., maintenance periods) costlier monetarily and affects their schedule because deferral of maintenance increases the risk of operational failure outside the maintenance phase of the Optimized Fleet Response Plan and suboptimizes surface ship operating systems performance.³⁹

Continued decisions to defer maintenance will further expand the estimated aggregate backlog, and the Navy has stated that deferred maintenance adds risk to future fleet readiness. Performing fleet-wide risk assessments using existing processes would help the Navy better manage and identify the resources needed to reduce the backlog. Without identifying and assessing the full range of risks in the SSEOC report, the Navy may not be able to assess and take action to mitigate these risks. Officials acknowledged that this information is not included in the annual SSEOC report. According to DOD guidance applicable to all the services, risk communication is at the core of any successful risk assessment. Senior leaders apply their judgment and experience in risk analysis and can often provide a distinct and broader perspective that

³⁸The Navy's Optimized Fleet Response Plan is the force readiness generation construct used to maximize employability through a disciplined, repeatable, predictable approach that balances mid- and long-term readiness production stability for the fleet with the agility to support dynamic employment. Each Optimized Fleet Response Plan cycle includes a maintenance phase that provides the time to maintain platforms to reach their expected service life. COMUSFLTFORCOM/COMPACFLTINST 3000.15B, *Optimized Fleet Response Plan* (Oct. 20, 2020). We have ongoing work evaluating the Navy's implementation of the Optimized Fleet Response Plan.

³⁹NAVSEA, *Fiscal Year 2019 Surface Ship Engineered Operating Cycle Deferred Tasks Annual Report* (March 4, 2020).

helps determine appropriate risk decisions.⁴⁰ Absent an explicit discussion of these risks, the SSEOC report lacks transparency and its usefulness to senior Navy leaders is diminished.

Navy Does Not Include Backlog Details in Congressional Budget Requests and Related Reports

Our review of budget justification documents found that the Navy is not transparent about the backlog in annual budget requests and related reports, such as reports to Congress on long-term ship maintenance plans or annual unfunded priorities lists. According to leading practices, agencies need to structure budgets to identify funding allotted for routine maintenance and repair and to address any backlog of deferred deficiencies, because insufficient levels of such funding can cause agencies' backlogs to increase. DOD's *Financial Management Regulation* calls for federal managers to produce budgets at a detailed level that will improve accuracy, insight, and increased transparency of an agency's expenditures.⁴¹

Navy officials told us their practice of building budget requests from the bottom up using information on individual ship sheets informs the budget development process and includes any existing backlog on an individual ship. However, the Navy's budget justification documents do not include information on the total maintenance backlog. For example, the FY2022 budget request does not include any mention of the Navy's \$455 million depot maintenance backlog estimate for current in-service surface ships, based on ship sheets. The Navy also did not include the \$1.2 billion backlog specifically attributed to the nine ships proposed for early decommissioning.

According to the Navy, deferred maintenance requirements are defined in the ship sheets that contain the total executable requirement across the future fiscal years. However, the Navy does not specifically identify the aggregate backlog in its annual budget request or related documents,

⁴⁰Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3105.01A, *Joint Risk Analysis* (Oct. 12, 2021).

⁴¹DOD 7000.14-R, *Financial Management Regulation*, vol. 4, chap. 19 (Oct. 2020).

such as annual unfunded priorities lists.⁴² OPNAV and NAVSEA officials said that currently they do not explicitly summarize and review the deferred maintenance backlog as part of the program objective memorandum review process that informs the annual budget request.⁴³ They said that as a result of our review, they intend to summarize and review the aggregate ship sheet maintenance backlog during the biannual program objective memorandum review process in October 2022. This action would enable the Navy to include information on the size of the estimated aggregate backlog in its annual budget request. Doing so could help senior Navy leaders and the Congress understand the level of funding required to reduce and ultimately eliminate the backlog.

We also reviewed the Navy's *Report to Congress on the Annual Long-Range Plan for Maintenance and Modernization of Naval Vessels for Fiscal Year 2020*, which was intended to assess the maintenance and modernization requirements for the fleet as it grows. The Navy submitted this long-range maintenance plan with its congressional budget request for FY2020. We found that, while this plan included a statement acknowledging the maintenance backlog, it did not provide any information on the size of the backlog.⁴⁴ While Navy officials agreed that this information was not specifically included in the report, they said that ship sheets, which contained backlog information, were the basis for the report. Although the Navy's ship sheets may contain the necessary information for individual ships, the Navy has not been transparent about

⁴²An "unfunded priority" is a program, activity, or mission requirement that (1) is not funded in the President's budget for the fiscal year; (2) is necessary to fulfill a requirement associated with an operational or contingency plan of a combatant command or other validated requirement; and (3) could have been recommended for funding through the budget if additional resources had been available for the budget year or the requirement emerged since the budget was formulated. Specified officers within DOD, including the Chief of Naval Operations, are required to submit unfunded priorities reports annually to both the Secretary of Defense and Congress. 10 U.S.C. § 222a. The Navy's FY2020 list identified ship depot maintenance as the top unfunded priority, including \$110 million for surface ship deferred maintenance. However, neither the FY2021 nor the FY2022 unfunded priorities lists include any mention of ship deferred maintenance.

⁴³The program objective memorandum is the final product of the programming process within DOD and its components. It displays resource allocation decisions made in response to and in accordance with strategic and joint programming guidance.

⁴⁴U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Maintenance and Modernization of Naval Vessels for Fiscal Year 2020* (2019). The Navy reported that the plan describes its continued challenges with high-tempo operations that has resulted in a maintenance backlog and reduced readiness rates for Navy ships.

the aggregate estimated backlog at a point in time in its budget documents and related reports.

Without accurate and transparent information about the size of the Navy's depot maintenance backlog, Congress lacks critical information that could help to prioritize funding to address the Navy's ship readiness. Also, absent information about the backlog specifically attributed to ships proposed for decommissioning, Congress lacks critical information about the Navy's decommissioning proposals. Including information in budget documents about the aggregate ship deferred depot maintenance backlog will give Congress and Navy senior leaders the information they need to effectively prioritize resources.

Navy Financial Reporting Understates Ship Deferred Maintenance Backlog

The Navy's reporting on the costs of ship deferred depot maintenance in annual financial statements is incomplete and not transparent. The Navy's annual financial statements underreported ship deferred depot maintenance, do not include the aggregate backlog, and do not include all of the required supplemental information about ship deferred maintenance.

While the SSEOC report is the Navy's internal annual account of surface ship deferred maintenance, DOD policy requires that the Navy communicate information on ship deferred maintenance in annual financial statements.⁴⁵ *Statement of Federal Financial Accounting Standards 42* requires that federal entities disclose seven items of qualitative and quantitative information about deferred maintenance in

⁴⁵DOD's *Financial Management Regulation* implements OMB Circular A-136, *Financial Reporting Requirements* (Aug. 10, 2021), which requires the submission of annual financial reports (AFRs) from agency heads. AFR deferred maintenance reporting is done in accordance with Federal Accounting Standards Advisory Board, *Definitional Changes Related to Deferred Maintenance and Repairs: Amending Statement of Federal Financial Accounts Standards 6, 14, 29 and 32, Accounting for Property, Plant and Equipment* (Apr. 25, 2012).

annual financial statements (see sidebar).⁴⁶ DOD's *Financial Management Regulation* directs that reporting entities, such as the Navy, are required to report material amounts of deferred maintenance and repairs as supplementary information to accompany their annual financial statements.⁴⁷ Amounts reported must include both funded and unfunded deferred maintenance and repairs.

U.S. Federal Government Deferred Maintenance and Repair Reporting

Agencies report deferred maintenance and repairs estimates as supplementary information accompanying required financial statements in agency annual financial reports.

According to the Federal Accounting Standards Advisory Board, reporting on deferred maintenance and repairs enables the government to be accountable to citizens for the proper administration and stewardship of its assets. The board further states that the reporting assists users by providing a realistic estimate of the amount of deferred maintenance and repairs and the effectiveness of asset maintenance practices an entity employs in fulfilling its mission.

In the U.S. *Fiscal Year 2020 Financial Report*, the U.S. Department of the Treasury estimated that federal deferred maintenance and repairs totaled \$208 billion. Treasury reported that the consequences of not performing regular maintenance and repairs could include increased safety hazards, poor service to the public, higher costs in the future, and inefficient operations.

Source: GAO analysis. | GAO-22-105032

We found that the Navy does not consistently meet the requirements of federal accounting standards—and by extension the DOD Financial Management Regulation. Our analysis of the Navy's financial statements since FY2015 shows that the Navy does not consistently report all seven

⁴⁶FASAB, *Statement of Federal Financial Accounting Standards 42: Deferred Maintenance and Repairs: Amending Statements of Federal Financial Accounting Standards 6, 14, 29 and 32* (Apr. 25, 2012). The revised disclosure requirements are effective for fiscal years beginning after September 30, 2014. Federal entities are required to (1) describe their maintenance and repairs (M&R) policies and how they are applied; (2) discuss how they rank and prioritize M&R activities among other activities; (3) identify factors considered in determining acceptable condition standards; (4) state whether deferred M&R relate solely to capitalized general property, plant, and equipment (PP&E) and stewardship PP&E or also to non-capitalized or fully depreciated general PP&E; (5) identify PP&E for which management does not measure and/or report deferred M&R and the rationale for the exclusion of other than non-capitalized or fully depreciated general PP&E; (6) provide beginning and ending deferred M&R balances by category of PP&E; and (7) explain significant changes from the prior year.

⁴⁷DOD 7000.14-R, *Financial Management Regulation*, vol.6B, chap. 12 (Feb. 2021).

items for ship deferred maintenance.⁴⁸ For example, the Navy does not define acceptable condition standards for ships, which accounting standards describe as one way to measure deferred maintenance.⁴⁹ Further, the information and cost values presented do not include the backlog estimate, making the information presented less useful, as it does not capture the full picture of work (and estimated cost) that needs to be performed. In addition, the reporting includes only unfunded ship deferred maintenance, not funded ship deferred maintenance.⁵⁰ The financial reporting also only includes depot-level ship deferred maintenance, and therefore could be missing any intermediate-level ship deferred maintenance. We recently reported that the Navy lacks reliable data on intermediate-level maintenance periods.⁵¹

We reviewed financial statements since FY2015.⁵² We compared the reporting in the FY2021 report with the estimate of aggregate maintenance backlog that OPNAV and NAVSEA officials developed in response to our request discussed earlier in this report. Using this comparison we found that the Navy had significantly underreported ship deferred maintenance in its FY2021 financial statements. See figure 10.

⁴⁸The Navy's financial statements report a single number for ship deferred maintenance and do not report any information on the types of ships included.

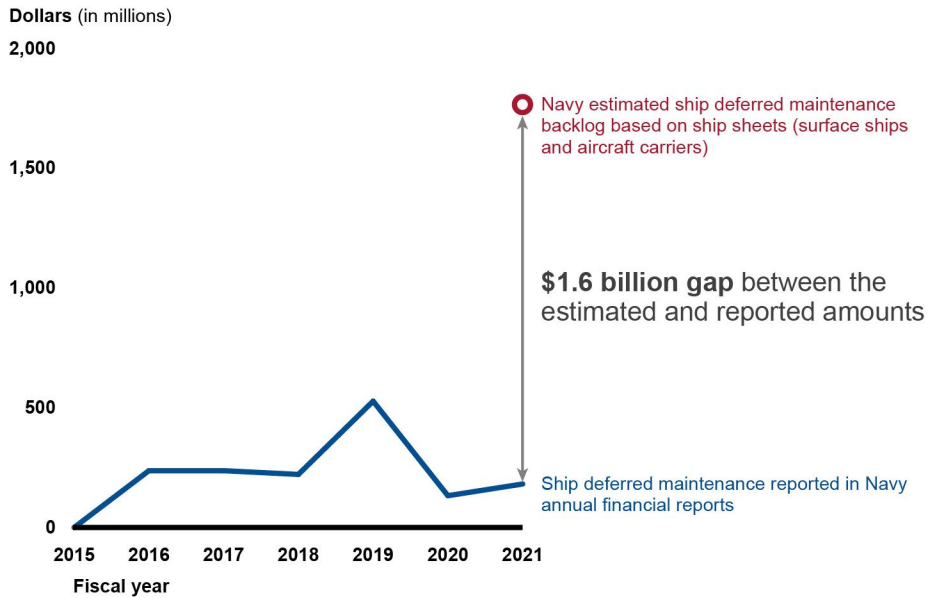
⁴⁹FASAB, *Statement of Federal Financial Accounting Standards 42*. According to the standards, amounts for deferred maintenance and repairs may be measured using condition assessment surveys, life-cycle cost forecasts, or other similar methods. If using condition assessments, agency management should determine what condition standards are acceptable and consistently apply them in reports unless it is determined a change in method is necessary.

⁵⁰Federal accounting standards state that reporting on deferred maintenance should include funded maintenance and repairs that have been delayed for a future period as well as unfunded maintenance.

⁵¹[GAO-22-104510](#). We found that the Navy did not collect several categories of data for intermediate maintenance periods for submarines, surface ships, and aircraft carriers, including the actual number of jobs deferred to other maintenance periods and the planned and actual costs.

⁵²*Statement of Federal Financial Accounting Standards 42* included revised deferred maintenance disclosure requirements that are effective for fiscal years beginning after September 30, 2014. Therefore, we based our analysis on reporting beginning with the FY2015 agency financial report.

Figure 10: Ship Deferred Maintenance Reported in Navy Financial Reports Compared with Navy’s Estimate of Ship Deferred Maintenance Backlog Based on Ship Sheets, for Fiscal Years 2015 through 2021



Source: GAO analysis of Department of the Navy annual agency financial reports and Navy data. | GAO-22-105032

	Ship deferred maintenance reported in Navy annual financial reports	Navy estimated ship deferred maintenance backlog based on ship sheets (surface ships and aircraft carriers)
2015	0	
2016	236.327	
2017	236.327	
2018	220.869	
2019	525.57	
2020	132.399	
2021	181	1761.77

Note: We asked Navy officials for historical backlog estimates, but they were unable to provide estimates prior to 2021.

The Navy reported in the FY2021 financial report that the ship deferred depot-level maintenance estimate is about \$181 million—far less than the Navy’s analysis based on ship sheets (developed in response to our request), which totaled nearly \$1.7 billion for surface ships (including the nine ships planned for early decommissioning) and \$92.4 million for aircraft carriers. Also, the FY2020 financial report indicated a decline in ship deferred maintenance from FY2019, which was not consistent with the FY2020 SSEOC report, which stated that FY2020 experienced an aggregate upward trend in deferred depot-level repairs. Navy finance

officials we spoke with said they compiled the information for the financial report from Fleet Forces Command and Pacific Fleet budget submission offices, and they did not verify the accuracy of the estimate or compare with Navy backlog estimates developed by OPNAV and NAVSEA.

The Navy has not established clear guidance for required supplementary information on ship deferred maintenance in annual financial statements, an issue we raised in a 1998 report, even though the Navy began reporting ship deferred maintenance in financial statements more than 2 decades ago.⁵³ Navy officials told us that the Navy does not closely review the ship deferred maintenance information in annual financial statements because the office of the Assistant Secretary of the Navy (Financial Management and Comptroller) has not made this a priority. As a result, the office of the Assistant Secretary of the Navy (Financial Management and Comptroller) has also not coordinated with the office of the Chief of Naval Operations to disclose the aggregate ship deferred maintenance backlog estimate—both funded and unfunded—in annual financial statements.

Officials with the Office of Financial Operations said they are focused on the ongoing effort to pass a financial audit.⁵⁴ These officials told us they intend to begin the process of validating Navy deferred maintenance information in FY2023 or FY2024, and that they may issue guidance then on how the Navy should disclose information on ship deferred information in annual financial statements. These officials said that, although the deferred maintenance information is currently unaudited, they are an important mechanism for external reporting to Congress and American taxpayers, who have invested hundreds of billions of dollars in Navy ships.

⁵³[GAO/AIMD-98-46](#).

⁵⁴The Navy continues to be unable to demonstrate basic internal control, as identified in its previous audits, which would allow it to report, with reasonable assurance, the effectiveness of internal control, including those designed to account for mission-critical assets (including ships). In its 2020 Statement of Assurance, the Navy identifies depot level maintenance as a material weakness in internal control over operations with a targeted remediation date of June 2025. A “deficiency in internal control over financial reporting” exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent or detect and correct misstatements on a timely basis. A “material weakness” is a deficiency or combination of deficiencies in internal control over financial reporting that results in a reasonable possibility that management will not prevent or detect and correct a material misstatement in the financial statements in a timely manner.

Transparency in the disclosure of ship deferred maintenance is important so that Congress has the information it needs to prioritize funding, and so that the American people have information about how the Navy is managing taxpayer dollars. Deferred maintenance applicable to mission assets such as ships, if reliably quantified and reported, can be an important performance indicator of mission asset condition, which is a key readiness factor. While the existence of deferred maintenance may indicate a need for additional resources for maintenance, such resources may already be available within the current funding of the military services to be reprogrammed and prioritized. In addition, until the Navy addresses its shortcomings with reporting ship deferred maintenance, this will continue to be another barrier preventing the Navy from achieving a clean financial audit.

Transparent and accurate reporting of deferred maintenance is also important for key decision makers such as Navy managers, DOD, and Congress. Having quality information on the costs of deferred maintenance—and the corresponding effects on maintenance backlogs—would provide the Navy and Congress with greater transparency about the Navy’s efforts to maintain its ships and would promote improved operational readiness.

Conclusions

The Navy has accumulated a deferred depot-level maintenance backlog of nearly \$1.7 billion for surface ships and nearly \$100 million for aircraft carriers, and does not track the level of deferred intermediate maintenance. Left unchecked, the Navy’s deferred maintenance backlog could result in more expensive repairs, reduced ship service life, worsened shipyard capacity shortfalls, and reduced operational readiness. Although the Navy has taken several steps over the past decade to address the surface ship deferred depot-level maintenance backlog, full implementation of leading practices for managing public-sector maintenance backlogs could help the Navy reduce its backlog.

Taking action to implement the three leading practices that the Navy has not met could help the Navy more efficiently manage existing resources—specifically, taking action to (1) establish performance goals, baselines for outcomes, and performance measures for reducing the backlog; (2) identify the full range of risks associated with deferred depot-level ship maintenance; and (3) provide Congress with transparent budget requests and related reports that include information about the aggregate depot-

level ship maintenance backlog. This would also better position the Navy and Congress to address the aggregate ship deferred maintenance backlog and restore more ships to full readiness status. Now that the Navy has developed an aggregate depot backlog estimate in response to our review, the Navy is better positioned to apply these three leading practices.

The Navy could also improve the ways that it communicates information about deferred maintenance, both internally and externally, to more effectively manage the surface ship deferred maintenance backlog. Including better quality information in annual SSEOC reports would enhance the Navy leadership's ability to target efforts to reduce deferred maintenance and improve visibility over the accumulating risk across the fleet. The Navy's including information on the size of the estimated aggregate backlog in annual budget request to Congress could help senior Navy leaders and the Congress understand the level of funding required to reduce and ultimately eliminate the backlog. Finally, having quality information on the costs of deferred maintenance, including disclosing in financial statements the estimated aggregate backlog, would provide the Navy, Congress, and U.S. taxpayers with greater transparency about the Navy's efforts to maintain ships and submarines, and could promote improved operational readiness.

Recommendations for Executive Action

We are making the following nine recommendations to the Department of the Navy:

The Secretary of the Navy should ensure that Naval Sea Systems Command (NAVSEA) establishes performance goals, baselines for outcomes, and performance measures to manage the surface ship deferred depot maintenance backlog. (Recommendation 1)

The Secretary of the Navy should ensure that the Office of the Chief of Naval Operations identifies and assesses the full range of fleet-wide risks, including operational, technical, and economic risks, associated with deferred surface ship depot maintenance, and includes the assessment in an annual report to the Chief of Naval Operations published by NAVSEA. (Recommendation 2)

The Secretary of the Navy should ensure that NAVSEA publish in an annual report to the Chief of Naval Operations the current aggregate

backlog estimate and an estimate of the maintenance required to be programmed and executed for each ship with canceled depot maintenance periods. (Recommendation 3)

The Secretary of the Navy should ensure that the Office of the Chief of Naval Operations modifies its maintenance requirement process to require that SURFMEPP continue estimating depot-level maintenance requirements until the Congress has accepted Navy decommissioning proposals. (Recommendation 4)

The Secretary of the Navy should ensure that information on the aggregate ship deferred maintenance backlog estimate is included in congressional budget requests and related reports. (Recommendation 5)

The Secretary of the Navy should ensure that information on the deferred maintenance backlog estimate for any ships proposed for decommissioning is included in congressional budget requests and related reports. (Recommendation 6)

The Secretary of the Navy should ensure that the Office of the Assistant Secretary of the Navy (Financial Management and Comptroller) issues guidance on the disclosure of ship deferred maintenance in annual financial statements. (Recommendation 7)

The Secretary of the Navy should ensure that the Office of the Assistant Secretary of the Navy (Financial Management and Comptroller) coordinates with OPNAV N83 and discloses the aggregate ship deferred maintenance backlog estimate in annual financial statements. (Recommendation 8)

The Secretary of the Navy should ensure that the Office of the Assistant Secretary of the Navy (Financial Management and Comptroller) discloses both funded and unfunded ship deferred maintenance in annual financial statements. (Recommendation 9)

Agency Comments

We provided a draft of our report to DOD for comment. DOD's written comments are reprinted in appendix III of this report. DOD concurred with seven of our nine recommendations and stated, in general, that the department will ensure that the Navy takes action to implement these recommendations.

DOD partially concurred with two of our recommendations:

- DOD partially concurred with our recommendation that the Navy include information on the aggregate ship deferred maintenance backlog in congressional budget requests and related reports. The department stated that the budget request is based on ship maintenance schedules, not on the deferred maintenance backlog; but that the Navy agreed to include information about the surface ship deferred maintenance backlog in an annual report.
- DOD also partially concurred with our recommendation that the Navy include information on the deferred maintenance backlog estimate for any ships proposed for decommissioning in congressional budget requests and related reports. The department stated that amounts for Navy ship inactivation budget requests are not based on the backlog of deferred maintenance, but that the Navy agreed to include information on the deferred maintenance backlog estimate for ships proposed for decommissioning in an annual report.

We agree that annually reporting on the size of the aggregate deferred maintenance backlog and ship-specific deferred maintenance backlog for ships proposed for decommissioning is consistent with the intent of both recommendations. However, we continue to believe it is important for DOD to also include this information in its annual budget requests. Including such deferred maintenance information in budget requests would provide decision makers in Congress with the information they need to effectively prioritize resources.

The Secretary of the Navy also provided technical comments that we incorporated as appropriate.

We are sending copies of this report to the appropriate congressional committee, the Secretary of Defense, the Secretary of the Navy, and other interested parties. In addition, this report will be available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have questions about this report, please contact me at MaurerD@gao.gov or (202) 512-9627. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix IV.

Letter

A handwritten signature in black ink that reads "Diana Maurer". The signature is written in a cursive, flowing style.

Diana Maurer
Director, Defense Capabilities and Management

Appendix I: Objectives, Scope, and Methodology

This report examines (1) the extent of deferred depot-level maintenance on surface ships, aircraft carriers, and submarines; (2) the extent to which the Navy used leading practices in its management of deferred maintenance; and (3) the extent to which the Navy's reporting on the costs of deferred maintenance meets federal accounting standards.

To address these objectives, we analyzed Navy data on completed depot maintenance periods. We also reviewed documents on ship material condition assessments, data on operations and maintenance funding, and documentation related to activities that supported leading practices for deferred maintenance. We reviewed Navy financial statements for required supplemental information on deferred depot maintenance. We reviewed relevant documents such as the Navy's maintenance policy for ships, the Navy's *Joint Fleet Maintenance Manual*, the Engineering and Technical Authority Manual, and the Corrosion Control Assessment and Maintenance Manual.¹ We also reviewed Navy policy and procedure documents such as the *Surface Ship Engineered Operating Cycle Program* Instruction and *Waterfront Engineering and Technical Authority Policy*.² We interviewed Navy officials from the Office of the Chief of Naval Operations (OPNAV) and other relevant offices in Naval Sea Systems Command (NAVSEA), U.S. Fleet Forces Command, and U.S. Pacific Fleet.

To determine the extent of deferred depot maintenance on surface ships, aircraft carriers, and submarines, we requested data from completed depot maintenance periods for the previous decade. For aircraft carriers and surface ships, the Navy provided data from fiscal year (FY) 2011 through FY2020. For submarines, the Navy was only able to provide data from FY2015 through FY2019. Officials from both Submarine

¹OPNAV Instruction 4700.7M, *Maintenance Policy for Navy Ships* (May 8, 2019); COMUSFLTFORCOM Instruction 4790.3, *Joint Fleet Maintenance Manual* (Jan. 15, 2021); NAVSEA, *Engineering and Technical Authority Manual* (June 6, 2011); and NAVSEA T9630-AB-MMD-010, *Corrosion Control Assessment and Maintenance Manual (CCAMM)*, 3rd revision (Dec. 31, 2014).

²OPNAV Instruction 3120.47, *Surface Ship Engineered Operating Cycle Program* (May 2, 2013); NAVSEA Instruction 5400.95G, *Waterfront Engineering and Technical Authority Policy* (Aug. 12, 2019).

Maintenance Engineering, Planning, and Procurement (SUBMEPP) and NAVSEA Logistics, Maintenance and Industrial Operations said this was the only available data on submarine deferred depot maintenance. We also interviewed Navy officials knowledgeable of depot maintenance completion data.

To measure the size of the Navy's depot-level deferred maintenance backlog for surface ships, aircraft carriers, and submarines, we requested data on actual expenditures compared with requirements from ship class maintenance plans. For surface ships, Surface Maintenance Engineering Planning Program (SURFMEPP) officials provided us with data showing the estimated surface ship backlog from FY2009 through FY2020, expressed in days of labor.³ These data provide an estimate of the maintenance backlog for the cruiser, guided missile destroyer, amphibious assault, and dock landing ship classes of surface ships.⁴ We requested that the Navy calculate an accurate financial estimate of its current surface ship deferred maintenance backlog. The Navy developed this aggregate deferred maintenance backlog estimate based on ship sheets used to develop the FY2022 budget request. For aircraft carriers, NAVSEA officials provided us with the total estimated cumulative backlog as of October 2021. The Carrier Planning Activity (CPA) developed the estimate for us using the same methodology used for aircraft carrier ship sheets. For submarines, Navy officials at both SUBMEPP and NAVSEA Logistics, Maintenance and Industrial Operations told us the Navy does not have a backlog estimate for submarines because the submarine community completes all required depot maintenance.

³The Navy calculated the surface ship backlog estimate as cumulative expenditures, in days of labor, compared with the technical foundation paper requirements. Technical foundation papers are class-specific baseline life cycle maintenance requirements developed using historical maintenance analysis, current class maintenance studies, operational results, and projected preservation trends. According to NAVSEA officials, the technical foundation papers provide a maintenance plan for a ship from the date of commissioning until the ship is decommissioned.

⁴According to officials, the Navy's data on actual expenditures compared with class maintenance plans for surface ships excluded six cruisers and two amphibious assault ships that followed a different maintenance plan and cannot be compared with the technical foundation papers. Officials stated the data also currently exclude littoral combat ships, amphibious assault ships (general purpose), amphibious transport docks, and Zumwalt-class destroyers. Navy officials said they plan to include littoral combat ships, amphibious assault ships (general purpose), and amphibious transport docks in these data in future estimates. Navy officials said they do not include decommissioned ships in the data.

We interviewed maintenance and engineering officials who compile ship deferred maintenance data and developed the estimates, and officials with OPNAV who used the data and estimates to plan depot maintenance periods and compile budget requests. After assessing the data and estimates, we determined that Navy's data and estimates were sufficiently reliable for presenting descriptive information on the estimated dollar amount of deferred ship and aircraft carrier maintenance, and we discuss our findings in this report. We did not independently verify the accuracy of the Navy's surface ship backlog estimate. We reviewed the Navy's estimate and interviewed officials from SURFMEPP and OPNAV. We concluded that the Navy's estimate is sufficiently reliable for the purposes of answering our objective questions.

To evaluate the Navy's efforts to manage and reduce its backlog of ship depot-level deferred maintenance, we reviewed our prior work on public-sector deferred maintenance backlogs. Specifically, we reviewed nine leading practices GAO previously identified as effective strategies for U.S. agencies to manage deferred maintenance and repairs.⁵ We also reviewed our prior work that examined the extent to which other agencies followed these practices.⁶ Although the prior GAO reports were specifically related to real property deferred maintenance, we noted that ships are considered mission assets for accounting purposes and are subject to the same accounting rules and deferred maintenance disclosure requirements as real property. We interviewed GAO methodologists and teams that had worked on evaluations of the Coast Guard and State Department deferred maintenance backlogs to understand the extent to which the leading practices framework could

⁵These nine leading practices were identified in GAO, *Federal Real Property: Improved Transparency Could Help Efforts to Manage Agencies' Maintenance and Repair Backlogs*, [GAO-14-188](#) (Washington, D.C.: Jan. 23, 2014) and based on research conducted by the National Research Council of the National Academies of Sciences, Engineering, and Medicine from 1998 through 2012.

⁶In 2014, we examined the extent to which five agencies—General Services Administration, and the Departments of Energy, Homeland Security, the Interior, and Veterans Affairs—followed these practices. See [GAO-14-188](#). In 2019, we examined the extent to which the Coast Guard followed these practices. See GAO, *Coast Guard Shore Infrastructure: Applying Leading Practices Could Help Better Manage Project Backlogs of at Least \$2.6 Billion*, [GAO-19-82](#) (Washington, D.C.: Feb. 21, 2019). In 2021, we examined the extent to which the Department of State followed these practices. See GAO, *Overseas Real Property: Prioritizing Key Assets and Developing a Plan Could Help State Manage Its Estimated \$3 Billion Maintenance Backlog*, [GAO-21-497](#) (Washington, D.C.: Sept. 15, 2021).

apply to naval vessels.⁷ We concluded that these leading practices constitute a suitable framework to evaluate the Navy's management of the surface ship deferred maintenance backlog.

To determine whether any additional leading practices existed specific to ships, we conducted a literature review to identify pertinent studies. Our literature review did not identify any additional leading practices specific to ship deferred maintenance. We then asked knowledgeable Navy officials to review these leading practices and confirm that the leading practices are appropriate for ship deferred maintenance. Navy officials who manage the Navy's tracking and reporting on surface ship deferred maintenance concurred that these leading practices constitute an appropriate framework for ship deferred maintenance. We also asked these officials to suggest any additional leading practices specific to ship deferred maintenance and they responded they did not have any additional leading practices to suggest. As we previously reported, the nine leading practices we employed were the ones we identified as being the most relevant and appropriate to federal agencies managing their deferred maintenance and repair backlogs; however, these practices do not represent all actions that federal agencies can employ to improve management of their maintenance and repair backlogs.

To determine the extent to which Navy followed these leading practices, we asked the Navy to provide information and documentation about how, if at all, it follows each leading practice in its maintenance processes. We reviewed annual internal reports on surface ship deferred maintenance (Surface Ship Engineered Operating Cycle reports) that the Navy issued for FY2013 through FY2020. We also reviewed Navy annual budget requests for FY2011 through FY2022, and unfunded priority lists for FY2020 through FY2022.

We reviewed relevant documentation provided and determined the extent to which the Navy followed these leading practices as follows:

- We determined that Navy had **met** the leading practice if it provided documentation showing that all critical elements of the practice were incorporated to a large or full extent in its processes.

⁷Vessels are included in the Coast Guard backlog.

- We determined that Navy had **partially met** the leading practice if it provided documentation showing that some, but not all, of the critical elements of the practice were incorporated in its processes.
- We determined that the Navy had **not met** the leading practice if it did not provide documentation showing that any of the critical elements of the practice were incorporated in its processes.

To make these determinations, two analysts reviewed the leading practices and documentation provided and rated the extent to which the Navy followed each practice based on the categories described above. First, one analyst reviewed the documentation provided for each leading practice and assessed whether Navy had met, partially met, or not met the practice. A second analyst then reviewed the documentation provided for each leading practice, as well as the first analyst's determinations, and assessed whether Navy had met, partially met, or not met the practice. In addition, we interviewed knowledgeable Navy officials to understand how Navy's maintenance processes addressed the deferred maintenance backlog.

To assess the Navy's reporting on the costs of deferred maintenance, we reviewed Navy annual financial reports for FY2015 through FY2020 and interviewed officials from the Navy's Office of Budget and Office of Financial Operations. *Statement of Federal Financial Accounting Standards 42* included revised deferred maintenance disclosure requirements that are effective for fiscal years beginning after September 30, 2014.⁸ Therefore, we based our analysis on Navy financial statements beginning with FY2015.

For this report, we interviewed officials and obtained documentation as appropriate from the following entities:

- Office of the Secretary of Defense
 - Office of the Under Secretary of Defense for Acquisition and Sustainment
 - Deputy Assistant Secretary of Defense for Materiel Readiness
 - Cost Assessment and Program Evaluation

⁸FASAB, *Statement of Federal Financial Accounting Standards 42: Deferred Maintenance and Repairs: Amending Statements of Federal Financial Accounting Standards 6, 14, 29 and 32*, § 13 (Apr. 25, 2012).

- Assistant Secretary of the Navy (Financial Management and Comptroller)
 - Office of Budget
 - Office of Financial Operations
- Office of the Chief of Naval Operations
 - Fleet Readiness (N83)
 - Strategic Fiscal Communications
 - Integrated Warfare, Shipbuilding and Conversion
- U.S. Fleet Forces Command
- U.S. Pacific Fleet
- Commander, Naval Surface Force Atlantic
- Naval Sea Systems Command
 - Logistics, Maintenance, and Industrial Operations
 - Naval Systems Engineering and Logistics Directorate
 - Surface Ship Maintenance, Modernization, and Sustainment
 - Surface Maintenance Engineering Planning Program (SURFMEPP)
 - Carrier Planning Activity (CPA)
 - Submarine Maintenance Engineering, Planning and Procurement (SUBMEPP)

We conducted this performance audit from February 2021 to May 2022 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Extent to Which the Navy Met Leading Practices for Managing Surface Ship Deferred Maintenance

The Navy met most, but not all, of the leading practices we have previously identified as effective strategies for managing public-sector deferred maintenance and repair backlogs. Specifically, we found that the Navy met six and did not meet three leading practices, as shown in table 5 below. We have reported that deferring maintenance and repair can lead to higher costs in the long term, that it poses risks to safety and agencies' missions, and that incorporating leading practices can help agencies better manage their deferred maintenance and repair backlogs.¹

Table 4: Extent to Which Navy Management of Deferred Maintenance Backlogs for Surface Ships Is Consistent with Leading Practices

Leading practice	Discussion of actions taken or not taken	Met/not met
(1) Establish clear maintenance and repair investment objectives and set priorities among outcomes to be achieved	Class maintenance plans and technical foundation papers establish clear maintenance and repair objectives for individual ships. Surface Ship Engineered Operating Cycle (SSEOC) reports and Life Cycle Health Assessments set priorities.	Met
(2) Identify assets that are mission-critical and mission-supportive	The Navy considers all ship types to be mission critical. Surface Maintenance Engineering Planning Program (SURFMEPP) categorizes maintenance tasks as SSEOC tasks if they have a significant impact on the ship's life cycle health and ability to achieve expected service life.	Met

¹GAO, *Federal Real Property: Improved Transparency Could Help Efforts to Manage Agencies' Maintenance and Repair Backlogs*, [GAO-14-188](#) (Washington, D.C.: Jan. 23, 2014) and GAO, *Coast Guard Shore Infrastructure: Applying Leading Practices Could Help Better Manage Project Backlogs of at Least \$2.6 Billion*, [GAO-19-82](#) (Washington, D.C.: Feb. 21, 2019).

**Appendix II: Extent to Which the Navy Met
Leading Practices for Managing Surface Ship
Deferred Maintenance**

Leading practice	Discussion of actions taken or not taken	Met/not met
(3) Conduct condition assessments as a basis for establishing appropriate levels of funding required to reduce, if not eliminate, any deferred maintenance and repair backlog	<p>The Navy began publishing monthly Life Cycle Health Assessment reports in fiscal year 2017. Life Cycle Health Assessments summarize condition assessments for each ship in the surface fleet in an executive-style presentation. The annual SSEOC report includes the percentage of the surface fleet that has met the Life Cycle Health Assessment satisfactory criteria. Taken together, this constitutes a basis for establishing appropriate levels of funding to address the backlog.</p> <p>Navy maintenance officials said they estimate the additional cost of deferring work on certain tasks, such as for tanks, which are more prone to continuing corrosion during the deferral that will likely increase the amount of work needed. They apply this fester factor on a ship-by-ship basis, not holistically across the fleet.</p> <p>The Navy incorporates the estimated deferred maintenance based on individual ship condition assessments into the ship sheets. These ship sheets list all required maintenance for an individual ship and are submitted to the Fleet and Office of the Chief of Naval Operations (OPNAV) in support of the planning, programming, budgeting and execution process. Actual funding levels are determined based on senior Navy leader priorities.</p>	Met
(4) Establish performance goals, baselines for outcomes, and performance measures for reducing the deferred maintenance backlog	<p>The Navy has not established a goal to reduce its aggregate backlog to a certain level or by a certain date, along with measures for doing so. In addition, Navy reports to senior leaders do not disclose the full extent (backlog estimate) and causes of deferred maintenance. SURFMEPP has a goal of deferring 5 percent or less of maintenance during planned depot maintenance periods, but this goal is not related to reducing the backlog.</p>	Not met
(5) Identify the primary methods to be used for delivering maintenance and repair activities	<p>The Navy has identified the primary methods (e.g., use of private-sector shipyards and various types of depot maintenance periods). The backlog represents a growing workload that will have to be accomplished by the ship repair industry. Limited repair capacity is already straining the ability of the public and private sectors to complete Navy ship maintenance on time. The Navy is planning to modernize shipyard infrastructure and currently conducting the Shipyard Infrastructure Optimization Program Surface assessment to inform non-nuclear surface ship maintenance infrastructure requirements. This assessment will validate and prioritize existing infrastructure priorities as well as conduct a gap analysis for investments required to sustain the surface fleet.</p>	Met
(6) Employ models for predicting the outcome of investments, analyzing trade-offs, and optimizing among competing investments	<p>The Navy increasingly defers maintenance on systems critical to reaching a ship's full expected service life.</p> <p>Starting in 2009, the Navy developed surface ship class maintenance plans and technical foundation papers that identify the investments in depot maintenance required for a class of ships to meet expected service life. SURFMEPP tracks the annual technical foundation paper days of labor required to stay on track for surface ships to be in satisfactory material condition and reach their expected service life. SURFMEPP communicates these technical foundation paper requirements to Navy stakeholders through the ship sheet process, which identifies the maintenance required each year based on the technical foundation paper requirements.</p>	Met

**Appendix II: Extent to Which the Navy Met
Leading Practices for Managing Surface Ship
Deferred Maintenance**

Leading practice	Discussion of actions taken or not taken	Met/not met
(7) Align ship classes with mission needs and dispose of unneeded assets	The Navy plans to decommission several ships to better align its force structure with expected missions and within available resources. This includes decommissioning several ships before they reach their full service life. Navy officials said that although combat capability is the main consideration in deciding whether to decommission a ship early, the budgetary savings resulting from avoiding large maintenance costs for some older ships factors into decommissioning decisions. If the Navy met leading practices eight and nine, this would provide more transparency about decisions to retire ships early.	Met
(8) Identify the types of risks posed by lack of timely investment	The Navy's risk assessments do not identify the full range of fleet-wide risks associated with ship deferred maintenance, specifically economic, operational, and technical risk. While the Navy does use the fester factor to consider economic risk, the Navy does not consider the growing backlog in its economic risk assessments. A ship with a large backlog of deferred maintenance often makes an increasingly attractive candidate for decommissioning before reaching full service life. Furthermore, ships with a large backlog of deferred maintenance are less likely to be fully ready to deploy, thus increasing the fleet's operational risk. The Navy does not integrate Life Cycle Health Assessment scores and SSEOC reporting to provide a full risk assessment of the health of the surface fleet. NAVSEA conducts technical risk assessments on an individual ship basis to help inform deferral decisions, but these do not inform decision makers of the full risks posed by the lack of timely investment.	Not met
(9) Structure budgets to specifically identify the funding allotted (a) for maintenance and repair and (b) to address any backlog of deferred maintenance deficiencies, because insufficient levels of such funding can cause agencies' backlogs to increase	While the Navy's budget is structured to identify funding for maintenance and repair, it is not structured to fully address the backlog of deferred maintenance. The Navy does not specifically identify funding needed to reduce the ship deferred maintenance backlog. And the Navy does not include information about the backlog in congressional budget requests and related reports, such as reports to Congress on long-term ship maintenance plans or annual unfunded priorities lists. The Navy included ship deferred maintenance in one of the past three annual unfunded priorities lists. The fiscal year 2020 unfunded priorities listed ship depot maintenance as the top priority, including \$110 million for surface ship deferred maintenance, far less than the backlog estimates we reviewed.	Not met

Source: GAO analysis of Navy documents and interviews. | GAO-22-105032

Note: These nine leading practices were identified in GAO, *Federal Real Property: Improved Transparency Could Help Efforts to Manage Agencies' Maintenance and Repair Backlogs*, [GAO-14-188](#) (Washington, D.C.: Jan. 23, 2014) and were later used in GAO, *Coast Guard Shore Infrastructure: Applying Leading Practices Could Help Better Manage Project Backlogs of at Least \$2.6 Billion*, [GAO-19-82](#) (Washington, D.C.: Feb. 21, 2019). These leading practices are based on research conducted by the National Research Council of the National Academies.

Appendix III: Comments from the Department of Defense

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of Defense



SUSTAINMENT

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
3500 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

Ms. Diana Maurer
Director, Defense Capabilities Management
U.S. Government Accountability Office
441 G Street, NW
Washington DC 20548

Dear Ms. Maurer,

This is the Department of Defense (DoD) response to the GAO-22-105032SU, "NAVY SHIPS: Applying Leading Practices and Transparent Reporting Could Help Reduce Risks Posed by Nearly \$1.8 Billion Maintenance Backlog" (GAO-22-105032SU). Detailed comments on the draft report recommendations are enclosed.

Sincerely,

A handwritten signature in black ink, appearing to read "Vic Ramdass", is positioned above the typed name.

Dr. Vic Ramdass
Deputy Assistant Secretary of Defense
(Materiel Readiness)

Enclosure:
As stated

**GAO DRAFT REPORT DATED MARCH 11, 2022
GAO-22-105032SU (GAO CODE 105032)**

**“NAVY SHIPS: APPLYING LEADING PRACTICES AND TRANSPARENT
REPORTING COULD HELP REDUCE RISKS POSED BY NEARLY \$1.8 BILLION
MAINTENANCE BACKLOG”**

**DEPARTMENT OF DEFENSE COMMENTS
TO THE GAO RECOMMENDATIONS**

RECOMMENDATION 1: The GAO recommends that the Secretary of the Navy should ensure that Naval Sea Systems Command (NAVSEA) establishes performance goals, baselines for outcomes, and performance measures to manage the surface ship deferred depot maintenance backlog.

DoD RESPONSE: Concur. NAVSEA will lead efforts to establish key performance measures to track and manage the surface ship deferred depot maintenance backlog.

RECOMMENDATION 2: The GAO recommends that the Secretary of the Navy should ensure that the Office of the Chief of Naval Operations identifies and assesses the full range of fleet-wide risks, including operational, technical, and economic risks, associated with deferred surface ship depot maintenance, and include in an annual report published by NAVSEA.

DoD RESPONSE: Concur. NAVSEA will work with the Office of the Chief of Naval Operations and the Fleets to develop a standard process for the issuance of an annual serialized report that includes information and risks associated with deferred surface ship depot maintenance.

RECOMMENDATION 3: The GAO recommends that the Secretary of the Navy should ensure that NAVSEA publish an annual report with the current aggregate backlog estimate and an estimate of the maintenance required to be programmed and executed for each ship with canceled depot maintenance periods.

DoD RESPONSE: Concur. NAVSEA will develop a standard process for the issuance of an annual serialized report that includes current aggregate backlog estimates and estimates to accomplish work from canceled ship depot maintenance periods.

RECOMMENDATION 4: The GAO recommends that the Secretary of the Navy should ensure that the Office of the Chief of Naval Operations modifies its maintenance requirement process to require that SURFMEPP continue estimating depot-level maintenance requirements until the Congress has accepted Navy decommissioning proposals.

**Appendix III: Comments from the Department
of Defense**

DoD RESPONSE: Concur. The Navy will ensure that the Surface Maintenance Engineering Planning Program (SURFMEPP) continues estimating depot-level maintenance requirements for surface ships until they are approved for decommissioning.

RECOMMENDATION 5: The GAO recommends that the Secretary of the Navy should ensure that information on the aggregate ship deferred maintenance backlog estimate is included in congressional budget requests and related reports.

DoD RESPONSE: Partial concur. Navy budget requests are based on the ship maintenance schedules integrated into the Optimized Fleet Response Plan (OFRP) and not the deferred maintenance backlog. The Navy will include information on the aggregate ship deferred maintenance backlog estimate in the annual serialized report on ship deferred maintenance.

RECOMMENDATION 6: The GAO recommends that the Secretary of the Navy should ensure that information on the deferred maintenance backlog estimate for any ships proposed for decommissioning is included in congressional budget requests and related reports.

DoD RESPONSE: Partial concur. The amounts for Navy ship inactivation budget requests are not based on the backlog of deferred maintenance. The Navy will include information on the deferred maintenance backlog estimate for ships proposed for decommissioning in the annual serialized report on ship deferred maintenance.

RECOMMENDATION 7: The GAO recommends that the Secretary of the Navy should ensure that the Office of the Assistant Secretary of the Navy (Financial Management and Comptroller) [ASN (FM&C)] issues guidance on the disclosure of ship deferred maintenance in annual financial statements.

DoD RESPONSE: Concur. Given that disclosing ship deferred maintenance in annual financial statements will change current processes and procedures, the ASN (FM&C) will work with associated Navy stakeholders to issue guidance on the disclosure of ship deferred maintenance in annual financial statements.

RECOMMENDATION 8: The GAO recommends that the Secretary of the Navy should ensure that the ASN (FM&C) coordinates with OPNAV N83 and discloses the aggregate ship deferred maintenance backlog estimate in annual financial statements.

DoD RESPONSE: Concur. The ASN (FM&C) will work with the planning activities at NAVSEA and OPNAV N83 to provide aggregate ship deferred maintenance for surface ships, carriers, and submarines in annual financial statements. This change in process will also require the ASN (FM&C) to work with other Navy System Commands (SYSCOMs) to ensure a consistent approach and process to all Navy deferred maintenance reporting in annual financial statements.

**Appendix III: Comments from the Department
of Defense**

RECOMMENDATION 9: The GAO recommends that the Secretary of the Navy should ensure that the ASN (FM&C) discloses both funded and unfunded ship deferred maintenance in annual financial statements.

DoD RESPONSE: Concur. Funded and unfunded ship deferred maintenance disclosures would be estimates based on man-days of accomplished maintenance. Instead of annual deferred maintenance for all categories, including ship maintenance, being generated based on the PB-61 Depot Maintenance Program Budget Exhibit on an annualized basis, it would need to be based on inputs from the SYSCOMs based on estimates of cumulative deferred maintenance (not annual amounts). Financial statement timelines will also have to be evaluated.

Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

Diana Maurer, (202) 512-9627 or MaurerD@gao.gov

Staff Acknowledgments

In addition to the contact named above, Suzanne Wren (Assistant Director), Herbert Bowsher (Analyst in Charge), David L. Jones, Richard Kusman, Felicia Lopez, Amanda Manning, Carol Petersen, Emily Quick-Cole, Molly Ryan, Michael Silver, Roger Stoltz, and Cheryl Weissman made key contributions to this report.

Related GAO Products

Navy Ship Maintenance: Actions Needed to Monitor and Address the Performance of Intermediate Maintenance Periods. [GAO-22-104510](#). Washington, D.C.: February 8, 2022.

Overseas Real Property: Prioritizing Key Assets and Developing a Plan Could Help State Manage Its Estimated \$3 Billion Maintenance Backlog. GAO 21-497. Washington, D.C.: September 15, 2021.

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Navy and Marine Corps: Services Continue Efforts to Rebuild Readiness, but Recovery Will Take Years and Sustained Management Attention. [GAO-21-225T](#). Washington, D.C.: December 2, 2020.

Coast Guard Shore Infrastructure: Applying Leading Practices Could Help Better Manage Project Backlogs of at Least \$2.6 Billion. [GAO-19-82](#). Washington, D.C.: February 21, 2019.

Surface Ships: Navy Needs to Revise Its Decommissioning Policy to Improve Future Decision Making. [GAO-14-412](#). Washington, D.C.: June 11, 2014.

Military Capabilities: Navy Should Reevaluate Its Plan to Decommission the USS Port Royal. [GAO-14-336](#). Washington, D.C.: April 8, 2014.

Federal Real Property: Improved Transparency Could Help Efforts to Manage Agencies' Maintenance and Repair Backlogs. [GAO-14-188](#). Washington, D.C.: January 23, 2014.

Financial Management: Issues to Be Considered by DOD in Developing Guidance for Disclosing Deferred Maintenance on Ships. [GAO/AIMD-98-46](#). Washington, D.C.: February 6, 1998.