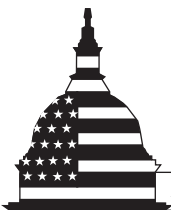


November 2010

# DEFENSE INFRASTRUCTURE

## Actions Needed to Improve the Navy's Processes for Managing Public Shipyards' Restoration and Modernization Needs

This report was reposted on November 18, 2010, to repair the graphic and restore the text missing from page 29.

**G A O**Accountability \* Integrity \* Reliability

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## Why GAO Did This Study

The Navy's four public shipyards—Norfolk Naval Shipyard, Pearl Harbor Naval Shipyard, Portsmouth Naval Shipyard, and Puget Sound Naval Shipyard—are critical in maintaining fleet readiness and supporting ongoing operations worldwide. The Navy requests funds for the shipyards' restoration and modernization as infrastructure condition may affect their mission and workforce. GAO was asked to review (1) the extent to which the shipyards have plans for their restoration and modernization needs; (2) the extent to which the Navy has a process to capture and calculate these needs; (3) the Navy's process to prioritize and fund projects to meet these needs; and (4) the extent to which the shipyards resolve infrastructure-related safety, health, and quality-of-life issues. GAO assessed the Navy's shipyard plans against elements of a federal strategic planning framework; evaluated its process for determining its restoration and modernization needs and addressing safety, health, and quality-of-life issues; visited the shipyards; and interviewed Navy command and shipyard officials.

## What GAO Recommends

GAO recommends that the Navy develop guidance to standardize shipyard strategic planning requirements, improve its process for developing shipyard restoration and modernization needs, and document resolution of identified quality-of-life issues. In written comments on a draft of the report, DOD concurred with GAO's recommendations.

View [GAO-11-7](#) or key components.  
For more information, contact Zina Merritt at (202) 512-5257 or [merrittz@gao.gov](mailto:merrittz@gao.gov).

## DEFENSE INFRASTRUCTURE

### Actions Needed to Improve the Navy's Processes for Managing Public Shipyards' Restoration and Modernization Needs

## What GAO Found

Each of the Navy's four public shipyards has plans that vary in the extent to which they address key elements of a federal comprehensive framework that GAO has previously identified as key principles of strategic planning. Pearl Harbor and Portsmouth Naval Shipyards' plans fully or partially addressed all of the key elements, such as having mission statements and addressing external factors that could affect goals. Norfolk Naval Shipyard's plans fully or partially address all but one of the key elements—establishing metrics—and Puget Sound Naval Shipyard's plans do not address three key elements—establishing long-term goals, metrics, and monitoring mechanisms. The Navy has not issued guidance detailing the need for shipyard strategic plans or what to include in them. Without such, the Navy and its shipyards may not have visibility over the effectiveness of their efforts to improve their overall infrastructure planning and may not have the information necessary to guide and prioritize investments.

In addition, the Navy's process to capture and calculate its total shipyard restoration and modernization needs produces understated total costs because certain data inputs are unavailable while others were not fully validated or are undervalued. For example, GAO found that some facility data, when unavailable, defaulted in the Navy's data system to a rating that indicated the facilities were well-configured and thus did not generate any restoration and modernization costs for the facilities. However, the Navy does not currently have a plan in place to address these challenges. Without relevant, reliable, and timely information, the Navy is limited in its ability to make informed decisions for effective and efficient use of resources.

The Navy has a collaborative process to prioritize and fund the shipyards' restoration and modernization projects. The Navy has to decide among requests from all its installations, including the shipyards, to fund the highest-priority needs. However, current Naval Sea Systems Command guidance to the shipyards limits the number of military construction projects each shipyard submits per year for infrastructure restoration and modernization, which sometimes leads to delays in requesting and completing projects.

The Navy shipyards have processes to systematically identify safety and occupational health mishaps and hazards, and document their actions to resolve these issues, but do not have a method to document actions to address other infrastructure-related situations affecting the quality of life of their workforce. The shipyards used interim fixes to partly address identified safety and health hazards, and in some cases the fixes have led to quality-of-life issues for the workforce. Shipyard officials recognize that the issues exist and currently have restoration and modernization projects to address some safety, health, and quality-of-life issues. However, according to officials, projects primarily for safety, health, and quality-of-life improvement have to compete with projects to improve shipyard operations that may be more heavily weighted. Without capturing and tracking quality-of-life issues, the Navy lacks visibility over the magnitude of these issues as it weighs potential improvement initiatives against other priorities.

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**United States Government Accountability Office**  
Washington, DC 20548

November 16, 2010

The Honorable Evan Bayh  
Chairman  
Subcommittee on Readiness and Management Support  
Committee on Armed Services  
United States Senate

The Honorable Daniel K. Akaka  
The Honorable Maria Cantwell  
The Honorable Susan M. Collins  
The Honorable Patty Murray  
The Honorable Mark R. Warner  
The Honorable James H. Webb  
United States Senate

The Navy's four public shipyards—Norfolk Naval Shipyard in Virginia, Pearl Harbor Naval Shipyard in Hawaii, Portsmouth Naval Shipyard in Maine, and Puget Sound Naval Shipyard in Washington—are important in maintaining fleet readiness and supporting ongoing operations around the world, providing the Navy with an ability to perform ship depot- and intermediate-level maintenance,<sup>1</sup> emergency repairs, ship modernization, and ship deactivations. The shipyards' role in keeping the Navy's vessels ready to support military operations can be affected by the physical condition of their infrastructure and equipment, and the Navy requests funds for the shipyards' continuous restoration and modernization<sup>2</sup> to

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<sup>1</sup> Ship depot-level maintenance involves materiel maintenance or repair requiring the overhaul, upgrading, or rebuilding of parts, assemblies, or subassemblies and testing and reclamation of equipment as necessary. Ship intermediate-level maintenance includes calibrating, repairing, or replacing damaged parts; manufacturing critical unavailable parts; and providing technical assistance.

<sup>2</sup> Restoration includes repair and replacement work needed to restore facilities degraded from several causes, such as natural disaster, fire, accident, excessive age, or inadequate sustainment. Modernization includes both renovation and replacement of existing facilities to implement new or higher standards, accommodate new functions, or replace building components that typically last more than 50 years. In this report, when we refer to restoration and modernization, these include improvements to infrastructure and equipment.

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maintain their ability to support the Navy's warfighter capabilities.<sup>3</sup> The condition of the shipyards' infrastructure may also affect the safety, occupational health, and quality of life of the shipyards' workforce. In May 2009, the Chief of Naval Operations testified that the Navy had underfunded shore readiness because of increased operational demands, rising manpower costs, and an aging fleet, leading to growth in the backlog of restoration and modernization needs at shore facilities. Further, he stated that the Navy's current planned investment levels for the public shipyards may not meet their needs, putting future shore readiness at risk. In October 2009, the Navy reported an approximate backlog of \$3 billion in shore facility restoration and modernization needs at its four public shipyards.<sup>4</sup> Our prior work has found that the large backlog of needed repair and maintenance at the Department of Defense's (DOD) installations in part makes DOD's management of its real property a high-risk area.<sup>5</sup>

You asked us to review the infrastructure restoration and modernization needs of the Navy's four public shipyards. Specifically, we examined (1) the extent to which the Navy shipyards have plans for needed shipyard restoration and modernization; (2) the extent to which the Navy's process to determine its restoration and modernization needs captures and calculates the shipyards' infrastructure, facility, and equipment needs; (3) the Navy's process for prioritizing and funding restoration and modernization projects to meet each shipyard's infrastructure, facility, and equipment needs; and (4) the extent to which the shipyards identify and address infrastructure-related safety, health, and quality-of-life issues.

To determine the extent to which the shipyards have plans for needed restoration and modernization, we reviewed planning documents from each shipyard and analyzed them to determine whether they included the

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<sup>3</sup> The Commander, Navy Installations Command, is responsible for shipyard land and buildings, and the Naval Sea Systems Command is responsible for ship maintenance and repair processes at the shipyards. These two commands work together to provide and support shipyard capabilities.

<sup>4</sup> The Navy calculated its estimated \$3 billion backlog through the Facility Readiness Evaluation System, which assesses data for all Navy installations, including the four shipyards. We discuss the Facility Readiness Evaluation System in detail later in this report.

<sup>5</sup> GAO, *Federal Real Property: Progress Made Toward Addressing Problems, but Underlying Obstacles Continue to Hamper Reform*, [GAO-07-349](#) (Washington, D.C.: Apr. 13, 2007), and *High-Risk Series: An Update*, [GAO-09-271](#) (Washington, D.C.: January 2009).

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seven essential elements of a strategic plan that we have previously reported are critical to successful strategic planning.<sup>6</sup> To examine the Navy's process for capturing and calculating the shipyards' restoration and modernization needs, we obtained and analyzed restoration and modernization information derived from the Navy's data systems for each of the shipyards. We reviewed the sources and types of data used in the Navy's process, determined the scope and timing of the Navy's most recent shipyard infrastructure inspections and assessments, compared dry dock replacement cost to total shipyard facilities' replacement cost for each shipyard, and interviewed Navy officials to determine benefits and limitations of the data systems and results. To examine the Navy's process for prioritizing and funding projects to meet the shipyards' infrastructure, facility, and equipment needs, we obtained Navy guidance on projects submitted for consideration, and obtained the respective shipyards' data on the funds requested for sustainment, restoration, and modernization special projects; military construction; and equipment for fiscal years 2009 and 2010. We did not independently validate these shipyard funding data. To determine the extent to which the shipyards identify and address infrastructure-related safety, health, and quality-of-life issues, we obtained and reviewed related DOD and Navy guidance, analyzed records of the shipyards' identified health and safety mishaps and hazards that had not been addressed as of July 2010, and reviewed justifications of shipyard infrastructure restoration and modernization projects for fiscal years 2009 through 2010. We also interviewed safety and occupational health officials, shipyard command officials, human resources officials, and union representatives at each of the shipyards. To address all four objectives, we interviewed officials from the Naval Sea Systems Command; the Commander, Navy Installations Command; and officials at all four naval shipyards. In addition, we conducted site visits at the shipyards for firsthand observations of areas identified by the shipyards as requiring potential restoration and modernization. However, during our visits, we did not attempt to independently evaluate the condition of shipyard infrastructure. Although we did not independently validate the Navy's restoration and modernization data, budget request and approval data, and the safety and occupational health data, we discussed with officials the steps they had taken to ensure reasonable accuracy of the data. We determined the data to be sufficiently reliable for the purposes of this report.

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<sup>6</sup> GAO, *Managing for Results: Critical Issues for Improving Federal Agencies' Strategic Plans*, [GAO/GGD-97-180](#) (Washington, D.C.: Sept. 16, 1997).

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We conducted this performance audit from October 2009 to October 2010 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. A detailed description of our scope and methodology is presented in appendix I.

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## Background

The Navy's four public shipyards—Norfolk Naval Shipyard, Pearl Harbor Naval Shipyard, Portsmouth Naval Shipyard, and Puget Sound Naval Shipyard—maintain, repair, modernize, deactivate, dispose of, and provide emergency repair to U.S. Navy ships, systems, and components. The shipyards ensure that the Navy can maintain its own capability to perform both ship depot maintenance and emergency repair work, primarily for nuclear-powered aircraft carriers and submarines. Each of the shipyards focuses on certain types of work, and together they support and enhance the fleet's operational availability and mission effectiveness.

- Norfolk Naval Shipyard is the Navy's oldest shipyard, originally established in 1767 under British rule. It is the only East Coast naval shipyard capable of dry-docking nuclear aircraft carriers. Located in Portsmouth, Virginia, it is a full-service shipyard that provides repair and modernization to the entire range of Navy ships, including aircraft carriers, submarines, surface combatants, and amphibious ships.
- Pearl Harbor Naval Shipyard, in Oahu, Hawaii, officially created by Congress in 1908, is the largest ship repair facility located between the West Coast and the Far East and is strategically located in a major home port area for submarines and surface ships. Its primary focus is the maintenance and repair of submarines and surface combatants.
- Portsmouth Naval Shipyard, in Kittery, Maine, was established in 1800. During World War I, it took on an important role in constructing submarines, in addition to maintaining and repairing surface ships. The Navy continued to build submarines there until 1969, when the last submarine built in a public shipyard was launched. Currently, Portsmouth Naval Shipyard is exclusively a nuclear submarine repair yard.
- Puget Sound Naval Shipyard, located in Bremerton, Washington, was originally established in 1891 as Naval Station Puget Sound and was designated a naval shipyard in 1901. It was originally designed to construct ships, including submarine chasers, submarines, and ammunition ships. Currently, it is the largest shipyard on the West Coast, and while equipped and staffed to work on all classes of Navy vessels, it primarily supports

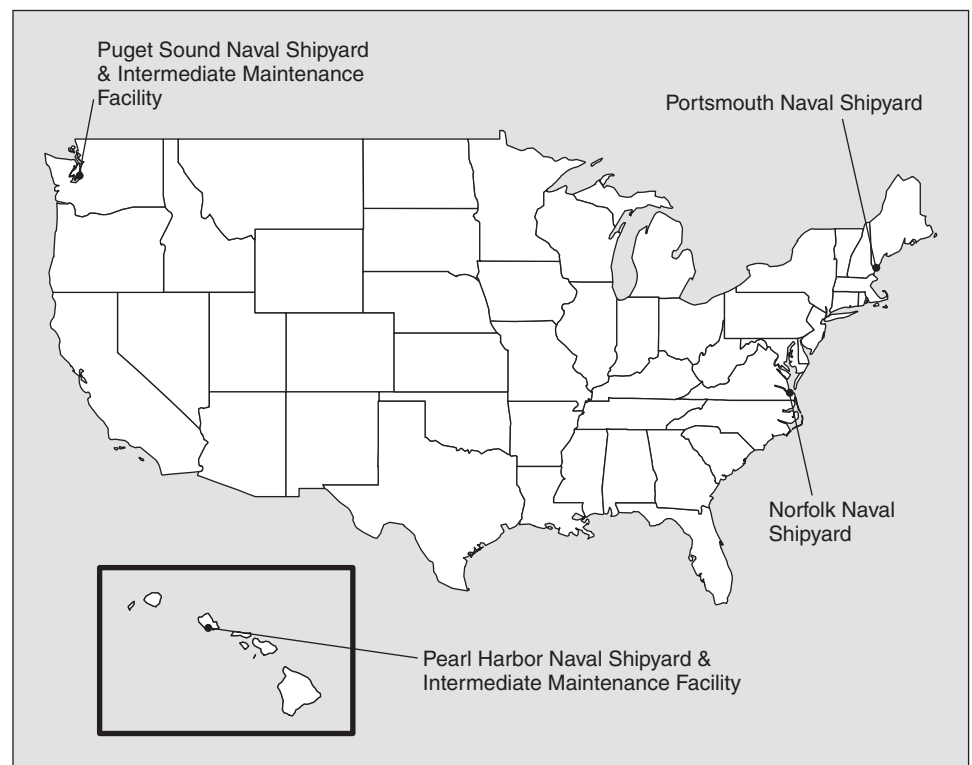


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aircraft carriers and is the Navy's only site for reactor compartment disposal and ship recycling for nuclear-powered ships.

Figure 1 shows the four public naval shipyards and their respective locations.

**Figure 1: Locations of the Four Public Naval Shipyards**



Source: U.S. Navy.

The Navy provides for restoration and modernization of shipyard infrastructure primarily through military construction projects, special projects, and equipment projects.

- **Military construction projects.** The Navy's military construction projects are for complete new facilities or improvements to an existing facility, such as construction, development, conversion, or extension of all types of buildings, facilities, roads, airfield pavements, and utility systems. The Navy uses the Military Construction appropriation to fund these projects that cost more than \$750,000 per project.

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- Special projects. The Navy refers to certain maintenance, repair, or construction projects that cost more than \$500,000 as special projects. These include major repairs or replacement of existing facility components—such as roofs and heating/cooling systems—that are expected to occur periodically throughout the life of the facilities, regularly scheduled inspections, preventive maintenance, and emergency response repairs. The Navy uses Sustainment, Restoration, and Modernization funds, which are a portion of its Operation and Maintenance, Navy appropriation, to finance these special projects.<sup>7</sup>
  - Equipment projects. The Navy has equipment projects for procurement, production, and modernization of industrial support equipment. The Navy funds large equipment projects with unit costs greater than \$250,000 through its Other Procurement, Navy appropriation.<sup>8</sup>

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## The Navy's Shipyards Have Developed Strategic Plans, but These Plans Vary in How They Address Key Elements

The Navy's four shipyards have independently developed strategic plans that address current and future restoration and modernization issues; however, the plans vary in the extent to which they address each of the elements of a comprehensive, results-oriented strategic planning framework.<sup>9</sup> While the Naval Sea Systems Command, in conjunction with the Navy Installations Command, provide for the long-term planning and operation of the shipyards, the shipyards lack guidance from these offices that could facilitate the shipyards' efforts to develop comprehensive strategic plans. Although the shipyards lack guidance, they recognize the value of long-term strategic planning and have created their own plans. However, without this guidance, shipyard plans may continue to lack certain elements important to successful plans and the Navy and its shipyards may not have full visibility over the plans' effectiveness, which will affect the shipyards' and the Navy's ability to improve their overall infrastructure planning as well as to support decision making.

The shipyards have generally developed two types of strategic plans that address issues facing the shipyard: a shipyard-wide strategic plan that

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<sup>7</sup> In the case of construction projects, 10 U.S.C. § 2805 limits the use of Operation and Maintenance funds to projects costing not more than \$750,000, or in the case of construction projects intended solely to correct a deficiency that is life-threatening, health-threatening, or safety-threatening, not more than \$1.5 million.

<sup>8</sup> The Navy funds equipment projects in which unit costs are less than \$250,000 out of the operating appropriation of the installation making the procurement. The cost of installing the equipment is usually paid out of the same appropriation used to procure the equipment.

<sup>9</sup> [GAO/GGD-97-180](#).

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addresses issues facing the entire shipyard, including personnel and workforce issues, ship maintenance, and restoration and modernization needs, and an infrastructure-specific plan that provides more detail on current and future infrastructure needs. Taken together, these plans represent the strategic plan used by a shipyard for overall planning purposes. For example, Pearl Harbor Naval Shipyard's Fiscal Year 2010 Business Plan lays out overall goals and objectives for the entire shipyard and its Facilities Modernization Plan provides long-range facilities planning to guide future facilities and infrastructure investments up to fiscal year 2035. Similarly, Norfolk Naval Shipyard's Strategic Plan 2010-2012 focuses on three main goals—delivering ships, developing leaders, and providing quality work—while its draft Vision 2035 Transformation Plan focuses on future infrastructure projects needed to modernize the shipyard.

We have previously reported that there are seven elements that should be incorporated into strategic plans to establish a comprehensive, results-oriented framework—an approach whereby program effectiveness is measured in terms of outcomes or impact:

1. **Mission statement:** A statement that concisely summarizes what the organization does, presenting the main purposes for all its major functions and operations.
2. **Long-term goals:** A specific set of policy, programmatic, and management goals for the programs and operations covered in the strategic plan. The long-term goals should correspond to the purposes set forth in the mission statement and develop with greater specificity how an organization will carry out its mission.
3. **Strategies to achieve the goals:** A description of how the goals contained in the strategic plan and performance plan are to be achieved, including the operational processes; skills and technology; and the human, capital, information, and other resources required to meet these goals.
4. **External factors that could affect goals:** Key factors external to the organization and beyond its control that could significantly affect the achievement of the long-term goals contained in the strategic plan. These external factors can include economic, demographic, social, technological, or environmental factors, as well as conditions or events that would affect the organization's ability to achieve its strategic goals.
5. **Stakeholder involvement:** Consideration of the views and suggestions—solicited during the development of the strategic plan—of those entities potentially affected by or interested in the organization's activities.

6. Use of metrics to gauge progress: A set of metrics that will be applied to gauge progress toward attainment of each of the plan's long-term goals.
7. Evaluations of the plan to monitor goals and objectives: Assessments, through objective measurement and systematic analysis, of the manner and extent to which programs associated with the strategic plan achieve their intended goals.

Our analysis of the shipyards' strategic plans showed that the plans vary in the extent to which they address each of the elements of a comprehensive, results-oriented strategic planning framework.<sup>10</sup> Figure 2 presents a summary of our analysis. More detailed information on how the shipyards' plans compare to the seven key elements in strategic planning is presented in appendix II.

**Figure 2: Summary Analysis of Navy Shipyards' Strategic Plans**

Essential elements of a strategic plan	Norfolk	Pearl Harbor	Portsmouth	Puget Sound
Mission statement	●	●	●	●
Long-term goals	●	●	●	○
Strategies to achieve goals and objectives	●	●	●	◐
Key external factors that could affect goals	◐	●	●	◐
Stakeholder involvement in developing the plan	●	●	●	◐
Use of metrics to gauge progress	○	●	◐	○
Evaluations of the plan to monitor goals and objectives	◐	◐	◐	○

● Addresses  
 ◐ Partially addresses  
 ○ Does not address

Source: GAO analysis.

<sup>10</sup> The Naval Sea Systems Command has created a strategic plan encompassing all four shipyards—the Naval Shipyard Business Plan. We have previously reported that this strategic plan did not address all of the essential strategic planning elements. Specifically, we found that the plan contained a results-oriented mission statement, but either partially addressed or did not address the remaining six key elements. See GAO, *Depot Maintenance: Improved Strategic Planning Needed to Ensure That Navy Depots Can Meet Future Maintenance Requirements*, [GAO-10-585](#) (Washington, D.C.: June 11, 2010).

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Overall, we found that Pearl Harbor Naval Shipyard and Portsmouth Naval Shipyard have plans that fully or partially address all of the key elements of a strategic planning framework. Further, Norfolk Naval Shipyard's plans fully or partially address all but one of the key elements, while Puget Sound Naval Shipyard's plans do not address three key elements.

Pearl Harbor Naval Shipyard's plans fully address six of the seven key elements, and partially address the remaining element regarding evaluations of the plan to monitor goals and objectives. For example, its plans contain a mission statement for the shipyard—to keep ships fit to fight—and an overarching goal to establish and execute an effective facilities modernization program with several interim objectives, such as improving the condition, capability, and capacity of the facilities. Pearl Harbor Naval Shipyard plans take into account key external factors that could affect its goals by also providing a constrained version of the plan that conforms to existing development limitations, including preservation of historic structures. Further, its plans set up a six-point scale to gauge progress on some of its overall goals; however, they have not set up a program evaluation process for the shipyard's more detailed infrastructure goals.

Portsmouth Naval Shipyard has plans that fully address five of the seven elements, and partially address the two elements on use of metrics to gauge progress and evaluation of the plans to monitor goals and objectives. For example, its plans present a strategy to achieve their goals and objectives in the form of a very detailed list of all infrastructure projects through fiscal year 2040, including cost and time estimates. In addition, the shipyard involved stakeholders in developing the plans and describes in the plans several external factors that could affect its goals, such as new environmental regulations, and methods for addressing these factors. Finally, although Portsmouth Naval Shipyard's strategic plan lays out some intermediate milestones to monitor progress toward meeting goals and objectives and states that it will be continually reviewed and updated, it does not discuss specific methodologies for doing so.

Norfolk Naval Shipyard has plans that fully addresses four of the seven elements and partially addresses the two elements on key external factors that could affect goals and evaluations of the plan to monitor goals and objectives; however, the plans do not address use of metrics to gauge progress. Specifically, the plans were developed with stakeholder participation through consultation with labor leadership, customers, and shipyard management. However, while the plans mention evaluations through regular performance reviews, the scope and methodology of these

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reviews are not discussed. Further, its plans do not discuss metrics for measuring progress against overall goals. Our prior work has shown that measuring performance allows organizations to track the progress they are making toward their goals and gives managers crucial information on which to base their organizational and management decisions. In addition, it is especially important to monitor progress toward meeting goals and objectives because systematic evaluation of how a program was implemented can provide crucial information about why a program did or did not succeed and suggest ways to improve it.

Puget Sound Naval Shipyard's plans fully address one of the seven elements—having a mission statement (“with one team ensuring freedom by fixing ships and supporting the warfighter”)—and partially addresses three others. Its plans partially address the elements on strategies to achieve goals and objectives, key external factors that could affect goals, and involving stakeholders in developing the plan. However, its plans do not address the three elements on specific long-term infrastructure goals, use of metrics to gauge progress, and evaluations of the plan to monitor goals and objectives. For example, the shipyard's plans partially address the key element of strategies to achieve goals and objectives by listing several projects that it would like to complete in the future, but instead of specific, measurable long-term goals, the plans include general focus areas, such as maintaining warfighter readiness. Further, the plans do not include metrics for measuring progress against overall goals or describe the shipyard's method for evaluating the plan to monitor goals and objectives. Puget Sound officials told us that they recognize the need to further develop their strategic plans to include more details about needed restoration and modernization projects in order to assist in future project planning.

The Naval Sea Systems Command, in conjunction with the Navy Installations Command, provides for the long-term planning and operation of the shipyards, but the commands have not provided guidance to the shipyards about creating their own strategic plans or on what specifically to include in such plans. According to shipyard and Naval Sea Systems Command officials, the Naval Sea Systems Command has not required this type of strategic planning at the shipyard level; rather it has focused primarily on providing guidance to the shipyards on the requirements for their yearly restoration and modernization project requests. Despite this lack of guidance, the shipyards, recognizing the value of long-term strategic planning, created their own plans. Although these plans present important information about projects needed to modernize the shipyards' infrastructure, they vary in the extent to which they address all of the key

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elements of a strategic plan. Without having these essential elements in the strategic plans, the shipyards and the Navy may not have visibility over the effectiveness of their plans to improve their overall infrastructure planning and may not be fully positioning themselves to best utilize the resources available for restoration and modernization projects.

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## Challenges in the Navy's Process to Capture and Calculate Its Restoration and Modernization Needs Yield Understated Results

The Navy has a process that provides an overview of its total shipyard restoration and modernization needs, but it results in understated estimates of its restoration and modernization needs. The Navy developed the Facility Readiness Evaluation System (Facility System), in part, to capture and calculate an estimate of its restoration and modernization needs; however, some data inputs were unavailable or not yet entered into the system, while others were undervalued or not validated at the time of our review. Navy officials are aware of the issues concerning the Facility System's data elements and have told us that they are taking steps to address the issues, but did not provide supporting documents showing goals and time frames for doing so. Because of the collective limitations within the Facility System, the estimated \$3 billion total restoration and modernization needs that the Navy reported to Congress in October 2009 is inaccurate and understated. Consequently, both the Navy and Congress have incomplete information on the total restoration and modernization costs identified by the shipyards.

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## The Navy Has a Centralized Data System for Capturing Its Infrastructure Restoration and Modernization Needs

Recognizing that it did not have a centralized, single system that it could use to calculate its total restoration and modernization shipyard needs, beginning in fiscal year 2008, the Navy began developing its Facility System. The purpose of the Facility System was to provide a more flexible system that could be used for retrieving, sorting, and calculating the Navy's restoration and modernization costs, both as a total cost and sorted by various data elements, such as region or installation. Further, according to Navy Installations Command and Naval Sea Systems Command officials, implementing the Facility System is a step toward readily providing an overview of current facility readiness. For example, the Facility System draws data inputs from other established Navy data systems to come up with a snapshot of overall needs. The Facility System, in which the primary data fields used are the configuration rating, condition rating, and plant replacement value fields, uses algorithms to calculate total restoration and modernization backlog for each Navy

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facility.<sup>11</sup> The configuration rating indicates the degree to which the current space or structure serves its intended purpose. For example, a pier that is long enough to accommodate all the types of vessels it is designed to berth would have a higher configuration rating than a pier that is too short to berth certain ships. Each week, the configuration rating is automatically fed into the Facility System from the Navy's official asset database—the internet Navy Facility Assets Data Store (Data Store).<sup>12</sup> The condition rating shows the Navy's assessment of the physical condition of shipyard facilities and is fed into the Facility System through the Data Store from the database Single Platform Maximo, which the installations use to track their local assets. The plant replacement value is the cost of fully replacing facilities and is calculated in the Facility System using a standardized formula provided by DOD—not an individualized facility-specific estimate. Figure 3 shows the sources of the configuration, condition, and plant replacement value ratings and the relationship among data systems that capture and calculate restoration and modernization needs.

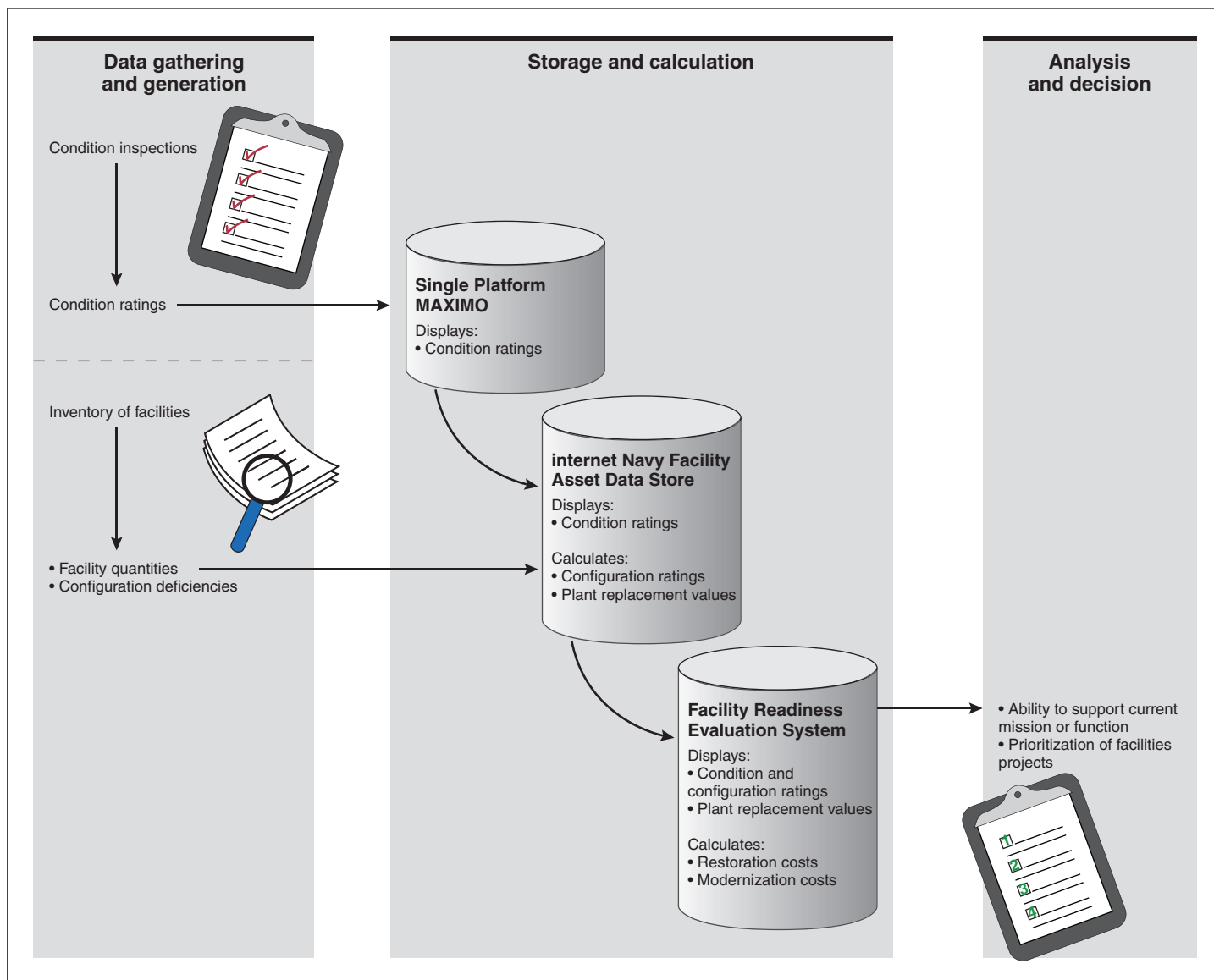
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<sup>11</sup> In the mathematical formula the Facility System uses to calculate total restoration and modernization backlog, configuration rating data are used to calculate modernization costs, condition rating data are used to calculate restoration costs, and plant replacement value is used as a weighting factor.

<sup>12</sup> The Data Store was designed to capture all of the data necessary to support real property inventory, planning, and acquisition for the Navy and Marine Corps.



**Figure 3: Data Sources and Relationship among Data Systems That Calculate Restoration and Modernization Needs**



Source: GAO.

Note: These computer-based applications display or calculate other facility-related data, but for clarity only fields relevant to capturing and calculating restoration and modernization needs are shown. Also, other computer-based applications are used in the facilities management process but are not shown here.

While the Facility System is still a work in progress, according to Navy officials, the Navy has used the total restoration and modernization

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backlog displayed in the Facility System to report to Congress without caveats regarding any limitations to the data.

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## Challenges in Configuration, Condition, and Plant Replacement Value Ratings Yield Understated Restoration and Modernization Costs

We found that the Navy has a process to capture and calculate its total shipyard restoration and modernization needs through the Facility System, but in many cases, (1) the configuration data were unavailable and not entered into the source database, (2) the condition data had not been validated and in some cases did not reflect the current condition of several types of infrastructure, and (3) the plant replacement values of shipyard dry docks were undervalued. According to the Standards for Internal Control in the Federal Government, management needs relevant, reliable, and timely communications and clearly documented internal controls. Such communications and documented controls are useful to managers in controlling operations and monitoring performance for effective and efficient use of resources.<sup>13</sup>

### Configuration Data

In numerous instances at each shipyard, we found that some configuration data were unavailable and had not been entered into Navy data systems that feed into the Facility System, understating the total restoration and modernization cost determined by the shipyards. The configuration rating is an algorithm-based calculation ranging from 0 to 100, in which 0 denotes that the facility does not support its current mission and 100 reflects that the facility is best configured for its mission or function.

Our analysis of the Facility System configuration ratings for the four shipyards showed that a large number of the facilities had a rating of 100. According to shipyard officials, the Navy has not determined configuration assessments for utilities and some facilities, and when configuration data are not entered into the system, the rating in the Facility System defaults to 100. Navy officials also stated the Facility System only shows configuration ratings of 100 when the facilities' configuration has not been determined. This default feature creates a false result—denoting that the facilities without configuration data are instead perfectly configured—and thus does not generate any restoration or modernization costs for the facilities. Table 1 shows the number of entries in the Facility System that were defaulted to 100 as of the time of our review.

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<sup>13</sup> GAO, *Standards for Internal Control in the Federal Government*, [GAO/AIMD-00-21.3.1](#) (Washington, D.C.: November 1999).

**Table 1: Number and Percentage of Configuration Entries in the Facility System That Were Defaulted to 100**

Naval shipyard	Number of entries defaulted to 100	Total entries	Percentage
Portsmouth	84	235	35.7
Pearl Harbor	62	158	39.2
Norfolk	274	514	53.3
Puget Sound	154	243	63.4

Source: GAO analysis of Navy data.

Navy officials were aware of the issues concerning the Facility System's configuration data but did not have documented goals and time frames for updating its processes for populating the configuration data fields. Thus, the unavailable configuration ratings may continue to lead, in part, to an understated total estimate of shipyard restoration and modernization needs.

## Condition Ratings

In our analysis of the condition ratings in the Facility System, we found that the Navy's methods for collecting and validating condition data for all facilities are not systematically carried out and may not reflect current conditions of some Navy facilities. Prior to 2006, the Navy performed annual internal facilities inspections to assess the condition of its shipyard facilities, including buildings, dry docks, piers, wharves, and utilities. According to Navy officials, these inspections were discontinued in 2006 because the process yielded a low return on investment. They stated that the personnel resources to produce the detailed condition assessments were too costly when compared to the value of the information produced. However, the Navy continued to annually inspect dry docks for their certification and to inspect piers and wharves on a cyclical basis, such as every 6 years for steel and concrete structures and every 3 years for wood structures. In 2009, the Navy hired a contractor to perform a condition inspection of its shipyards. According to Navy officials, these inspections only covered major components of shipyard buildings that were used to model and predict generally the shipyards' future funding needs.

The information derived from the annual dry dock inspections, cyclical pier and wharf inspections, utility inspections done in 2006, and the inspections done on some building components in 2009 produced a baseline condition rating for facilities in the Facility System. However, according to shipyard officials, these condition assessments may not reflect the current condition of some facilities. Shipyard officials stated that they have not performed a thorough validation of the current

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condition ratings for every building in the Facility System because of the sheer magnitude of the entries. Instead, according to shipyard officials, they validate condition ratings on an as-needed basis. According to officials at each of the four shipyards, when they prepare a project package for funding consideration, they routinely have to update the condition rating for the facility in question to ensure that it reflects current conditions. During our site visits at the shipyards, shipyard officials highlighted a few examples of condition ratings that do not reflect current condition. For example, the Facility System shows that at Norfolk Naval Shipyard's Building 510—Electronics Shop had a condition rating of 74 (indicating a high "fair" condition) as of March 2010. During our visit, shipyard officials stated that the facility should have a condition rating of less than 60, which indicates "poor" condition. They noted that the building's fire sprinkler system was in violation of fire codes, an elevator was out of service, the heating/ventilation/air conditioning system was over 60 years old, and numerous roof leaks continue to damage and deteriorate the building. At Puget Sound Naval Shipyard, officials stated that the condition data in the Facility System for Pier 4 show a rating of 90, which indicates "good" condition; however, shipyard officials stated that components of the pier are in poor condition, for example, deteriorated piles supporting the pier and fenders used in mooring ships to the pier that need to be replaced. Figure 4 shows the deteriorated piles supporting Pier 4 at Puget Sound Naval Shipyard.

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**Figure 4: Deteriorated Piles under Pier 4 at Puget Sound Naval Shipyard**



Source: GAO.

Further, Puget Sound Naval Shipyard officials stated that Building 431, a machine shop, has a condition rating of 62, which indicates “fair” condition. However, shipyard officials stated that the machine shop faces imminent collapse if an earthquake were to occur. As a result of the way condition ratings are currently recorded in the Facility System, higher than actual ratings in the system’s condition field undervalue the total restoration and modernization cost that has been reported to Congress.

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Navy officials are aware of the issues concerning the Facility System's condition data, but the Navy's current guidance for how to conduct condition inspections still references the routine inspections that were discontinued in 2006. Further, since stopping the annual inspections, the Navy has not issued interim guidance for assessing facility conditions or for routinely validating existing condition data in the Facility System. According to Navy Installations Command officials, the Navy is in the midst of changing its overall condition inspection process. These officials told us that they have plans to routinely and systematically assess infrastructure conditions in the future, and have plans to request funding to implement the revised inspection program in fiscal year 2012. However, the Navy does not have documented measurable goals and time frames for routinely updating its processes for conducting these inspections or for validating the current condition data in the system. Consequently, the unvalidated condition ratings lead, in part, to an understated total estimate of the shipyards' restoration and modernization needs.

#### Plant Replacement Value Ratings

DOD's formula for calculating plant replacement values does not provide an accurate assessment of actual costs needed to design and construct dry docks, thus undervaluing the shipyards' total restoration and modernization needs. DOD defines plant replacement value as the cost to design and construct a facility to current standards to replace an existing facility at the same location. DOD provides a standard formula for plant replacement value that calculates this value in a consistent manner across the department.<sup>14</sup> One element in this formula is replacement unit cost, which estimates the cost to provide a complete and usable facility capable of serving the purpose of the original facility. Multiplying the replacement unit cost times the actual dimensions of the facility to be replaced and then adjusting for various other conditions, such as project location, yields the plant replacement value.

However, according to Navy officials, plant replacement values found in the Navy's official facility asset database do not reflect the current costs to design and construct dry docks equivalent to those found at the shipyards. For example, officials at Norfolk Naval Shipyard estimated that the actual plant replacement values for their dry docks alone were understated by a total of \$1.64 billion. The plant replacement values of dry docks constitute

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<sup>14</sup> Plant Replacement Value = (Facility Quantity) x (Replacement Unit Cost) x (Area Cost Factor) x (Historical Records Adjustment) x (Planning and Design Factor) x (Supervision Inspection and Overhead Factor) x (Contingency Factor).

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from 12 percent to 43 percent of a shipyard's overall plant replacement value, so undervaluation of the dry docks' plant replacement values can materially affect the overall shipyard backlog calculation.

According to Navy officials, they cannot unilaterally alter plant replacement values because DOD prescribes both the formula to calculate plant replacement value and certain cost factors used in that calculation. However, DOD provides a method for suggesting revisions to its published cost factors, particularly for facilities unique to an individual service's mission. For example, in 2009 the Navy provided historical construction cost data that led DOD to more than double the replacement unit cost factors for both piers and wharves. As a result, plant replacement values for these structures more accurately reflect the current costs to design and construct piers and wharves, and the backlog calculations that depend on plant replacement value are also more accurate. However, we found that the Navy has not yet provided similar documentation to DOD to change the replacement unit cost factor for dry docks. Officials stated that plant replacement value is not a factor in approving restoration and modernization projects, but it is a factor in the Facility System's calculations and left in its current state significantly understates dry dock restoration and modernization needs. These understated plant replacement values, along with unavailable configuration ratings and unvalidated condition ratings, cumulatively result in an understated total estimate of the shipyards' restoration and modernization needs as reported to Congress. Without relevant, reliable, and timely information on the shipyards' restoration and modernization needs, the Navy is limited in its ability to make informed decisions for effective and efficient use of resources.

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## The Navy Has a Process to Prioritize and Fund Restoration and Modernization Projects, but Guidance Limits the Number of Shipyard Projects It Considers

The Navy has a collaborative process to prioritize and fund the shipyards' restoration and modernization projects that involves the shipyards and higher Navy management commands, although its current guidance restricts the shipyards from submitting for consideration potential restoration and modernization projects that officials believe they need. According to officials, the Navy prioritizes among the shipyards' requests and between the shipyards and other Navy installations<sup>15</sup> to fund its highest-priority needs. Current Naval Sea Systems Command guidance to shipyards restricts the number of projects each shipyard can submit for consideration, which sometimes leads to delays in requesting and completing restoration and modernization projects identified by the shipyards.

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## Funding Requirements for Shipyard Restoration and Modernization Projects Are Based on Navy Priorities

The Naval Sea Systems Command and the Navy Installations Command provide annual guidance to the shipyards and regional commands, respectively, for developing and submitting their requests for military construction project, special project, and equipment project requirements. Per Naval Sea Systems Command guidance, specifically for the military construction projects and special projects, the shipyards provide project documentation, including descriptions, preliminary scoring, and economic analyses. Projects are then coordinated with Naval Sea Systems Command officials for input on the project requests and scoring. Navy Installations Command guidance then states that the shipyards are to submit requests for project funds through their regional commands, including preliminary scores to prioritize the project requests based on the level of importance, using factors such as mission alignment, reduction of excess infrastructure, and quality of service support. In addition, the guidance instructs the shipyards and regional commands to indicate in their submissions other factors that may affect the scoring and prioritization of the projects. For example, in guidance regarding projects submitted for funding for fiscal year 2012, the Navy Installations Command directed the regional commands to indicate whether submitted projects promote energy savings or support Navy special interest areas, such as consolidation of multiple functions into a facility and promotion of fitness facilities. The regional commands submit regional projects, including shipyard requirements after review and approval by the Regional Mission Integration Group, and present their project requests to the Navy

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<sup>15</sup> In addition to the shipyards, the Navy has a variety of other installations, such as naval stations, air stations, hospitals, weapons stations, and training centers.



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Installations Command for review and prioritization. The command's recommendations are then forwarded to the Navy's Shore Mission Integration Group, which includes officials from several components, such as the Office of the Chief of Naval Operations, the Navy Installations Command, and the Naval Facilities Engineering Command. The Shore Mission Integration Group reviews all Navy installation project requests, including the shipyard requests among projects presented by other Navy regional commands, and then approves the projects that will be included in the Navy's full budget submission in line with DOD's and the Navy's priorities and competing requirements, such as prevailing in wars, deterring conflict, and preserving and enhancing the force.<sup>16</sup>

This process is similar to the process for prioritizing and requesting equipment projects. Shipyard officials submit equipment project requests directly to the Naval Sea Systems Command, which prioritizes the projects among its other needs, and submits an integrated request to the Chief of Naval Operations for approval.

In addition to the projects requested by the shipyards as part of the Navy's prioritization process, according to Navy officials, the Navy has included other projects that were planned for future budget submissions, as part of its recent budget submissions because of congressional interest in those projects. Further, the four shipyards have received funding to accomplish some needed projects through the American Recovery and Reinvestment Act of 2009 (Recovery Act).<sup>17</sup> Under the Recovery Act, Congress appropriated about \$7.4 billion to DOD to fund, among other things, facility repair and military construction. The Navy identified potential projects and submitted them to DOD to be selected for funding based on several factors, including operational need and the speed with which the contract could be awarded. For example, according to shipyard officials, seven of Portsmouth Naval Shipyard's eight funded projects for fiscal year 2009 were either projects with congressional interest that were not requested by the shipyard in the Navy's prioritization process or were projects funded from Recovery Act funds, totaling \$54.9 million. For fiscal year 2009, Norfolk Naval Shipyard received \$2.1 million in Recovery Act funds for a special project to replace two elevators, and according to Pearl Harbor Naval Shipyard officials, they received \$4.2 million for 2010

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<sup>16</sup> Department of the Navy Office of Budget, *Highlights of the Department of the Navy Fiscal Year 2011 Budget* (Washington, D.C.: February 2010).

<sup>17</sup> Pub. L. No. 111-5 (2009).

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projects they did not submit through the Navy's prioritization process to perform work on several equipment improvements, including a liquid waste processing system, a bending roll machine, a pipe bender, and a mobile crane.

According to shipyard officials, some shipyard projects may get delayed repeatedly because of other priorities, which may lead to critical failures and other emergencies that could become extremely costly. For example, Norfolk Naval Shipyard officials submitted a project in fiscal year 2000 to repair and upgrade a damaged pier. The initial estimate for repairing and upgrading the pier was about \$15.5 million. However, the project remained unfunded until the pier had been condemned and required a total replacement. In fiscal year 2006, the revised estimated cost to demolish and replace the pier was \$78.8 million. When the pier was eventually completed in fiscal year 2010, the total cost equaled about \$85 million, illustrating that the cost associated with delaying the initial repair and upgrade work increased greatly over time.

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### Navy Guidance to Shipyards Restricts Shipyards from Submitting Their Total Restoration and Modernization Needs

The shipyards routinely had additional restoration and modernization projects they believed were needed and could have reasonably been accomplished, but these projects were not submitted for consideration because of restrictions established in Naval Sea Systems Command guidance. Shipyard officials stated that Naval Sea Systems Command and Navy Installations Command budget request guidance is supplemented with direction provided through e-mails and telephone calls from the Naval Sea Systems Command and the Navy regions that limit the number of projects the shipyards are allowed to submit for consideration each year. Shipyard officials also told us that based on their prior experience with the request and approval process, they do not submit all of the projects they think are needed for restoration and modernization. In addition, the Naval Sea Systems Command guidance routinely directed the shipyards to prepare only one project request under the Military Construction funding category per fiscal year for the Naval Sea Systems Command's initial review prior to submission for Navy Installations Command review. The guidance noted that exceptions will be considered only if they have clear and convincing evidence that being limited to one military construction project per year would result in significant adverse mission impact. Officials from the Naval Sea Systems Command and Navy Installations Command told us that the process was intended to systematically prioritize projects and constrain the development and submission of projects that may have less likelihood of being funded.

The shipyards submitted restoration and modernization projects for consideration for fiscal years 2009 and 2010 totaling about \$1 billion. However, shipyard officials stated that they would have submitted additional projects totaling about \$508 million that they believed were needed and could have reasonably been accomplished if they had not been constrained by the guidance. Table 2 shows the funding for projects the Navy shipyards submitted for consideration compared to unconstrained requirements—the amount of funding that shipyard officials stated that they would have requested for projects they believe were needed and could have accomplished—for fiscal years 2009 and 2010.

**Table 2: Navy Shipyard Projects Submitted for Funding Consideration and Unconstrained Funding Requirements for Fiscal Years 2009 and 2010**

	FY 2009	FY 2010
<b>Norfolk Naval Shipyard, VA</b>		
Shipyard-requested funding	\$184,445	\$177,711
Unconstrained requirements	372,528	346,727
<b>Requirements not requested</b>	<b>\$188,083</b>	<b>\$169,016</b>
<b>Pearl Harbor Naval Shipyard, HI</b>		
Shipyard-requested funding	\$111,040	\$121,590
Unconstrained requirements	111,040	137,290
<b>Requirements not requested</b>	<b>\$0</b>	<b>\$15,700</b>
<b>Portsmouth Naval Shipyard, ME</b>		
Shipyard-requested funding	\$71,594	\$46,799
Unconstrained requirements	109,248	99,175
<b>Requirements not requested</b>	<b>\$37,654</b>	<b>\$52,376</b>
<b>Puget Sound Naval Shipyard, WA</b>		
Shipyard-requested funding	\$148,626	\$146,442
Unconstrained requirements	174,626	165,822
<b>Requirements not requested</b>	<b>\$26,000</b>	<b>\$19,380</b>
<b>Total Navy shipyards' requirements not requested</b>	<b>\$251,737</b>	<b>\$256,472</b>

Source: GAO analysis of Navy data.

Note: According to shipyard officials, their unconstrained requirements include funding for projects they believe were needed for restoration and modernization and could be accomplished. We did not independently validate these requirements.

One example of these restoration and modernization projects that the shipyards believed that they needed but did not provide for the Naval Sea Systems Command's initial review is Pearl Harbor Naval Shipyard's military construction project for consolidating product support shops into

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a single facility. According to a shipyard official, the shipyard refrained from submitting two military construction projects for fiscal year 2010 with a total cost of \$41.9 million because it had another project with a higher priority for two dry docks' ship support services costing \$26.2 million—a net amount of \$15.7 million in projects not requested. According to the official, the production support shops currently work out of different facilities, including temporary tents, trailers, and storage bins, that create poor and unsafe working conditions, which results in inefficient production support to ships undergoing major work at the dry docks and increased maintenance costs. Further, Puget Sound Naval Shipyard developed a project for a regional lifting and handling facility costing \$34.2 million, which an official told us the shipyard planned to submit for fiscal year 2009. However, the official stated that it has not yet been submitted for the Naval Sea Systems Command's initial review because of project guidance restriction and budget constraints. The project's requirement has been outstanding since fiscal year 2003. According to the project's proposal, it would consolidate the work performed in 12 other buildings located throughout the shipyard, and could result in improved productivity, reduced rework, a reduction in maintenance backlog, and increased production capability to perform ship repairs. In addition, the project proposal stated that because of the facility's planned earthquake safety seismic features, there would be a significant reduction in personnel safety and health issues.

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## Shipyards Document Their Actions to Address Identified Safety and Health Issues but Not Quality-of-Life Issues

The Navy shipyards have processes to systematically identify safety and occupational health mishaps and hazards and document their actions to resolve these issues; however, the shipyards may not fully address all identified hazards and do not have a method to systematically document actions to address other infrastructure-related situations affecting the quality of life of their workforces. Our review of the corrective actions taken for some of the identified safety and occupational health issues showed that the steps taken in many cases were interim or temporary fixes that did not fully address the issues and in some cases led to quality-of-life issues for the workforce. While some recent infrastructure improvements have been made that enhanced the safety, health, and quality of life of the workforce, shipyard officials recognize that working conditions are not ideal at the shipyards and that there is room for improvement. However, projects have to compete with each other for the funding that is available, and according to shipyard officials, the Navy's prioritization process weighs projects with improvements to shipyard operations more heavily than those designed to resolve less significant workforce safety, health, or quality-of-life issues. In addition, shipyard

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officials stated that they are limited in their ability to fully resolve some of these issues because some facilities have historical significance and procedural steps are required before altering a historical facility's original design and appearance. Without capturing quality-of-life issues and steps taken toward resolution, the Navy lacks visibility over the magnitude of these issues; whether any identified issues have been fully addressed; and ultimately its ability to provide a high-quality, safe, and healthful workplace at the shipyards.

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### Shipyards Document the Resolution of Identified Safety and Occupational Health Mishaps and Hazards, Although Not All Hazards Are Fully Resolved

The shipyards document the resolution of identified safety and occupational health mishaps and hazards and have recently received awards for their safety performance, but may be limited in fully resolving the hazards, which in some cases may lead to workforce quality-of-life issues. A DOD directive indicates that it is DOD's policy to protect personnel from accidental death, injury, and occupational illness.<sup>18</sup> In furtherance of this policy, a DOD instruction requires the heads of DOD components (including the Navy) to collect and maintain injury and occupational illness data and ensure that effective corrective action is taken on identified causes for accidents and occupational illnesses.<sup>19</sup> In response to these requirements, the Navy has issued various guidance regarding safety, occupational health, and quality of life. In addition, the Navy Ashore Vision 2030 states that the Navy advocates providing for "high quality, safe, efficient, and environmentally sound workspace for all sailors and employees."<sup>20</sup> The Navy's Safety and Occupational Health Program works to maintain safe and healthy working conditions for all Navy personnel by reducing work-related hazards (situations or practices that may result in an injury or illness) and mishaps (incidents of injury or illness).<sup>21</sup> The program manual provides guidance on safety and

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<sup>18</sup> Department of Defense Directive 4715.1E, *Environment, Safety, and Occupational Health* (Mar. 19, 2005).

<sup>19</sup> Department of Defense Instruction 6055.07, *Accident Investigation, Reporting, and Record Keeping* (Apr. 24, 2008).

<sup>20</sup> Chief of Naval Operations, *Naval Ashore Vision 2030: Navy Installations—The Foundation for Readiness* (Nov. 3, 2004).

<sup>21</sup> Office of the Secretary of the Navy Instruction 5100.10J, *Department of the Navy Policy for Safety, Mishap Prevention, Occupational Health and Fire Protections Programs* (Oct. 26, 2005); Office of the Chief of Naval Operations Instruction 5100.8G, *Navy Safety and Occupational Safety and Health Program* (May 24, 1989); and Office of the Chief of Naval Operations Instruction 5100.23G, *Navy Safety and Occupational Health (SOH) Program Manual* (Dec. 30, 2005).

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occupational health standards, including prevention and control of workplace hazards; the role of industrial hygienists; workplace inspections; employee reporting of hazards; and mishap investigation, reporting, and recordkeeping. Among other things, the Navy Office of Safety and Occupational Health is required to investigate every mishap and complete a report that includes root causes and recommended corrective actions, perform regular inspections to identify hazards, collect and respond to employee reporting of suspected hazards, post deficiency notices at hazard locations, forward notices to the responsible offices within the shipyard, and follow up on these notices.

We found that the shipyards, through the Navy's Safety and Occupational Health Program, have mechanisms to systematically identify and document corrective actions to resolve both safety and occupational health mishaps and hazards. For mishaps, Navy Office of Safety and Occupational Health officials use an injury tracking database to maintain a log of safety mishaps and occupational illnesses, including date of initial identification; location of the mishap; type of injury or illness; and a narrative to provide more detail, such as the cause of the mishap and how the mishap was resolved. The shipyard safety offices analyze mishap information to develop annual mishap reduction goals and identify trends to adjust training. For hazards, each of the shipyards use a database to retain information, including date of initial identification, risk assessment (measuring hazard severity and mishap probability), and date of the most recent inspection. These databases also include actions to fully address or partially control the hazards, such as isolation of the hazard or completed or planned repair of infrastructure deficiencies that may have caused the hazard or mishap. According to shipyard safety and health officials, they continue to monitor the hazards that are partially controlled and do not consider a hazard fully abated until it has been completely resolved. In addition, the shipyards have recently received awards for their safety performance. For example, each of the shipyards has the Star status in the Occupational Safety and Health Administration's Voluntary Protection Program, indicating injury and illness rates at or below the national average of respective industries. Further, Pearl Harbor Naval Shipyard received the 2009 Chief of Naval Operations Shore Safety Award and the Navy's 2008 Safety Excellence Award.

In analyzing the shipyards' safety and occupational health information and during our shipyard site visits, we found that the shipyards have identified safety and health hazards related to shipyard infrastructure, but not all hazards have been fully addressed. Rather, the unresolved hazards have been monitored and interim controls or temporary fixes have been put in

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place. At each of the four shipyards, shipyard officials identified examples of these hazards in office and shipyard industrial buildings that are currently occupied and used by shipyard workforce, such as lack of sufficient ventilation, heating and air conditioning problems, nonfunctioning fire suppression or alarm systems, mold, improper railings to protect people from falling, and broken glass falling from windows. Figure 5 shows an example of broken glass windows that have been replaced by plywood boards in an industrial building at Portsmouth Naval Shipyard.

**Figure 5: Broken Glass Windows Replaced by Plywood Boards at Portsmouth Naval Shipyard**



Source: GAO.

At Pearl Harbor Naval Shipyard, shipyard officials identified and showed us multiple buildings with critical structural deficiencies, which may be hazardous to personnel or compromise the integrity of the building, as well as vermin infestations. At Norfolk Naval Shipyard, shipyard officials showed us extensive water damage that resulted in unsound walkways and ceilings in several office buildings.

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At Puget Sound Naval Shipyard, officials told us that although they are in the process of seismically reinforcing buildings in the shipyards, there still are multiple office and industrial buildings that are currently occupied but are not seismically sound in the event of an earthquake. At Portsmouth Naval Shipyard, shipyard officials showed us rusted movable submarine maintenance enclosures as well as water leaks onto electrical main feeds that officials stated often caused power outages and damage to office ceilings. Figure 6 shows examples of the rusted mobile submarine maintenance enclosures, which according to officials are large equipment that are placed around submarines undergoing maintenance while in dry docks to shield shipyard workers from winter weather conditions. Figure 7 shows a room currently used by the shipyard workforce with open rafters after ceiling tiles that were damaged from leaks in the roof were removed.

**Figure 6: Rusted Movable Submarine Maintenance Enclosures at Portsmouth Naval Shipyard**



Source: GAO.



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**Figure 7: Exposed Rafters after Water Damage from a Leaking Roof at Portsmouth Naval Shipyard**



Source: GAO.

According to shipyard safety and occupational health officials, their databases for monitoring safety and occupational health mishaps and hazards do not easily separate mishaps or hazards caused by deficiencies in the shipyard infrastructure. However, safety and occupational health officials notify shipyard command officials and the shipyards' Naval Facilities Engineering Command officials when infrastructure repair is needed to resolve safety and health issues. Our review of the corrective actions taken for some of the identified safety and occupational health issues showed that the steps taken in many cases were interim or temporary fixes, such as isolation, accommodation of individuals, or work-arounds, which did not fully address the issues. In addition, Pearl Harbor Naval Shipyard and Portsmouth Naval Shipyard officials stated that they control mold by painting over the area or closing off the affected rooms until they can fully address the structural deficiencies that caused the excess moisture, which led to the mold. However, according to shipyard officials, using temporary controls and not fully resolving these hazards may lead to quality-of-life issues, such as poor ventilation and temperature control in buildings.

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Although we observed some quality-of-life issues and some unresolved shipyard hazards, the shipyards have made recent infrastructure improvements that enhanced the safety, health, and quality of life of the workforce. For example, at Pearl Harbor Naval Shipyard, a new facility was built to replace two office buildings with infrastructure deficiencies. According to shipyard officials, the new facility was an improvement for the office workers' occupational health and quality of life. At Puget Sound Naval Shipyard, a large, new cafeteria area was built to provide nearby food service for the shipyard workforce, consolidating smaller food service locations that were in disrepair. At Norfolk Naval Shipyard, because of the expansion of an administrative building, officials stated that they were able to consolidate employees from different areas in the shipyard in one building and provide larger, more high-quality work spaces.

However, shipyard officials recognize that working conditions are not ideal at the shipyards and that there is room for improvement. Shipyard officials stated that some safety and occupational health hazards and quality-of-life issues have been addressed through current or planned restoration and modernization projects. As part of its justification of proposed restoration and modernization projects, Navy guidance provides for improvements to the workforce's safety and occupational health under the broad category "Quality of Service," which also includes improvements to workplace productivity and efficiency.

Our analysis of the projects included in the Navy's budget submission for fiscal years 2009 and 2010 showed that 71 of the 113 project submission documents showed improvements to safety and occupational health, as well as quality-of-life issues included as part of projects that provided for improvements to shipyard operations. Table 3 provides the total number of projects related to safety, health, or quality of life by shipyard for fiscal years 2009 and 2010.

**Table 3: Number of Shipyard Restoration and Modernization Projects That Include Safety, Occupational Health, and Quality-of-Life Improvements for Fiscal Years 2009 and 2010**

Shipyard	FY 2009		FY 2010	
	Total number of projects	Number of projects related to safety, health, and quality of life	Total number of projects	Number of projects related to safety, health, and quality of life
Norfolk	12	6	9	9
Pearl Harbor	17	10	17	10
Portsmouth	9	7	10	6
Puget Sound	25	20	14	3
<b>Total</b>	<b>63</b>	<b>43</b>	<b>50</b>	<b>28</b>

Source: GAO analysis of Navy information.

Officials from the Navy Installations Command and Naval Sea Systems Command and shipyard and Navy officials acknowledged that projects with improvements to shipyard operations are generally weighed more heavily than some projects that are developed primarily to address workforce safety, health, and quality-of-life issues that have not been fully addressed. Our analysis of the shipyard projects for fiscal years 2009 and 2010 found that these project submission documents showed improvements to safety and occupational health, as well as quality-of-life issues included as part of projects that provided for improvements to shipyard operations. Norfolk Naval Shipyard's projects for infrastructure improvements related to safety and occupational health include replacing elevators and renovating bathrooms. Portsmouth Naval Shipyard's projects include replacement of roofs, windows, and heat and air conditioning systems. Projects at Puget Sound Naval Shipyard include seismic upgrades to one building.

Shipyard officials told us that they are limited in their ability to fully resolve some safety, health, and quality-of-life issues because some facilities have historical significance and procedural steps are required before altering a historical facility's original design and appearance. For example, Norfolk Naval Shipyard officials showed us multiple instances of non-weatherproof windows with peeling paint and deteriorated wooden frames that they could not replace with newer and different window styles. Instead, they stated that they would need to find a contractor that could replicate the window design using similar materials, which they claim would be at a much greater cost than if they were to replace them with newer window designs. Further, Pearl Harbor Naval Shipyard officials showed us that next to occupied office and shipyard industrial

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buildings, there are two empty facilities that were condemned for structural deterioration and asbestos hazards, but according to officials, these facilities could not be demolished and rebuilt because they needed to retain the historical skyline appearance of the installation.

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### No Systematic Shipyard Process to Identify and Resolve Quality-of-Life Issues Related to the Condition of Infrastructure

We found that the shipyards lack a formal process to systematically identify and document resolution of infrastructure-related quality-of-life issues—those situations that negatively affect the quality of an employee’s work space but that the Navy may not consider safety and occupational health hazards and that may not be fully addressed through the Navy’s Safety and Occupational Health Program. According to shipyard officials, some of the quality-of-life issues result from temporary fixes put in place to resolve occupational health hazards. As stated previously in this report, DOD and the Navy have issued guidance promoting the importance of safety, occupational health, and quality of life. In addition, the Navy Ashore Vision 2030 states that the Navy promotes providing “high quality, safe, efficient, and environmentally sound workspace for all sailors and employees.”

During our site visits to each shipyard, we observed and learned of examples of quality-of-life issues. For example, at each of the shipyards, officials showed us that several buildings had windows that were not weatherproof or had poor heating, ventilation, and air conditioning systems, which led to uncomfortable temperatures or excessive moisture; training spaces in poor condition, which officials stated were not beneficial to retaining skilled workers; and congested work areas with uneven or broken up roadways, which made the work area hard to navigate according to officials.

While none of the four shipyards has a formal process to document resolution of shipyard infrastructure issues that affect the workforce’s quality of life, each shipyard has established venues for quality-of-life issues to be communicated to shipyard command officials. Shipyard command officials communicate with union representatives who raise quality-of-life issues that may not be readily identified and addressed through the Safety and Occupational Health Program. For example, at Portsmouth Naval Shipyard, union representatives and command officials regularly meet as part of the Facilities and Equipment Planning Team to identify and potentially address safety, occupational health, and quality-of-life issues concerning the shipyard’s workforce. Pearl Harbor Shipyard officials also stated that union representatives and department leaders meet every other week as part of its Command Leadership Council, which

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provides an opportunity for union officials to identify and request resolution of quality-of-life issues. Puget Sound Naval Shipyard's Guiding Coalition consists of command officials and volunteers from the workforce to identify needed changes and facilitate these changes, including addressing quality-of-life issues, such as providing new furniture in the cafeterias or assisting in refurbishing restroom areas. Norfolk Naval Shipyard established the Ownership, Accountability, Responsibility, and Stewardship Group that includes shipyard command officials, union officials, and workforce representatives and has regular meetings to identify and work to resolve safety, occupational health, and quality-of-life problems. Although each shipyard has these lines of communication in place, according to union and shipyard command officials, they do not regularly document these communications and minutes of these meetings may not indicate any resolution of identified issues.

According to shipyard officials, the Navy does not have guidance for the shipyards on systematically tracking and documenting resolution of identified quality-of-life issues. While Navy guidance promotes a safe and healthful workplace for all personnel, because the Navy does not routinely capture quality-of-life issues as they are encountered and document the resolution of the issues, the Navy lacks visibility over the magnitude of quality-of-life issues; whether any identified issues have been fully addressed; and ultimately its ability to provide a high-quality, safe, and healthful workplace at the shipyards.

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## Conclusions

At a time when the federal government is facing long-term fiscal challenges and its agencies face increasing competition for federal discretionary funds, the Navy must make resource allocation decisions that maximize its ability to meet its goals, including fulfilling mission requirements and maintaining safe and healthy workplaces. The Navy's four public shipyards ensure that the Navy can maintain its own capability to perform both ship and depot maintenance and emergency repair work, and together they support and enhance the fleet's operational availability and mission effectiveness. The ability of the shipyards to meet their mission—keeping the fleet operational—depends on maintaining the shipyards' infrastructure and equipment, and to do this the Navy and Congress need an accurate picture of the costs involved in order to exercise oversight and make knowledgeable funding decisions. The Navy has reported a backlog of its shipyard restoration and modernization needs and recognizes that this backlog poses a challenge to future shore readiness. Decision makers need to be aware of the full extent of the shipyards' restoration and modernization needs, and improvements could

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be made in the shipyards' strategic planning so that the essential elements of a results-oriented strategic framework are consistently incorporated across the shipyards. In addition, the Navy's process for updating its facility assessments could be improved to ensure that facility data used in determining restoration and modernization needs are current. The Navy has taken steps to improve the plant replacement value calculation for piers and wharves; however, its replacement unit cost factor for dry docks has not been updated and still produces understated restoration and modernization costs. As a result, total shipyard restoration and modernization costs are underestimated. Furthermore, the data that decision makers need include not only the full extent of the shipyards' restoration and modernization needs, but also how current infrastructure challenges affect the quality of life of the shipyards' workforce. Such data could help decision makers to target resources efficiently to enable the Navy's four shipyards to meet their mission and provide a high-quality, safe, and healthy workplace.

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## Recommendations for Executive Action

To improve overall visibility of the Navy shipyards' restoration and modernization needs and quality-of-life issues, we recommend that the Secretary of Defense direct the Secretary of the Navy to take the following four actions:

1. In consultation with the Naval Sea Systems Command and the Navy Installations Command, develop guidance that lays out the requirement for the shipyards to develop strategic plans that address their future restoration and modernization needs and that reflect the seven essential elements of a comprehensive strategic planning framework.
2. Develop and document a method for systematically collecting and updating the Navy's configuration and condition information, including establishing measurable goals and time frames for updating its processes so that the data are complete and accurate.
3. Submit documentation to the Office of the Deputy Under Secretary of Defense for Installations and Environment to update the replacement unit cost factor for dry docks so that plant replacement value calculations for dry docks, and subsequent restoration and modernization cost calculations, more accurately reflect the shipyards' unique infrastructure needs.

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4. Develop guidance for the shipyards to systematically collect information on and document corrective actions to prioritize and address identified quality-of-life issues.

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## Agency Comments and Our Evaluation

In written comments on a draft of this report, DOD concurred with all four of our recommendations related to improvements in the managing of the Navy shipyards' restoration and modernization needs and quality-of-life issues. DOD's written comments are reprinted in appendix III. DOD also provided technical comments that we have incorporated into this report where applicable.

DOD concurred with our recommendation to direct the Secretary of the Navy, in consultation with the Naval Sea Systems Command and the Navy Installations Command, to develop guidance that lays out the requirement for the shipyards to develop strategic plans that address their future restoration and modernization needs and reflect the seven essential elements of a comprehensive strategic planning framework. In commenting on this recommendation, the Department of the Navy noted that strategic planning in development of recapitalization requirements has to be done at the regional and installation levels, taking into account all Navy missions within current funding constraints, and noted that we did not include in our report higher-level strategic plans, such as the Global Shore Infrastructure Plan and the Naval Sea Systems Command Depot Maintenance Plan. We acknowledge that these higher-level strategic plans provide context for the individual shipyard plans; however, the shipyards have developed their plans to assist them in addressing current and future restoration and modernization issues. Therefore, we maintain our view that these shipyard plans should reflect the seven essential elements of a comprehensive strategic planning framework to provide shipyards better visibility over the effectiveness of their plans.

DOD also concurred with our recommendation to direct the Secretary of the Navy to develop and document a method for systematically collecting and updating its configuration and condition information. DOD stated in its comments that the Infrastructure Condition Assessment Program is in place to assess the condition of the Navy shipyard buildings and waterfront structures and will correctly report this information in relevant systems, with a pilot assessment to be conducted in fiscal year 2011. Additionally, the department stated that this program will include configuration assessments and that the Navy is working to provide information for the missing configuration ratings in fiscal year 2011. However, the department did not provide any documentation outlining the

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specific details of the Infrastructure Condition Assessment Program nor did it provide any specific timelines for taking future actions to provide information for the missing data. In addition, in its technical comments, the department also noted that because of its efforts to update its configuration and condition assessments, it believes that it is premature to conclude that the \$3.0 billion backlog in restoration and modernization needs is understated. However, DOD did not provide any material to refute the logic that if the configuration element is automatically defaulting to a rating that shows no restoration or modernization is needed, the backlog has to be understated.

DOD also concurred with our recommendation to direct the Secretary of the Navy to submit documentation to the Office of the Deputy Under Secretary of Defense to update the replacement unit cost factor for dry docks. The Department of the Navy stated that it has recently funded an effort to investigate the replacement cost unit factor for dry docks, but did not provide any details or specific time frames for completing its review.

The department also concurred with our recommendation to direct the Secretary of the Navy to develop guidance for the shipyards to systematically collect information on and document corrective actions to prioritize and address identified quality-of-life issues. DOD commented that Navy configuration and condition ratings include an assessment of the impact of facilities on the quality of life for the employees and are used in its process to prioritize its restoration and modernization projects. While the Navy continues to make improvements in its configuration and condition ratings, we believe these efforts could be enhanced by the Department of the Navy systematically collecting information on employee reported quality-of-life issues and documenting corrective actions.

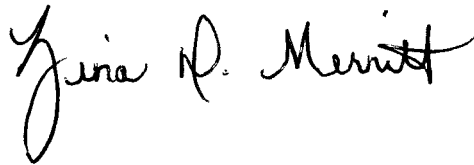
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We are sending copies of this report to interested congressional committees, the Secretary of Defense, and the Secretary of the Navy. The report also is available at no charge on the GAO Web site at <http://www.gao.gov>.



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A handwritten signature in black ink, reading "Zina D. Merritt". The signature is written in a cursive style with a large, stylized "Z" and "M".

Zina D. Merritt  
Acting Director  
Defense Capabilities and Management

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# Appendix I: Scope and Methodology

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To determine the extent to which the shipyards have plans for needed restoration and modernization, we obtained and reviewed planning documents from each shipyard and analyzed them to determine if they addressed the seven essential elements of a strategic plan that we have previously reported are critical to successful strategic planning. In performing our analysis, one team member initially analyzed the plans to determine if they addressed, partially addressed, or did not address the seven key elements. A second team member independently reviewed and verified the initial analysis. The two team members discussed and reconciled any differences. We also met with shipyard officials to discuss their strategic planning processes.

To understand the Navy's process and the extent to which it captures and calculates the Navy's restoration and modernization needs for the shipyards' infrastructure, facilities, and equipment, we obtained and reviewed relevant Navy guidance on process for determining restoration and modernization needs and interviewed Navy officials. Through interviews with Navy headquarters and shipyard officials, we determined how the Navy uses the Facility Readiness Evaluation System (Facility System) to calculate, capture, and report the restoration and modernization needs (i.e., backlog) for each of the four shipyards. We also examined, to some extent, other systems, such as the Single Platform Maximo and the internet Navy Facility Asset Data Store (Data Store), that interface with the Facility System. Using the Facility System data provided by each of the four shipyards, we performed analyses on the configuration, condition, and plant replacement value data to determine the extent to which these factors would collectively yield an accurate backlog assessment. As reported, we found some instances where the data were unavailable, not validated, and undervalued, thus we concluded that the restoration and modernization costs were understated. We were not able to recalculate a more precise backlog assessment for any of the four shipyards because the data were not available.

Specifically, to assess the configuration data in the Facility System, we performed analyses to show the number and percentage of occurrences in which the configuration rating defaulted to 100 for every facility listed in the Facility System data provided by each of the four shipyards at the time of our review. To examine the condition rating data in the Facility System, we obtained and reviewed Navy guidance and interviewed Navy officials to determine when the last physical inspections of shipyard facilities (i.e., buildings, utilities, dry docks, piers, and wharves) were conducted and entered into the Single Platform Maximo database that updates the Data Store and ultimately the Facility System database. We reviewed project

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proposals and compared the condition described or rated on the proposals to the condition data in the Facility System. We also observed the physical condition of several facilities during a guided tour at each shipyard and interviewed Navy officials about their process for reviewing and updating any needed changes to the condition data. We did not attempt to independently evaluate the condition of shipyard infrastructure. We also reviewed guidance and interviewed Navy officials to determine the extent to which the Navy has established systematic procedures, time frames, and budgeting for its plans to change the condition inspection process. To assess the effect of plant replacement values in the Facility System on backlog calculations, we reviewed Department of Defense (DOD) guidance for calculating plant replacement values; information provided by Navy officials concerning the plant replacement value of piers, wharves, and dry docks; and documents showing Navy methods for calculating backlog. Using data from the Facility System provided by the Navy, we calculated the percentage of each shipyard's total plant replacement value represented by dry docks at that shipyard to determine the relative significance of dry dock plant replacement values. We also interviewed Navy officials to better understand their backlog calculation methods and to establish the actions they had taken to address their concerns about the accuracy of plant replacement values in the Facility System. We assessed the reliability of the data from the Navy's databases that we used to conduct our review by reviewing documentation and interviewing knowledgeable officials on the purpose, data input sources, calculations, validation of data inputs, and internal controls. We also tested the configuration data by checking for data that were missing or defaulted to 100, and compared examples of condition ratings and officials' condition assessments to the data in the Navy's databases to determine accuracy and currency of the data. Based on our review, we determined that the Navy data were sufficiently reliable for our purposes of the audit objectives.

To examine the Navy's process to prioritize and fund projects to meet shipyards' restoration, modernization, and equipment needs, we obtained and reviewed Navy policies, guidance, and related procedures for the shipyards to identify, prioritize, and submit their funding requests and for Navy headquarters to review, rank, and approve the respective shipyards' submitted funding requests. We obtained the four shipyards' funding requests for the military construction projects; sustainment, restoration, and modernization special projects; and equipment projects for fiscal years 2009 and 2010. We also obtained each shipyard's unconstrained funding requirements for each of the 2 years. The unconstrained requirements included the shipyard's requested funding and were based on

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what shipyard officials stated that the respective shipyard could reasonably execute with the existing workforce without affecting the shipyard's planned maintenance workload. We did not independently validate the shipyards' funding data. We also identified the related impact of delaying selected projects on the respective shipyard's infrastructure, equipment, and related operations.

To determine the extent to which the shipyards identify and address infrastructure-related safety, occupational health, and quality-of-life issues, we obtained and reviewed DOD and Navy guidance that provided policy, standards, and processes regarding evaluation of safety and occupational health mishaps and hazards, as well as goals for improving the Navy workforce's quality of life. We also analyzed records of the shipyards' identified safety and occupational health mishaps and hazards, including hazard records that had not been closed as of July 2010, and reviewed planning documents and project proposal justifications of shipyard infrastructure restoration and modernization projects for fiscal years 2009 and 2010. We assessed the reliability of the data from these databases by reviewing relevant Navy guidance and comparing it to information we gathered from interviews with knowledgeable agency officials on internal controls and how they identify, track, and address safety and health issues. We also reviewed examples of databases used by the shipyards to track safety mishaps and health hazards in order to corroborate information from interviews with agency officials. Based on this review, we determined that the Navy data were sufficiently reliable for the purposes of our audit. Further, we conducted site visits and interviewed safety and occupational health officials, human resources officials, shipyard command officials, and union representatives at each of the shipyards regarding methods for identifying, communicating, and resolving infrastructure-related safety, occupational health, and quality-of-life issues affecting the workforce.

To address each of these objectives, we also spoke with officials from the Office of the Assistant Secretary of the Navy (Installations and Environment); the Naval Sea Systems Command; the Commander, Navy Installations Command; and all four naval shipyards: Norfolk Naval Shipyard, Pearl Harbor Naval Shipyard, Portsmouth Naval Shipyard, and Puget Sound Naval Shipyard. Although we did not independently validate the Navy's restoration and modernization data, budget request and approval data, and safety and occupational health data, we discussed with officials the steps they had taken to ensure reasonable accuracy of the data. We determined the data to be sufficiently reliable for the purposes of this report.

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We conducted this performance audit from October 2009 to October 2010 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: The Extent to Which Navy Shipyards’ Planning Documents Address the Essential Elements of a Strategic Plan

We reviewed strategic planning documents from all four shipyards and found that they address current and future restoration and modernization issues, but the plans vary in the extent to which they address each of the elements of a comprehensive, results-oriented strategic plan framework.<sup>1</sup> Table 4 summarizes our analysis of the shipyards’ strategic plans.

**Table 4: The Extent to Which Navy Shipyards’ Planning Documents Address the Essential Elements of a Strategic Plan**

Essential elements of a strategic plan	Norfolk	Pearl Harbor	Portsmouth	Puget Sound
Mission statement	<b>Addresses:</b> The Norfolk Naval Shipyard Strategic Plan contains a mission statement. Specifically, its operational mission is to provide safe, quality, on-time, and on-cost ship maintenance, repair, alteration, overhaul, and refueling service to the fleet.	<b>Addresses:</b> The Pearl Harbor Naval Shipyard Business Plan contains a mission statement. Specifically, the mission of the shipyard is “we keep them fit to fight.”	<b>Addresses:</b> The Portsmouth Naval Shipyard Strategic Plan contains a mission statement: “to deliver modernized and reliable undersea platforms and equipment to the fleet while setting the standards of excellence for safety, cost, schedule, and quality.”	<b>Addresses:</b> Puget Sound Naval Shipyard has a mission statement: one team ensuring freedom by fixing ships and supporting the warfighter.”
Long-term goals	<b>Addresses:</b> The Norfolk Naval Shipyard Strategic Plan contains three broad goals: deliver ships, develop leaders, and do it right. Its Vision 2035 Plan also contains some broad goals, including align the shipyard into product districts and process hubs, recapitalize the waterfront, and create a state-of-the-art shipyard. The vision plan also specifies some interim goals, in the form of infrastructure projects, and lists the desired execution year of each project.	<b>Addresses:</b> The Pearl Harbor Naval Shipyard Business Plan contains several goals, including an overall goal to establish and execute an effective facilities modernization program with several interim objectives, including improving the condition, capability, and capacity of the facilities.	<b>Addresses:</b> The Portsmouth Naval Shipyard Strategic Plan contains a long-term goal to improve the infrastructure of the shipyard, and to modernize and maintain its facilities to efficiently perform future work while preserving the historical character of the base. The long-term plan presented in the Portsmouth Naval Shipyard Vision 2040 Plan builds on this objective.	<b>Does not address:</b> Puget Sound Naval Shipyard has an Execution Plan and a document that lays out some maintenance and modernization needs. Neither of these plans contains specific, measurable long-term goals. Rather, these documents contain focus areas. For example, the execution plan contains three focus areas, including maintain warfighting readiness, while the infrastructure planning document focuses on projects needed to improve the dry docks and piers.

<sup>1</sup> [GAO/GGD-97-180](#).

**Appendix II: The Extent to Which Navy  
Shipyards' Planning Documents Address the  
Essential Elements of a Strategic Plan**

<b>Essential elements of a strategic plan</b>	<b>Norfolk</b>	<b>Pearl Harbor</b>	<b>Portsmouth</b>	<b>Puget Sound</b>
Strategies to achieve goals and objectives	Addresses: Through its Vision 2035 Plan, Norfolk Naval Shipyard lays out future military construction projects needed to meet its overall goals and estimates the costs of these projects.	Addresses: The Pearl Harbor Naval Shipyard Modernization Plan lays out future infrastructure projects needed to meet its overall goals and objectives and estimates the costs and time frames of these projects.	Addresses: Through its Vision 2040 Plan, Portsmouth Naval Shipyard lays out future infrastructure projects needed to meet its overall goals and estimates the costs and time frames of these projects.	Partially addresses: Though Puget Sound Naval Shipyard does not have concrete goals in place, it has developed a list of restoration and modernization projects that it would like to complete. Completion of these projects will help with its overall goal of fixing ships.
Key external factors that could affect goals	Partially addresses: The Vision 2035 Plan briefly mentions considering certain constraints, including the lack of long-term funding and lack of enterprise support, and the strategic plan mentions future budget constraints, but neither plan discusses methods for assessing or addressing these factors.	Addresses: The Pearl Harbor Naval Shipyard Modernization Plan presents two options for future projects, given the potential constraints—a constrained plan that conforms to existing development constraints, including the preservation of historic structures and antiterrorism force protection concerns, and an unconstrained plan that assumes no development constraints.	Addresses: The Vision 2040 Plan mentions several external factors, including new environmental regulations and antiterrorism force protection concerns. In addition, the plan discusses methods for addressing these factors.	Partially addresses: Puget Sound Naval Shipyard's planning documents discuss how limited funding and time constraints affect its ability to complete infrastructure projects, but neither plan discusses methods for assessing or addressing these factors.
Stakeholder involvement in developing the plan	Addresses: The Norfolk Naval Shipyard Strategic Plan was developed in consultation with labor leadership, customers, and shipyard management. The Vision 2035 Plan was developed as a collaborative effort with a broad spectrum of shipyard employees.	Addresses: Pearl Harbor Naval Shipyard interviewed key leadership in developing its Modernization Plan.	Addresses: The Portsmouth Naval Shipyard Strategic Plan was developed by many different players within the shipyard, and its Vision 2040 Plan was developed as a collaborative effort of many of the shipyard's installation personnel.	Partially addresses: The Puget Sound Naval Shipyard Execution Plan states that the shipyard will work closely with stakeholders to address challenges, but it does not mention how, if at all, stakeholders were involved in the development of the plan.

**Appendix II: The Extent to Which Navy  
Shipyards' Planning Documents Address the  
Essential Elements of a Strategic Plan**

<b>Essential elements of a strategic plan</b>	<b>Norfolk</b>	<b>Pearl Harbor</b>	<b>Portsmouth</b>	<b>Puget Sound</b>
Use of metrics to gauge progress	Does not address: Neither of Norfolk Naval Shipyard's plans discusses metrics for measuring progress against its overall goals.	Addresses: Pearl Harbor Naval Shipyard measures its progress on its objectives each year using a six-point scale.	Partially addresses: The Portsmouth Naval Shipyard Strategic Plan includes intermediate milestones to measure progress toward meeting overall goals and objectives but does not include specific metrics that measure performance against these goals.	Does not address: Neither of Puget Sound Naval Shipyard's plans discusses metrics for measuring progress against overall goals.
Evaluations of the plan to monitor goals and objectives	Partially addresses: The Norfolk Naval Shipyard Strategic Plan states that it will be evaluated through regular performance and accountability reviews, including monthly reviews with department heads. Progress toward goals is addressed in the yearly Execution Plan. The plan does not, however, describe the scope and methodology. The Vision 2035 Plan states that plan oversight will be by the shipyard's Vision 2035 Planning Board and Leadership Council. The plan will be reevaluated yearly throughout execution to determine necessary course adjustments. Updates to the plan will align with the regular budget cycle.	Partially addresses: Objectives presented in the Pearl Harbor Naval Shipyard Business Plan are continually monitored and scored, but the Modernization Plan does not mention any program evaluation process.	Partially addresses: Both the Portsmouth Naval Shipyard Strategic Plan and the Vision 2040 Plan state that they will be reviewed and updated as needed. Neither plan, however, describes specific methodologies for conducting these reviews.	Does not address: The Puget Sound Naval Shipyard Execution Plan says that progress will be measured, but it does not contain any mention of how this will happen.

Source: GAO analysis.



# Appendix III: Comments from the Department of Defense



## DEPARTMENT OF THE NAVY

OFFICE OF THE ASSISTANT SECRETARY  
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WASHINGTON DC 20350 1000

Zina D. Merritt  
Director, Defense Capabilities and Management  
U. S. Government Accountability Office  
441 G Street, NW  
Washington, DC 20548

NOV 1 2011

Dear Ms. Merritt

This is the Department of the Navy's response to the GAO draft report "Actions Needed to Improve the Navy's Processes for Determining Public Shipyards' Restoration and Modernization Needs" (GAO-11-7). Comments on the report and its recommendations are enclosed.

We appreciate the opportunity to provide comments on your draft report.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen J. Keating, Jr.".

Stephen J. Keating, Jr.  
By Direction

Enclosure:  
As stated

Copy to:  
DoD Inspector General

**GAO DRAFT REPORT DATED OCTOBER 2010  
GAO-11-7 (GAO CODE 351402)**

**“DEFENSE INFRASTRUCTURE: ACTION NEEDED TO IMPROVE THE  
NAVY’S PROCESSES FOR MANAGING PUBLIC SHIPYARDS’  
RESTORATION AND MODERNIZATION NEEDS”**

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

**RECOMMENDATION 1:** The GAO recommends that the Secretary of Defense direct the Secretary of the Navy to, in consultation with Naval Sea Systems Command and Navy Installations Command, develop guidance that lays out the requirement for the shipyards to develop strategic plans that address their future restoration and modernization needs and that reflect the seven essential elements of a comprehensive strategic planning framework. (See page 36/GAO Draft Report.)

**DoN RESPONSE:** Concur. While the Navy recognizes the importance of strategic planning in development of recapitalization requirements, those plans have to be at a Regional and Installation level taking into account all Navy missions within current funding constraints. It should be noted that the draft report does not mention the Navy’s Global Shore Infrastructure Plan (GSIP), which serves as a higher order strategic document that provides context for the individual shipyard plans reviewed by GAO. Additionally, the NAVSEA Depot Maintenance Plan, also not cited in the draft report, serves as the strategic corporate plan to address shipyard restoration and modernization issues.

**RECOMMENDATION 2:** The GAO recommends that the Secretary of Defense direct the Secretary of the Navy to develop and document a method for systematically collecting and updating its configuration and condition information, including establishing measurable goals and timeframes for updating its processes so that the data are complete and accurate. (See page 36/GAO Draft Report.)

**DoN RESPONSE:** Concur. Navy, through the Infrastructure Condition Assessment Program (ICAP), has a program in place to assess the condition of shipyard buildings and waterfront structures and have this information correctly reported in relevant IT systems (iNFADS, FRES, etc). A pilot assessment is to be conducted at Portsmouth Naval Shipyard in Fiscal Year (FY) 2011. Additionally, configuration (obsolescence) will also be assessed and reported as necessary using the asset evaluation program. With respect to the configuration data, the Navy is working towards populating the missing Q-Ratings in FY 2011.

**RECOMMENDATION 3:** The GAO recommends that the Secretary of Defense direct the Secretary of the Navy to submit documentation to the office of the Deputy Under Secretary of Defense for Installations and Environment to update the replacement unit cost factor for dry-docks so that plant replacement value calculations for dry-docks, and subsequent restoration and modernization cost calculations, more accurately reflect the shipyards' unique infrastructure needs. (See page 36/GAO Draft Report.)

**DoN RESPONSE:** Concur. Navy has recently funded an effort to investigate the replacement unit cost factor (RCF) for dry-docks. The intent of the investigation is to ensure the quality of information of the specific inputs/components and ensure the RCF for dry-docks is in-line with the rest of the DoD infrastructure. Also, Navy is incorporating dry-docks into the condition assessment program to ensure they are accurately represented in data systems.

**RECOMMENDATION 4:** The GAO recommends that the Secretary of Defense direct the Secretary of the Navy to develop guidance for the shipyards to systematically collect information on and document corrective actions to prioritize and address identified quality-of-life issues. (See page 36/GAO Draft Report.)

**DoN RESPONSE:** Concur. Navy configuration and condition ratings include an assessment of the impact of facilities on quality of life for the employees. These ratings are used in prioritization of facility investments.

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# Appendix IV: GAO Contact and Staff Acknowledgments

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## GAO Contact

Zina D. Merritt, (202) 512-5257 or [merrittz@gao.gov](mailto:merrittz@gao.gov)

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## Staff Acknowledgments

In addition to the contact named above, key contributors to this report were Laura Durland, Assistant Director; Leslie Bharadwaja; Larry Bridges; John Edwards; Dawn Godfrey; Nicole Harms; Gina Hoffman; Erik Wilkins-McKee; Michael Willems; and Elizabeth Wood. In addition, Michael Armes, Terry Dorn, Paul Francis, and Karen Zuckerstein provided their expertise and guidance.

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# Related GAO Products

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*Defense Infrastructure: Observations on the Department of the Navy's Depot Capital Investment Program.* [GAO-10-726R](#). Washington, D.C.: June 14, 2010.

*Depot Maintenance: Improved Strategic Planning Needed to Ensure That Navy Depots Can Meet Future Maintenance Requirements.* [GAO-10-585](#). Washington, D.C.: June 11, 2010.

*Depot Maintenance: Actions Needed to Identify and Establish Core Capability at Military Depots.* [GAO-09-83](#). Washington, D.C.: May 14, 2009.

*High-Risk Series: An Update.* [GAO-09-271](#). Washington, D.C.: January 2009.

*Depot Maintenance: DOD's Report to Congress on Its Public-Private Partnerships at Its Centers of Industrial and Technical Excellence (CITEs) Is Not Complete and Additional Information Would Be Useful.* [GAO-08-902R](#). Washington, D.C.: July 1, 2008.

*Defense Infrastructure: Continued Management Attention Is Needed to Support Installation Facilities and Operations.* [GAO-08-502](#). Washington, D.C.: April 24, 2008.

*Defense Infrastructure: Changes in Funding Priorities and Strategic Planning Needed to Improve the Condition of Military Facilities.* [GAO-03-274](#). Washington, D.C.: February 19, 2003.

*Defense Maintenance: Sustaining Readiness Support Capabilities Requires a Comprehensive Plan.* [GAO-01-533T](#). Washington, D.C.: March 23, 2001.

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