

GAO

Report to the Chairman, Subcommittee
on Defense, Committee on
Appropriations, House of
Representatives

July 2010

**DEFENSE
ACQUISITIONS**

**Guidance Needed on
Navy's Use of
Investment Incentives
at Private Shipyards**



GAO

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Highlights of [GAO-10-686](#), a report to the Chairman, Subcommittee on Defense, Committee on Appropriations, House of Representatives

Why GAO Did This Study

As fiscal constraints increasingly shape Navy shipbuilding plans, the pressure to increase efficiency mounts. Modernizing facilities and equipment at shipyards that build Navy ships can lead to improved efficiency, ultimately reducing the cost of constructing ships. In response to a request from the House Appropriations Subcommittee on Defense, GAO (1) identified investments in facilities and equipment at privately-owned shipyards over the last 10 years; (2) determined the Navy's role in financing facilities and equipment investments at these shipyards; and (3) evaluated how the Navy ensures investments result in expected outcomes. To address these objectives, GAO analyzed shipyard investment data over the past 10 years; interviewed shipyard, corporate, and Navy officials; and reviewed contracts, investment business cases, and other Navy and contractor documents.

What GAO Recommends

GAO recommends that the Navy develop a policy that identifies the intended goals and objectives of investment incentives, criteria for using incentives, and methods for validating outcomes. The Department of Defense concurred with this recommendation.

[View GAO-10-686 or key components.](#)
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DEFENSE ACQUISITIONS

Guidance Needed on Navy's Use of Investment Incentives at Private Shipyards

What GAO Found

Over the past 10 years, large shipyards that build Navy ships used public and corporate funds to invest over \$1.9 billion in facilities and equipment to improve efficiency, develop new shipbuilding capabilities, and maintain existing capabilities. Examples of each category include the following:

- *Improving efficiency*—General Dynamics Bath Iron Works built a new facility—the Ultra Hall—that improves efficiency by allowing shipbuilders to access work space more easily in a climate-controlled environment.
- *Developing capabilities*—Northrop Grumman Shipbuilding–Newport News built a replacement pier that allowed shipbuilders to work on two aircraft carriers simultaneously due to a Navy scheduling conflict.
- *Maintaining capabilities*—General Dynamics Electric Boat invested to repair docks in order to maintain the shipyard's ability to launch and repair submarines.

Investments at two smaller shipyards, Austal USA and Marinette Marine shipyard, were primarily to maintain and develop new capabilities as both are competing for new Navy contracts.

Over the last 10 years, the Navy expanded its use of investment incentives and has recently provided some form of investment support at all large shipyards. To incentivize facility and equipment investments, the Navy has (1) released money early from the reserve of contract funds normally held back to ensure ships are delivered according to specifications, (2) accelerated asset depreciation schedules, (3) tied a portion of the contractor's fee to investing in new facilities and equipment, and (4) adjusted the contract share-line to give the contractor more of the savings if costs decrease. The Navy also manages funds appropriated by Congress for Hurricane Katrina relief at shipyards in the Gulf Coast. Outside of Hurricane Katrina funding, the Navy has not supported investments at the two smaller shipyards. Navy officials stated that the Navy has to negotiate investment incentives with large shipyards because limited competition and instability of Navy work does not foster an environment for shipyards to invest without incentives. Shipyard officials argued that instability in Navy shipbuilding plans makes it difficult to invest without guaranteed work from the Navy and incentives are necessary to help meet corporate minimum rates of return needed to justify an investment, especially given the large dollar amounts involved with some investments.

The Navy lacks policy to help ensure it achieves goals and objectives from providing facility and equipment investment incentives at private shipyards. Absent this policy, individual program offices and contracting officers make decisions about what type of incentive to use, desired return on investments, and what kinds of investments to support. Without policy, program officers and contracting officers use different methods to validate expected outcomes and safeguard the Navy's financial support.

Contents

Letter		1
	Background	3
	Private Shipyards Made Investments to Improve, Upgrade, and Maintain Facilities and Equipment over the Last 10 Years	6
	The Navy Supports Facilities and Equipment Investments by Offering Incentives at Most Major Shipyards and Has Expanded This Support over the Last 10 Years	11
	The Navy Lacks a Policy to Ensure Investment Incentives Achieve Expected Outcomes	19
	Conclusions	25
	Recommendations for Executive Action	25
	Agency Comments and Our Evaluation	25
Appendix I	Scope and Methodology	27
Appendix II	Overview of Private Shipyards and Summary of Navy Investment Incentives	29
Appendix III	Comments from the Department of Defense	40
Appendix IV	GAO Contact and Staff Acknowledgments	42
Tables		
	Table 1: Selected Investments at Major Shipyards over the Last 10 Years and Associated Costs	10
	Table 2: Example of the Normal and Accelerated Straight-Line Depreciation Payment Schedules for a \$90 Million Asset	12
	Table 3: Types of Government Support for Shipyards and Contracts That Include Them	14
	Table 4: Expected Outcomes of Selected Projects Receiving Navy Financial Support	20
	Table 5: Types of Investment Incentive Safeguards	23

Figures

Figure 1: Navy Shipbuilders, Corporate Ownership, and Associated Product Lines	4
Figure 2: Public and Corporate Investments at Major Shipyards in Improving Efficiency, Maintaining Capabilities, and Developing Capabilities (2000-2009)	7
Figure 3: Bath Iron Works Ultra Hall	8
Figure 4: Example of Share-Line Adjustment for a Fixed-Price Incentive or Cost-Plus Incentive Contract	13
Figure 5: Major Navy-Supported Investments in Shipyard Facilities and Equipment (2000-2009)	18

Abbreviations

CAPEX	Capital Expenditures
FAR	Federal Acquisition Regulation

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United States Government Accountability Office
Washington, DC 20548

July 26, 2010

The Honorable Norman D. Dicks
Chairman
Subcommittee on Defense
Committee on Appropriations
House of Representatives

Dear Mr. Chairman:

The U.S. Navy builds the most sophisticated, technologically advanced ships in the world, but the investment required to build these ships is placing pressure on the Department of Defense's ability to afford its long-range shipbuilding plans. In its fiscal year 2011 long-range plan for shipbuilding,¹ the Chief of Naval Operations acknowledged that the Navy faces a serious planning challenge over the next several decades as it balances legacy ship retirements with the need for multimission platforms and significantly increased capabilities of current new-construction ships.

The Department of Defense's ability to afford the long-range shipbuilding plan is of importance to both the Navy and privately owned shipyards. The Navy has repeatedly reshaped and changed this long-range shipbuilding plan, placing its goal of a 313-ship fleet in jeopardy. In May 2009,² we reported on several best practices used by commercial shipbuilders to deliver ships on time and within budget that could be adopted by the Navy. Based on this work, we made several recommendations to the Secretary of Defense aimed at improving shipbuilding programs including retiring technical risk and stabilizing design at key points and moving to fixed-price contracts for the first ships built in a class. As the department works to implement some of these best practices, privately owned shipyards can also contribute to the overall affordability of ships. One way that shipyards can contribute is by making capital investments to modernize facilities and equipment to improve efficiency, which could ultimately decrease the overall cost of ships by reducing the number of labor hours needed to build each ship.

¹U.S. Navy, *Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for FY 2011* (February 2010).

²GAO, *Best Practices: High Levels of Knowledge at Key Points Differentiate Commercial Shipbuilding from Navy Shipbuilding*, [GAO-09-322](#) (Washington, D.C.: May 13, 2009).

In light of congressional interest in the Navy's ability to afford its shipbuilding plan, you asked that we review investments in facilities and equipment at privately owned shipyards.³ Specifically, we (1) identified what investments in facilities and equipment privately owned shipyards made with both public⁴ and corporate funds over the last 10 years; (2) determined the Navy's role in financing facilities and equipment investments at shipyards; and (3) evaluated how the Navy ensures that its role in facilities and equipment investments at private shipyards results in expected outcomes.

To identify facilities and equipment investments over the last 10 years, we analyzed data on all capital investments over \$1 million at the seven privately owned shipyards that build Navy ships: General Dynamics Bath Iron Works, General Dynamics NASSCO, General Dynamics Electric Boat, Northrop Grumman Shipbuilding–Gulf Coast, Northrop Grumman Shipbuilding–Newport News, Austal USA, and Marinette Marine shipyard. We supplemented our analysis of the data by interviewing officials at each shipyard to obtain an understanding of the purpose of these investments. We then categorized the investments at major shipyards, and shipyard officials confirmed our categorization of the investments. To assess the reliability of each shipyard's data, we interviewed knowledgeable shipyard officials about the data and confirmed that the data are subject to external audits. We determined that the data were sufficiently reliable for the purposes of this report. To determine the Navy's role in facilities and equipment investments at privately owned shipyards, we reviewed shipbuilding contracts, legislation making funds available for shipyards affected by Hurricane Katrina, and reports to Congress by the Office of the Assistant Secretary of the Navy for Ship Programs regarding capital investment strategies at shipyards. To supplement this analysis, we held discussions with a number of Navy offices responsible for shipbuilding programs. To evaluate how the Navy ensures that its role in facilities and equipment investments results in expected outcomes, we reviewed shipyard business-case analyses and accompanying documents for Navy-supported projects and analyzed approaches across programs to identify differences. Appendix I further discusses our scope and methodology.

³In addition to this work, GAO has ongoing work examining the material condition of public shipyards and the extent to which the Navy is investing in capital improvements at these shipyards.

⁴Public funds include federal, state, and local dollars.

We conducted this performance audit from October 2009 to July 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 audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

The shipbuilding industry in the United States is predominantly composed of three different types of shipyards: (1) privately owned shipyards that build naval vessels; (2) small privately owned shipyards that build commercial vessels; and (3) U.S. government-owned naval shipyards that conduct maintenance, repairs, and upgrades on Navy and Coast Guard vessels.⁵ As a result of consolidation, two major corporations—General Dynamics and Northrop Grumman—own most of the private shipyards that build Navy ships. General Dynamics owns Bath Iron Works in Bath, Maine; Electric Boat in Groton, Connecticut, and Quonset Point, Rhode Island; and NASSCO in San Diego, California. Northrop Grumman owns Northrop Grumman Shipbuilding–Gulf Coast with locations in Pascagoula, Mississippi, and New Orleans, Louisiana; and Northrop Grumman Shipbuilding–Newport News in Virginia. Some of these shipyards maintain additional support facilities in other locations to assist in production processes, such as Gulf Coast’s Gulfport, Mississippi facility that constructs lightweight ship components also known as composites. Along with these five major shipyards,⁶ there are two midsized shipyards that construct smaller Navy ships. Marinette Marine Corporation in Marinette, Wisconsin, is owned by the Italian shipbuilder Fincantieri, and Austal USA in Mobile, Alabama, is owned by Austal, which is headquartered in Western Australia. Figure 1 shows the location and the current product lines of each shipyard.

⁵The Navy operates four publicly owned shipyards located in Pearl Harbor, Hawaii; Puget Sound, Washington; Seavey Island, Maine; and Portsmouth, Virginia.

⁶We refer to Northrop Grumman Shipbuilding–Gulf Coast as one shipyard with two primary locations: Pascagoula, Mississippi, and New Orleans, Louisiana.

Figure 1: Navy Shipbuilders, Corporate Ownership, and Associated Product Lines



Sources: GAO (data), MapArt (map).

Several of these shipyards have specialized production capabilities that constrain and dictate the types of vessels each can build and limit opportunities for competition within the shipbuilding sector. For instance, of the five major shipyards, only Newport News is capable of building nuclear-powered aircraft carriers, and only Newport News and Electric Boat have facilities for constructing nuclear submarines. Furthermore, of the five major shipyards, only NASSCO builds commercial ships alongside Navy ships. It typically builds Navy auxiliary ships, such as the T-AKE class of dry cargo / ammunition vessels, that share similarities with commercial ships, and, according to the shipbuilder, production processes and equipment are shared between the two types of projects.

When the Navy contracts with these shipyards, it must follow provisions in the Federal Acquisition Regulation (FAR), which establishes uniform policies and procedures for acquisition by all executive agencies. In addition, the Cost Accounting Standards provide uniformity and consistency in cost accounting practices across government contracts.⁷ As a general policy under the FAR, contractors are usually required to furnish all facilities and equipment necessary to perform government contracts. However, in specific situations, including when it is clearly demonstrated that it is in the government's best interest or when government requirements cannot otherwise be met, the government may provide government property⁸ to contractors to perform a contract. For example, as part of the DDG 1000 destroyer contract, the Navy included a requirement for Bath Iron Works to purchase unique equipment necessary to produce the DDG 1000. This equipment was acquired as government property because the equipment is unique to DDG 1000 construction and the contractor is unlikely to use it to perform another contract.

When a contractor furnishes facilities and equipment to perform a contract, the government recognizes the costs associated with these items by paying depreciation and facilities capital cost of money costs allocated to the contract. Depreciation and facilities capital cost of money costs are indirect contract costs, or costs incurred for the general operation of the business that are not specifically applicable to one product line or contract.⁹ The FAR, in conjunction with the Cost Accounting Standards, includes provisions for how a contractor recovers costs such as depreciation and facilities capital cost of money as part of indirect

⁷The Cost Accounting Standards, codified at 48 C.F.R. § 9904, govern the measurement, assignment, and allocation of costs to certain government contracts. 41 U.S.C. § 422(f)(1); 48 C.F.R. § 9901.302(b). The applicability of the Cost Accounting Standards to a proposed government contract is addressed in 48 C.F.R. § 9903.201-1.

⁸Government property includes (1) government-furnished property, which is property in the possession of or acquired by the government and furnished to the contractor for performance of a contract; and (2) contractor-acquired property, which is property acquired, fabricated, or otherwise provided by the contractor for performing a contract and to which the government has title. Federal Acquisition Regulation (FAR) § 45.101.

⁹More specifically, an indirect cost means any cost not directly identified with a single, final cost objective, but identified with two or more final cost objectives or with at least one intermediate cost objective. FAR § 2.101. Depreciation costs are generally allocated as indirect costs, but may be charged directly in certain circumstances. 48 C.F.R. § 9904.409-40; Defense Contract Audit Agency, Contract Audit Manual (DCAAM 7640.1), sec. 8.409-1e.

contract costs allocated to government contracts.¹⁰ By recovering depreciation costs, the contractor recoups the cost of an asset—a facility or a piece of equipment—over the asset’s estimated useful life. Facilities capital cost of money acknowledges the opportunity cost for a contractor when it uses its funds to invest in facilities and equipment in lieu of other investments such as relatively risk-free bonds. Facilities capital cost of money is determined by multiplying the net book value of the contractor’s capital assets by a cost-of-money rate, which is a rate tied to the U.S. treasury rate.

With respect to Navy shipbuilding, a shipyard’s indirect costs, including depreciation and facilities capital cost of money, are allocated to the Navy’s shipbuilding contracts at the shipyard in accordance with the Cost Accounting Standards.¹¹ When a shipyard makes facilities and equipment investments, all ships under contract during the life of those assets are allocated a portion of the assets’ indirect costs. Therefore, if the number of ships under construction at a given time in a shipyard increases, the indirect costs per ship decrease, and if the number of ships under construction at a given time in a shipyard decreases, the indirect costs per ship increase.

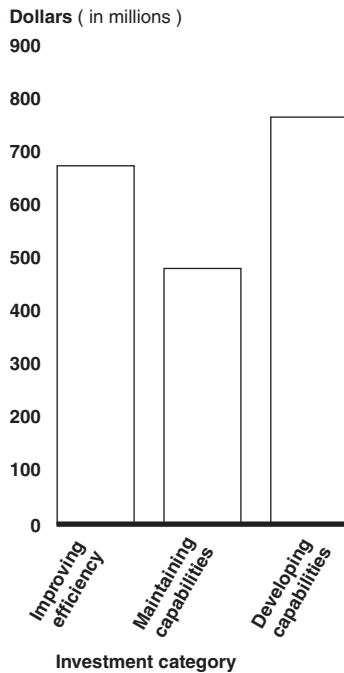
Private Shipyards Made Investments to Improve, Upgrade, and Maintain Facilities and Equipment over the Last 10 Years

Over the last 10 years, major shipyards used public and corporate funds to invest more than \$1.9 billion in facilities and equipment that improved shipbuilding efficiency, developed new capabilities, and maintained existing capabilities. Figure 2 shows the amount of money invested in each category.

¹⁰The FAR provides that depreciation and facilities capital cost of money are allowable contract costs. FAR §§ 31.205-10(b), 31.205-11(a). A cost is allowable when the cost complies with all of the following requirements: reasonableness; allocability; standards promulgated by the Cost Accounting Standards Board, if applicable, generally accepted accounting principles and practices appropriate to the circumstances; terms of the contract; and any limitations set for in subpart 31.2 of the Federal Acquisition Regulation. FAR § 31.201-2. Procedures for allocating depreciation costs and facilities capital cost of money costs to government contracts are provided in 48 C.F.R. § 9904.409 and § 9904.414, respectively.

¹¹48 C.F.R. §§ 9904.409, 9904.414.

Figure 2: Public and Corporate Investments at Major Shipyards in Improving Efficiency, Maintaining Capabilities, and Developing Capabilities (2000-2009)



Source: GAO analysis of data supplied by Bath Iron Works, Electric Boat, Gulf Coast, NASSCO, and Newport News.

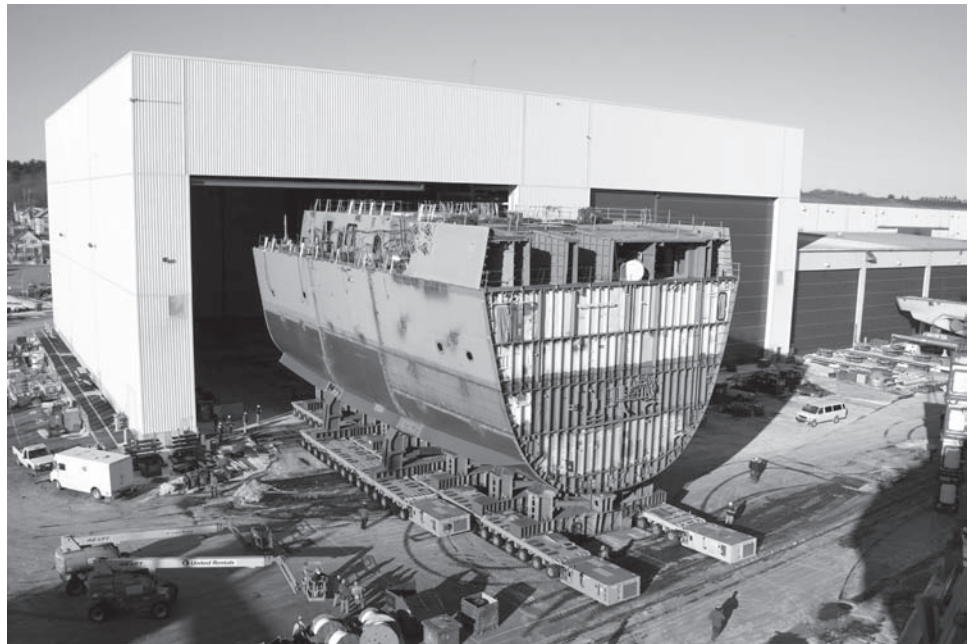
Note: Some investments could be placed in more than one category, but each investment is only included in the category that best describes its primary purpose. This figure excludes approximately \$374 million spent at Gulf Coast’s Pascagoula and Gulfport facilities to repair damage from Hurricane Katrina.

These categories are defined as follows:

- *Improving shipbuilding efficiency.* Investments in improving shipbuilding efficiency generally reduce the number of hours shipbuilders spend on a given task, and often allow shipbuilders to reorder the sequence of shipbuilding work to achieve new efficiencies. For example, investments in improving efficiency can make it possible for shipbuilders to complete more work in specially-designed workshops and modular assembly buildings, thus having to complete less of the work later on in the shipbuilding process inside the more constrained environments of almost-completed areas of the ship. To illustrate how these investments improve efficiency, shipyard officials often describe the “1-3-8 rule of thumb” of shipbuilding work: work that takes 1 hour to complete in a

workshop, takes 3 hours to complete once the steel panels have been welded into units (sometimes called modules), and 8 hours to complete after a block has been erected or after the ship has been launched.¹² For example, inside the recently-constructed Ultra Hall at Bath Iron Works, shipbuilders can now access work spaces more easily in a climate-controlled environment allowing them to finish units at a higher stage of completion before they are erected and then moved into the water. Figure 3 is a photo of a unit being moved out of the Ultra Hall.

Figure 3: Bath Iron Works Ultra Hall



Source: General Dynamics Bath Iron Works.

- *Developing new capabilities.* Shipyards make investments to develop new capabilities so that they can complete new types of tasks. In some cases, shipyards need these new capabilities to meet the Navy's technical requirements for new ships. For example, to build a newly-designed aircraft carrier with heavier metal plate requirements than those of previous aircraft carriers, Newport News invested in new facilities and

¹²Some shipbuilders identify slightly different numbers of hours for the second and third phases (block and posterection/postlaunch construction) cited in the rule. These numbers of hours tend to increase as the complexity and outfitting density of a ship increase.

equipment. These investments included building a heavy-plate facility, and upgrading a crane to make it capable of lifting heavier modules. Other shipyards also identified purchasing cranes as examples of investments to develop new capabilities.

- *Maintaining capabilities.* From time to time, shipyards make major investments to replace or repair facilities and equipment. This allows the shipyards to maintain existing capabilities for years or decades. For example, Electric Boat officials explained that its shipyard had to make a major investment in dock repair in order to maintain the shipyard's ability to launch and repair submarines.

Through investments to improve efficiencies and develop new capabilities, major shipyards modernized their facilities and equipment, thus transforming their shipbuilding processes. Some of these investments completely changed the physical layouts of shipyards. For example, Bath Iron Works completed a Land Level Transfer Facility in 2001, replacing an inclined-way transfer facility used since 1890. Bath Iron Works officials explained that with the Land Level Transfer Facility, the shipyard now has the capability to construct ships in larger, more fully outfitted units on any one of three construction lanes. The shipyard also has a floating dry dock that it can move to any of the three construction lanes to transfer the ship into the water. With this arrangement, the shipyard can better manage when a ship is ready to be moved to the water. Another example includes NASSCO's facility expansion project, which fundamentally changed the layout of the shipyard to increase production capacity, throughput, and efficiency. In particular, NASSCO added new production lanes to reduce shipyard congestion, allowing builders to move units around the shipyard with reduced bottlenecks, and added a modern blast and paint facility to improve paint process efficiency while reducing emissions. Finally, Newport News built a new pier, thus increasing its capacity for servicing and completing construction of aircraft carriers.

Table 1 shows selected investments at each major shipyard, sometimes funded through public or corporate funds, over the last 10 years. These selected investments highlight examples of projects by investment category as well as the magnitude of some investments at shipyards.

Table 1: Selected Investments at Major Shipyards over the Last 10 Years and Associated Costs

Dollars in millions

Corporation, shipyard	Investment	Investment category and description	Years	Cost
General Dynamics				
Bath Iron Works	Ultra Hall	Improving Efficiency—Allows shipbuilders to construct larger, more complete units before joining the units together during ship assembly.	2006-2008	\$226 for the three investments
Electric Boat	Long-term dock repair	Maintaining Capabilities—Extends the life of three graving docks, which are used for new-construction postdelivery work, as well as overhaul and repair.	2004-2009	
NASSCO	Facility expansion project	Improving Efficiency—Improved production efficiency by shifting painting to earlier in the building process and increasing preoutfitting capabilities for modules.	2007-2009	
Northrop Grumman				
Newport News	Pier 3	Developing Capabilities—Allowed Newport News to accelerate building a replacement pier so that it could support work on two aircraft carriers at the same time due to a Navy scheduling conflict.	2003-2007	85
Gulf Coast	Pascagoula Panel Line	Improving Efficiency—Improves steel panel quality and reduces panel distortion with more accurate machines and processes.	2005-2008	79

Source: GAO analysis of data supplied by Bath Iron Works, Electric Boat, NASSCO, Newport News, and Gulf Coast.

Two Midsized Shipyards Invested in Facilities and Equipment Mostly to Develop New Capabilities or Maintain Capabilities

Two midsized shipyards, Austal USA and Marinette Marine Corporation, started construction of two different designs of the Littoral Combat Ship for the Navy in 2005, and their investments have focused primarily on maintaining shipyard capabilities and developing new capabilities in order to compete for Navy contracts. Austal USA used both public and corporate money to complete investments of approximately \$155 million in facilities and equipment since 1999, and Austal USA officials said these investments were mostly to develop new capabilities to compete for Navy business. For example, Austal USA officials said that to develop the capacity to work on new Navy ships, their shipyard invested approximately \$85 million to build the Modular Manufacturing Facility. Shipyard officials said that with this facility, the yard constructs ships in a modular fashion to maximize productivity, efficiency, and throughput. Marinette Marine Corporation officials stated that investments over the last 10 years have largely been to maintain capabilities, but the shipyard’s new owner, Fincantieri, plans to make significant investments in the future.

The Navy Supports Facilities and Equipment Investments by Offering Incentives at Most Major Shipyards and Has Expanded This Support over the Last 10 Years

To incentivize investments, the Navy has provided support to most major shipyards with four mechanisms: early release of contract retentions, accelerated depreciation, special contract-incentive fees, and contract share-line adjustments. However, the Navy has not incentivized investments at the two mid-sized shipyards. Navy officials cited the lack of competition and instability of Navy work in shipbuilding as major reasons why the Navy needs to incentivize investments in facilities and equipment at major shipyards. At the shipyards, officials argued that they cannot secure corporate support for many investments without Navy incentives. Shipyard officials also pointed to instability in the Navy's long-range shipbuilding plans as a reason their shipyards usually do not pursue investments without Navy support. Over the last 10 years, the Navy has expanded its use of investment incentives and is now involved with providing some form of investment support at all major shipyards.

The Navy Negotiated Facilities and Equipment Incentives with Most Major Shipyards

The Navy has provided support to most major shipyards with four types of investment incentives: early release of contract retentions, accelerated depreciation, special contract-incentive fees, and share-line adjustment.

- *Early release of contract retentions.* By releasing contract retentions early, the Navy disburses money to a shipyard earlier than scheduled from a reserve normally retained to ensure ships are delivered according to specifications. For example, instead of holding 3.75 percent of the contract payments in retentions, the Navy might hold only 1.5 percent of the contract payments, releasing the remaining 2.25 percent early to a shipyard in exchange for the shipyard investing in facilities or equipment. Navy officials said that with this incentive, the Navy does not provide additional funds to the shipyard, but rather provides funds to the contractor it would receive anyway upon successful completion of the contract. Shipbuilders said the early release of contract retentions provides funds with which the shipyard can make investments that it might otherwise not be able to make.¹³ The early release of contract retentions may fund the entire capital investment or a portion of the investment.

¹³Early release of contract retentions also provides financial benefit to shipyards because of the time-value of money: money today has more value than the same amount in the future. However, major private shipyards and Navy officials did not emphasize this benefit and focused on the cash-flow benefit of the early release of retentions incentive.

- Accelerated depreciation.* When accelerating depreciation,¹⁴ the Navy pays the shipyard higher payments for depreciation of an asset over a shortened timeline than under a normal depreciation payment schedule. In exchange, the shipyard agrees to fund the investment. This benefits the shipyard because it recoups its investment faster than it would have under a normal depreciation schedule. For example, if a shipyard asset has a useful life of 9 years, the shipyard recoups a portion of the investment each year over that span. However, if an incentive agreement accelerated the depreciation schedule, the shipyard would receive larger payments earlier and over fewer years. Navy and shipbuilding officials explained that this kind of incentive can help bridge a gap between an investment's expected rate of return and the corporation's desired rate of return to help justify making an investment. See table 2 for a comparison of normal and accelerated straight-line depreciation.

Table 2: Example of the Normal and Accelerated Straight-Line Depreciation Payment Schedules for a \$90 Million Asset

Dollars in millions										
Years	1	2	3	4	5	6	7	8	9	Total
Normal Depreciation Payment	\$10	\$10	\$10	\$10	\$10	\$10	\$10	\$10	\$10	\$90
Accelerated Depreciation Payment	30	30	30	0	0	0	0	0	0	90

Source: GAO.

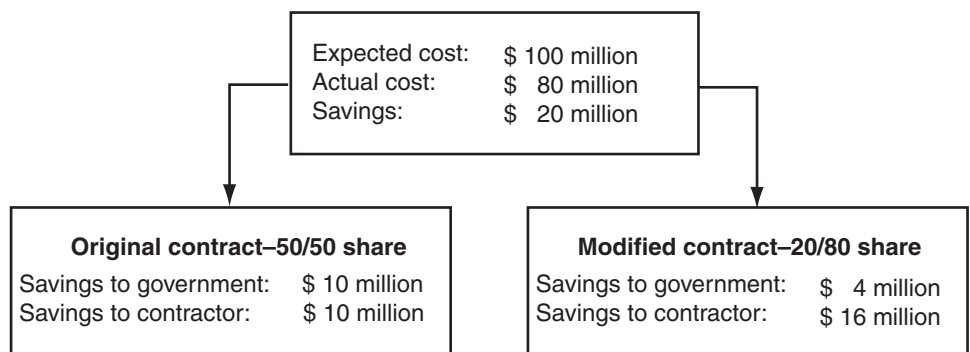
Note: This example assumes that the piece of equipment or facility does not have a salvage value at the end of its useful life.

- Special contract-incentive fee.* While incentive fees are used in contracts across the Department of Defense generally to motivate contractor efforts, the Navy also uses special contract-incentive fees to specifically encourage investments in facilities and equipment. On a contract that includes such a special incentive fee, a shipyard may earn a fee for making an investment. This special fee is available to the shipyard only if it agrees to make a Navy-approved investment. The special fee may pay for all or part of the investment. In some cases, the incentive bridges the difference between the corporation's desired rate of return and the projected return on an investment.
- Contract Share-Line Adjustment.* The contract share-line defines what share of underruns or overruns will accrue to the contractor and the Navy. By adjusting the contract share-line ratio, the Navy can incentivize a contractor to invest in facilities or equipment that will reduce costs. For

¹⁴To use this incentive, the Navy needs to secure a waiver from the Cost Accounting Standards Board.

example, during original contract negotiations for a fixed-price incentive or cost-plus incentive contract, the two parties may agree to an even share of the savings if the total negotiated or allowable cost ends up being less than the total target cost. Through a contract modification, the Navy could change the original sharing ratio so that more of the savings are given to the contractor. Under this modification, the contractor is incentivized to invest in a facility or equipment that may reduce costs so that it earns a higher fee. The Navy will benefit from these lower costs on all future contracts. See figure 4 for an example of a share line adjustment.

Figure 4: Example of Share-Line Adjustment for a Fixed-Price Incentive or Cost-Plus Incentive Contract



Source: GAO.

The Navy also manages Hurricane Katrina relief funds, which Congress appropriated for infrastructure improvements at shipyards that build Navy ships in states affected by Hurricane Katrina. This support differs from incentive programs at other shipyards because it is direct federal funding and is not tied to a specific Navy shipbuilding program. These funds were not directed to repairing specific damage from the hurricane, but can be used for a variety of projects at eligible shipyards.¹⁵

Table 3 provides an overview of investment incentive mechanisms and how the Navy has used each incentive to support investments at shipyards. Appendix II includes additional details of the investment incentives at each shipyard.

¹⁵See Emergency Supplemental Appropriations Act for Defense, The Global War on Terror, and Hurricane Recovery, 2006, Pub. L. No. 109-234, § 2203.

Table 3: Types of Government Support for Shipyards and Contracts That Include Them

Government support	Navy actions	Shipyard benefit	Supported contracts or shipyard (projects)
Investment Incentives			
Early release of contract retentions	The Navy releases money early from the reserve of contract retentions normally held back to ensure ships are delivered according to specifications.	The shipyard has more financial resources than it would otherwise have to make new investments.	<ul style="list-style-type: none"> • DDG 51 (Ultra Hall and Land Level Transfer Facility) • T-AKE (facility expansion project) • Sealift (new cranes)
Accelerated depreciation	The Navy accelerates the depreciation schedule for an asset.	The shipyard recoups its investment more quickly. This helps to bridge the gap between an investment's projected rate of return and the corporation's desired rate of return.	<ul style="list-style-type: none"> • Newport News (pier construction) • Electric Boat (dock modernization) • Virginia-class submarine (Block I projects)^a
Special contract-incentive fee	The Navy ties some of the contractor's fee to investing in facilities and equipment.	The shipyard earns a fee for making certain approved investments. The incentive can help bridge the gap between an investment's projected rate of return and the corporation's desired rate of return.	<ul style="list-style-type: none"> • DDG 51 (Ultra Hall) • CVN 21 (projects supporting the new carrier design) • Virginia-class submarine (Capital Expenditures (CAPEX) projects)
Contract share-line adjustment	The Navy adjusts the share line between itself and the contractor to give the contractor a greater share of the savings if lower costs are achieved.	The shipyard receives a greater profit if it invests in a facility or equipment that leads to cost savings.	<ul style="list-style-type: none"> • DDG 51 (Ultra Hall)
Hurricane Katrina Relief			
Federal Hurricane Katrina funds	The Navy administers funds appropriated by Congress to improve shipyard facilities and equipment in the states affected by Hurricane Katrina.	Shipyards receive money to help support projects approved by the Navy. These projects are not tied to any particular shipbuilding contract.	<ul style="list-style-type: none"> • Austal Modular Manufacturing Facility • Gulf Coast Pascagoula Panel Assembly Line • Gulf Coast Gulfport Composites Manufacturing Facility

Source: GAO analysis of Navy data.

^aThe Navy purchases the Virginia-class submarines in blocks. The first block includes four submarines, the second block includes six submarines, and the third block includes eight submarines.

The Navy has not negotiated investment incentives at the two midsized shipyards, Austal USA and Marinette Marine Corporation, which are both competing for the Littoral Combat Ship contract, though both received other forms of federal government support for facilities and equipment investments. Both shipyards received grants from the U.S. Department of

Transportation's Maritime Administration, which are available to small shipyards for capital and related improvements that foster efficiency and competitive operations. For example, Marinette Marine Corporation officials said that their shipyard received \$1.4 million to help finance investments for new cranes. In addition, Austal received almost \$34 million of federal Hurricane Katrina funds to help finance its Modular Manufacturing Facility. Both mid-sized shipyards have plans for further expansions, but as of now, neither shipyard plans to request Navy investment incentives to execute these plans.

Incentives May Encourage Major Shipyards to Make Facilities and Equipment Investments That They Might Not Make on Their Own

Navy officials, shipyard officials, and corporate officials from Northrop Grumman and General Dynamics provided different perspectives on reasons for using incentives to encourage investment in the Navy shipbuilding market.

Navy officials told us that the Navy negotiates investment incentives with major shipyards because limited competition in the market does not foster an environment that encourages shipyards to invest without incentives. For example, Newport News is the only shipyard capable of building aircraft carriers. A Navy contracting officer said that, as a result, there may be a disincentive for Newport News to invest in projects that improve efficiency. Generally speaking, at contract negotiation, the government's proposed contractor fee is based on a percentage of total estimated allowable contract costs, with the percentage reflecting various weighted risk factors. Newport News, as a sole supplier, will likely construct all future aircraft carriers but could earn a lower fee if new efficiencies reduce the total cost of construction.¹⁶ Even in cases where there is limited shipbuilding competition, such as with surface combatants, shipyards may face similar disincentives to invest. If the shipyard invests to improve efficiency, these investments will likely reduce the price of a ship and can lower future profits. However, where some competition exists, better efficiency may lead to winning a greater allocation of future work. Navy officials added that shipyards that are not confident Navy work will materialize or be funded as scheduled are reluctant to make capital investments without government incentives.

¹⁶Newport News officials told us that despite operating as the sole supplier of aircraft carriers, the shipyard does make efficiency improvements. They added that without such efficiency improvements, aircraft carriers could become prohibitively expensive for the Navy to buy.

Officials from major shipyards argued that instability in long-range Navy shipbuilding plans discourages shipyards from making investments without guaranteed Navy work. Because major shipyards generally do not perform commercial work, there are few other inducements to invest in new facilities and equipment other than Navy shipbuilding opportunities. For example, at one shipyard, an official explained that it had invested in a facility in anticipation of an upcoming contract. The Navy changed the shipbuilding program and did not award the contract, rendering this facility underutilized until receipt of another contract several years later. The official emphasized that this shipyard will never invest again in new facilities without a signed contract guaranteeing future work. The official added that to do otherwise would not be a prudent business decision.

Officials from major shipyards also argued that their shipyards need Navy incentives because many potential investments in facilities and equipment do not meet the corporation's desired rate of return. In addition, some shipyard officials stated that since they cannot secure corporate investments for many projects, they often looked first for state or federal support for new investments to help to bridge the gap between their corporation's desired rate of return and the expected rate of return of the investment.

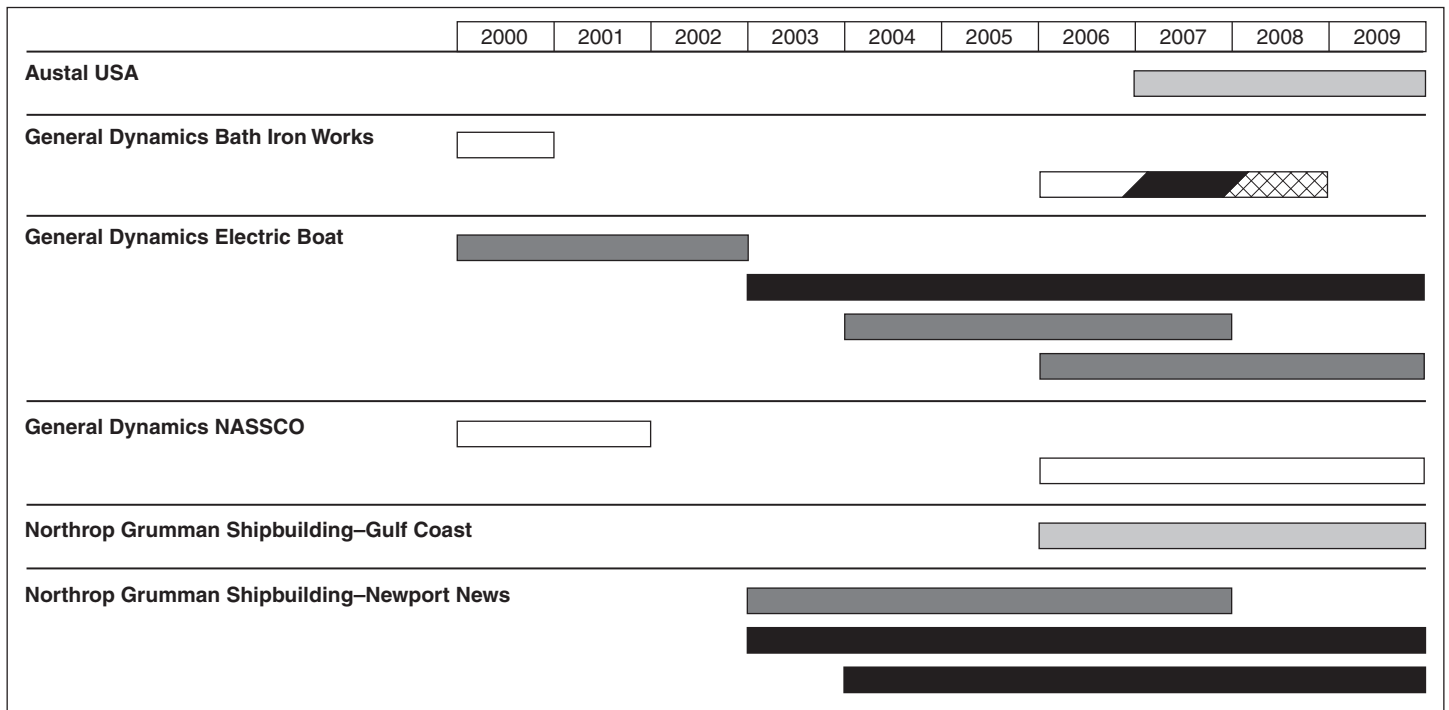
Corporate officials argued that the low rates of shipbuilding production, low shipbuilding fees relative to invested capital, and length of time it takes to build a ship sometimes mean investments take too long to generate an acceptable return, or will never generate an acceptable return. Moreover, officials stated that shipyard investments are large, sometimes exceeding \$25 million for a single investment. Furthermore, other sectors of these corporations are often better positioned than shipyards to propose investments that achieve the corporation's desired rate of return because these sectors can use less expensive investments to improve processes for high-volume products. Corporate officials agreed that corporations would generally make investments in maintaining capabilities without meeting a corporation's desired rate of return because these investments are necessary to stay in business.






The Navy Increased Support for Investments at Major Shipyards over the Past 10 Years, Generally by Expanding the Use of Investment Incentives

Over the past 10 years, the Navy has moved from providing onetime support of major capital investments to more routine support of investment spending at all five major shipyards.¹⁷ In 2000, Bath Iron Works was in the process of completing construction of its Land Level Transfer Facility, which was an investment that the Navy incentivized through early release of contract retentions. Since then, the Navy has used investment incentives to facilitate facilities and equipment investments at four of the five major shipyards, across multiple shipbuilding programs. At the fifth major shipyard, Gulf Coast, the Navy administered Hurricane Katrina recovery money to support investments. Since 2007, the Navy has actively supported investments at all major shipyards with investment incentives or Hurricane Katrina recovery funding. Figure 5 shows the Navy's expanded support to private shipyards over the last 10 years.

¹⁷The Navy has used accelerated depreciation and early release of contract retentions prior to 2000 to encourage investments at shipyards.

Figure 5: Major Navy-Supported Investments in Shipyard Facilities and Equipment (2000-2009)



-  Share-line adjustment
-  Early release of contract retentions
-  Hurricane Katrina funding
-  Accelerated depreciation
-  Special contract-incentive fee

Source: GAO analysis of Navy and contractor data.

Senior-level Navy officials stated that negotiating facilities and equipment incentives are becoming a routine part of contract negotiations, but officials expressed different opinions over which mechanisms are most useful. While the Navy has used early release of retentions and accelerated depreciation throughout the past 10 years, it has recently started to negotiate special contract-incentive fees during contract negotiation as a part of its cost-control strategy, such as during the Virginia-class submarine Block II and Block III contract negotiations. Senior-level Navy officials have differing views on whether it is better to include incentives as part of a contract or to negotiate after the Navy awards a contract. One contracting officer observed that the length of time involved in obtaining

the required Cost Accounting Standards Board waiver for accelerated depreciation may have led officials to pursue other investment incentives.

Potential exists that contractors may ask the Navy and other services to expand the scope of current incentive activities. Shipyards have already started to request incentives for a variety of projects outside of investments in facilities and equipment, and a shipyard recently requested funding assistance for lean six-sigma process-improvement training. In addition, the T-AKE contract includes a cost-reduction initiative in which the Navy paid for projects that reduced costs through design and producibility improvements, but did not require new investments in facilities or equipment. Moreover, we were told by one company that corporate divisions supporting other government-related product lines have expressed interest in these types of facilities and equipment incentives.

The Navy Lacks a Policy to Ensure Investment Incentives Achieve Expected Outcomes

The Navy does not have a policy outlining its goals and objectives for providing financial incentives to shipyards to encourage facilities and equipment investments. Without such a policy, the Navy has not identified if there is a minimum return on investment expected for this support and the kinds of investments that are in the best interest of the Navy to support. The Navy has also not considered the extent to which investment incentives affect depreciation and facilities capital cost of money at shipyards. Navy officials also lack guidance on how to validate outcomes and safeguard financial interests, thus resulting in varying approaches across programs.

The Navy Has Not Defined Objectives for Providing Investment Support to a Shipyard

In a 2008 report to Congress, the Navy recognized a need to clarify its priorities and objectives for supporting investments at shipyards, but has not yet developed this clarifying guidance. Navy officials stated that program offices and contracting officers negotiate incentives on a program-by-program basis and there is no guidance on which investment mechanism is appropriate under which circumstances. Use of special contract incentives fees is becoming common, yet some Navy officials suggested that adjustments in contract terms such as a share-line adjustment provide a strong incentive for successful program implementation.

While reducing cost is the goal of many facilities and equipment investment incentives, the Navy does not define a metric or minimum desired level for these reductions in cost. This results in differences in

expected outcomes across investment mechanisms. Table 4 highlights variations in the types of expected outcomes with examples by shipyard, investment, and investment mechanism. Given the variation in the expected outcomes, it is difficult to ascertain if the Navy has a minimum return it expects to receive by providing financial support or if just any return is sufficient.

Table 4: Expected Outcomes of Selected Projects Receiving Navy Financial Support

Shipyard	Investment	Investment mechanism	Expected outcome
Bath Iron Works	Ultra Hall	Early release of contract retentions, special contract-incentive fee, and share-line adjustment	Labor hour reduction over two ships
Electric Boat	Automation in light fabrication	Virginia-class submarine Block II—special contract-incentive fee	Labor hour savings between 2006 and 2023
NASSCO	Facility expansion plan	Early release of contract retentions	Labor hour savings, overhead and volume savings, and escalation savings over several ships
Northrop Grumman Shipbuilding—Gulf Coast	Ingalls operations panel assembly line	Hurricane Katrina relief funds	Cost savings per panel
Northrop Grumman Shipbuilding—Newport News	900-ton crane upgrade	CVN 21 special contract-incentive fee	Cost savings between 2008 and 2013

Source: GAO analysis of Navy and contractor documents.

Moreover, our review of the Virginia-class submarine Block II capital expenditures (CAPEX) clause showed that the Navy lacks a desired level of return within this investment mechanism. Navy officials responsible for approving business cases for the incentive stated that contractors are only required to demonstrate that the investment will result in savings on the Block II submarines and long-term savings to the government. Officials explained that their methodology is guided by the following contract language:

the Contractor shall be eligible to receive a special incentive based upon the Contractor and/or Major Subcontractor Newport News Shipbuilding investing in such projects that result in savings to the Government for the submarines under this contract and long term savings to the Government for the Virginia Class submarine program.

As a result of this contract language, the contractors are not required to include return on investment calculations, calculate the net present value of savings on future submarines, or consider the share-line ratio to calculate actual savings to the government. Reviewing officials stated that even when contractors included return-on-investment calculations in the

business cases, the officials did not review it because such calculations were not required in the contract language. The contracting officer responsible for managing Virginia-class submarine CAPEX stated that this contract language is too vague concerning when to approve or disapprove a project based on estimated savings, and if a similar incentive is used again, the contract should include criteria for when to approve or disapprove a project. To illustrate, the contracting officer stated that a contractor submitted a business case under Block II CAPEX for a project expected to cost \$4 million with \$10,000 in expected savings on Block II submarines and additional saving accruing on future submarines beyond Block II. The contracting officer stated that the Navy did not approve the project because the expected savings on Block II were so low, but such a decision was difficult to support based on the contract language.¹⁸

Individual program offices and contracting officers also make decisions about which types of investments to pursue, without any policy from the Navy about the kinds of investments that are in its best interest. Most of the investments the Navy supported fall into the category of improving efficiency at the shipyards. Some of the more recent investments, however, could also be considered as maintaining or developing capabilities at the shipyards. It is unclear whether or not the Navy has determined that these investments are in fact in its best interest. For example, according to officials, the Virginia-class submarine Block II and Block III clauses do not prohibit approving maintenance projects as long as these projects generate cost savings. In 2009, the Navy paid a special contract-incentive fee to Electric Boat to refurbish equipment past its normal service life in order to prevent major failures that would result in an injury or equipment damage and affect production schedules. In a similar manner, Newport News submitted a business case to receive a special contract-incentive fee to support repairs to its foundry, stating that near-term investment was necessary because the average age of most of the equipment is well past its average useful service life and at a high risk of mechanical failure. The Navy did not approve this business case under the Block II special contract incentive fee because Newport News was unable to demonstrate savings on the Block II submarines, a stipulation in the contract language. However, the Navy encouraged the shipyard to resubmit the proposal if it could demonstrate savings on future submarine construction. Such investments to maintain capabilities are likely to

¹⁸Shipyard officials responsible for submitting this business case stated that they have since reevaluated the project and resubmitted a new business case for the Navy's review.

generate some cost savings and may better position the shipyards to increase submarine production rates, but some officials indicated that such investments should actually be contractor responsibilities.

The Navy Has Not Considered the Extent to Which Investment Incentives Affect Indirect Costs at Shipyards

The Navy also lacks policy on how to determine an incentivized investment's effect on indirect costs to the Navy. As the Navy is incentivizing investments up front, it is unclear whether contractors should be able to recover indirect costs associated with these assets through depreciation and facilities capital cost of money. While the Navy did not allow the contractor to recover depreciation and facilities capital cost of money for investments supported with Hurricane Katrina funds, some agreements explicitly provide that the contractor can recover costs for incentivized facilities and equipment investments. However, Defense Contract Audit Agency officials questioned a facilities capital cost of money claim that one shipyard included in its indirect costs because the Navy provided an incentive to construct the facility. Nonetheless, officials concluded that the contractor could recover these costs from the Navy because it was unclear in the terms of the contract, and neither the Federal Acquisition Regulation nor the Cost Accounting Standards address recovery of facilities capital cost of money for facilities receiving incentive support. Defense Contract Audit Agency officials stated that they believe it is unfair that contractors can recover facilities capital cost of money costs on incentivized facilities and this issue needs to be reevaluated if the Navy continues to incentivize investments.

In instances where the incentive agreement explicitly states that the contractor can recover these long-term costs, officials evaluating business cases stated that they do not always consider these long-term costs when comparing the cost of the project with potential savings. Specifically, Navy officials stated that they did not consider the effect of depreciation when evaluating Virginia-class submarine Block II CAPEX projects.

Differences Exist for Validating Expected Outcomes and Safeguarding Financial Interest If Expected Outcome Is Not Achieved

In the absence of Navy guidance, approaches vary by investment incentive for validating whether or not a project achieves expected outcomes and safeguarding Navy financial interest if a project does not achieve expected outcomes. Some investment incentives require validation of anticipated savings whereas others only require a validation of project construction milestones. For example, officials described a lengthy review of savings validation associated with the first Virginia-class submarine CAPEX Block II project, but later indicated the process has evolved over time and other validations have been more straightforward. According to Navy officials

managing the Virginia-class CAPEX incentive, the contract provides little guidance on how to validate outcomes, so program officials developed the current validation process after the contract was signed. However, the CVN 21 program office did not validate anticipated savings after investments were complete, but validated investments based on construction milestones. Because the Navy negotiated a lower target cost for the future carrier, Navy officials stated that it is not necessary to validate the savings associated with these projects. These officials added that it would be difficult to calculate an accurate baseline against which to compare labor hours with and without the new investments because the new carrier had never been constructed.

In the absence of a Navy policy, program and contracting officials also negotiate various methods to safeguard the Navy’s financial interest in the event that expected outcomes for the investment incentive are not achieved. The range of methods is seen in table 5.

Table 5: Types of Investment Incentive Safeguards

Safeguard measure	Navy action	Benefit to the Navy	Example of incentive mechanism using safeguard
Recoupment	The Navy takes back its financial support if the contractor does not meet predetermined construction milestones or anticipated savings thresholds.	The Navy can receive returned funds from the contractor if the project is not executed properly. This safeguard encourages the contractor to complete the investment in accordance with the terms of the investment mechanism.	Virginia-class submarine special contract-incentive fee (CAPEX)—The Navy can recoup the incentive if the project does not meet the proposed schedule or generate the anticipated cost savings. The contracts state that all or any portion of the incentive can be recouped, but do not detail how the percentage would be determined. CVN 21 special contract-incentive fee—The Navy can recoup the special incentive fee associated with these investments in the event that the contractor fails to substantially complete a facility when it would be needed to support CVN 21’s construction schedule.
Modified contract terms	The Navy renegotiates terms on current contracts.	This safeguard encourages the contractor to achieve the outcomes expected from the investment and to protect the Navy’s interest if the contractor did not achieve these outcomes.	Ultra Hall—The Navy and the contractor negotiated changes to target price and other elements of the incentive fee structure for two DDG 51 destroyers.

Safeguard measure	Navy action	Benefit to the Navy	Example of incentive mechanism using safeguard
Savings included in future contract	The Navy includes savings associated with incentivized projects in subsequent contracts.	This safeguard allows the Navy to further incentivize the contractor's achievement of anticipated savings and ensure its receipt of savings regardless of investment completion.	<p>CVN 21 special contract-incentive fee—The contractor agreed to reflect savings for investments made under the CVN 78 construction preparation contract in the construction proposal.</p> <p>Ultra Hall—The contractor agreed to include savings associated with the Ultra Hall in its proposed costs for future contracts.</p> <p>Virginia-class submarine CAPEX—Navy officials stated that all savings for investments made under Block II CAPEX were included in the Block III contract.</p>
Staggered disbursement	The Navy disburses the incentive to the contractor in increments triggered by construction progress or other milestones.	Staggered disbursement allows the Navy to encourage progression toward expected outcomes before it provides the entire incentive amount to the contractor, thus reducing the project's risk.	<p>Federal Hurricane Katrina funds—The Navy pays a defined portion of the project's cost after the contractor demonstrates that it has completed specified construction tasks.</p> <p>Virginia-class submarine CAPEX—The contractor receives half of the incentive amount for Virginia-class submarine Block II CAPEX projects when the Navy approves the project and the remaining amount when the contractor implements the project.</p>

Source: GAO analysis of Navy and contractor documents.

In addition to variation in the types of safeguards used across incentive mechanisms, the Navy has used the same investment mechanism—early release of contract retentions—for two different programs, but the safeguarding mechanism differed. The Navy modified the terms of the DDG 51 contract by negotiating changes to target price as a safeguard when it agreed to support the Ultra Hall investment through early release of contract retentions and payment of a special contract-incentive fee. In comparison, when the Navy agreed to an early release of contract retentions to support the facilities expansion project at NASSCO, program officials stated that the Navy did not renegotiate the terms of the T-AKE contract. In both instances, officials stated that the maturity of the DDG 51 and T-AKE programs were factors in deciding to release contract retentions early; the Navy awarded Bath Iron Works the first DDG 51 destroyer contract in 1985 and NASSCO started construction of the T-AKE class in 2003.

Conclusions

Over the past 10 years, the Navy has expanded the use of investment incentives to encourage shipyards to make investments that may reduce costs of future ships. In a 2008 report to Congress, the Navy acknowledged a need to clarify its priorities and objectives for providing investment incentives to shipyards. However, the Navy has yet to do this, and the absence of policy leaves the overall goals and intended outcomes of this support unclear. Decisions about when a particular incentive should be chosen, what returns are acceptable across programs, and what types of investments the Navy should support are made on a case-by-case basis without guidance. Also, it is unclear whether or not contractors should be able to claim recovery for certain indirect costs related to assets supported by incentive mechanisms. Further, given the absence of policy, inconsistencies exist regarding the importance attached to validating outcomes and how to safeguard the Navy's financial support in the event that the expected outcome is not achieved.

Recommendations for Executive Action

We recommend that the Secretary of Defense direct the Secretary of the Navy to develop a policy that identifies the intended goals and objectives of investment incentives, criteria for using incentives, and methods for validating outcomes.

Agency Comments and Our Evaluation

The Department of Defense agreed with our recommendation to develop a policy that identifies the intended goals and objectives of investment incentives, criteria for using incentives, and methods for validating outcomes. The department stated that the Navy intends to include guidance for program managers and contracting officers in a Navy best-practices guidebook.

The department's written comments can be found in appendix III of this report. The department also provided technical comments, which were incorporated into the report as appropriate.

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>.

If you or your staff have any questions about this report, please contact me at (202) 512-4841 or martinb@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page

of this report. GAO staff who made major contributions to this report are listed in appendix IV.

Sincerely yours,

A handwritten signature in black ink that reads "Belva M. Martin". The signature is written in a cursive style with a large initial 'B' and 'M'.

Belva Martin
Acting Director
Acquisition and Sourcing Management

Appendix I: Scope and Methodology

To identify facilities and equipment investments over the last 10 years, we obtained and analyzed data on all capital investments over \$1 million at all major, privately owned shipyards including General Dynamics Bath Iron Works, General Dynamics NASSCO, General Dynamics Electric Boat, Northrop Grumman Shipbuilding–Gulf Coast, Northrop Grumman Shipbuilding–Newport News, and two smaller, privately owned shipyards, Austal USA and Marinette Marine shipyard. We supplemented our analysis of the data by interviewing officials at each shipyard to obtain an understanding of the purpose of these investments. We then categorized the investments at major shipyards into three groups, and shipyard officials confirmed our categorization of the investments. In our analysis we excluded some investments such as investments that exclusively supported nuclear aircraft carrier and submarine refuelings, modernizations, and service life extensions programs. We also excluded information-technology investments and annual operating capital. To assess the reliability of each shipyard’s data, we interviewed knowledgeable shipyard officials about the data and confirmed that the data are subject to external audits. We determined that the data were sufficiently reliable for the purposes of this report. We also interviewed officials at each shipyard’s Supervisor of Shipbuilding, Conversion, and Repair to understand investments over the past 10 years and how those investments may have affected each shipyard’s work flow and processes. We also interviewed relevant Defense Contract Audit Agency officials at major private shipyards.

To determine the role the Navy had in facilities and equipment investments at privately owned shipyards, we reviewed shipbuilding contracts, legislation making funds available for shipyards affected by Hurricane Katrina, and Deputy Assistant Secretary of the Navy for Ship Programs reports to Congress regarding capital-investment strategies at shipyards. To assist with identifying when the Navy has provided support for facilities and equipment investments, we held discussions with: the CVN 21 program office; DDG 51 program office; Joint High Speed Vessel program office; T-AKE program office; Virginia-class submarine program office; Program Executive Office, Ships; Supervisor of Shipbuilding, Conversion, and Repair (Bath, Groton, Gulf Coast, and Newport News); and Naval Sea Systems Command–Contracts. After identifying which mechanisms the Navy uses to provide support to shipyards for facilities and equipment investments and when these investments were used, we analyzed the data to determine any trends over the past 10 years. To supplement this analysis, we met with officials from the Office of the Deputy Assistant Secretary of the Navy–Ships, the Office of the Deputy Assistant Secretary of the Navy–Acquisition and Logistics Management,

and the Office of the Secretary of Defense–Industrial Policy to understand how the Navy’s role in investment support at shipyards has evolved over the past 10 years. We also met with officials from General Dynamics Marine Systems and Northrop Grumman Shipbuilding to understand their corporate processes for when to make facilities and equipment investments and how the Navy’s support is considered during that process.

To evaluate how the Navy ensures its role in facilities and equipment investments results in expected outcomes, we reviewed shipyard business-case analyses and accompanying documents for Navy-supported projects and analyzed approaches across programs to identify differences and presence of formal validation of attainment of expected benefits. We supplemented this analysis with interviews of officials responsible for managing investment incentives including the CVN 21 program office; T-AKE program office; Virginia-class submarine program office; Program Executive Office, Ships; Supervisor of Shipbuilding, Conversion, and Repair (Bath, Groton, Gulf Coast, and Newport News).

We conducted this performance audit from October 2009 to July 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 audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Overview of Private Shipyards and Summary of Navy Investment Incentives

Austal USA

Corporation and Location	Austal is an Australian-based company with a U.S. location in Mobile, Alabama.
Year Acquired (Corporation)	Not applicable
Product Line	Smaller surface ships
Navy Program Overview	Austal USA is the Navy's prime contractor for the Joint High Speed Vessel and teamed with General Dynamics Bath Iron Works for construction of the Littoral Combat Ship. The Navy has contracted with Austal USA for three Joint High Speed Vessels and an option for seven more. The Navy has also contracted with General Dynamics Bath Iron Works for two Littoral Combat Ships built at Austal USA shipyard. Austal is currently competing as the prime contractor for the next 10 Littoral Combat Ships.
Navy Investment Incentives over the Past 10 Years	Hurricane Katrina relief funds
Description of Investment Incentives	In June 2006, Congress enacted the Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006, which included funding for infrastructure improvements at Gulf Coast shipyards that had existing Navy shipbuilding contracts and were damaged by Hurricane Katrina. Following this legislation, the Assistant Secretary of the Navy for Research, Development and Acquisition issued a memorandum that outlined goals for competitively awarding the funding, provided general instructions for how contractors should develop business cases supporting funding requests, and established a panel to review contractor proposals for funding. The panel awarded Austal USA a contract supporting construction of the Modular Manufacturing Facility. Disbursement of funds from the Navy to Austal USA was based upon completion of predetermined construction milestones.

Bath Iron Works

Corporation and Location	Bath Iron Works operates facilities principally in Bath, Maine, and has support facilities in Brunswick, Maine.
Year Acquired (Corporation)	1995 (General Dynamics)
Product Line	Surface combatants
Navy Program Overview	Bath Iron Works builds surface combatants including DDG 51 and DDG 1000.
Navy Investment Incentives over the Past 10 Years	Early release of retentions, share-line adjustment, special contract-incentive fees
Description of Investment Incentives	<p>The Navy used early release of retentions to help support the Bath Iron Works investments in a Land Level Transfer Facility.</p> <p>The Navy supported Ultra Hall construction by modifying the terms of the DDG 51 contract and adding three incentive mechanisms. As part of the incentives, the Navy also negotiated a reduced maximum price for each DDG 51 ship.</p> <ul style="list-style-type: none">• By releasing retentions early, corporate and shipyard officials stated that the Navy helped Bath Iron Works, and its corporate owner General Dynamics, avoid negative cash flows during construction, a primary objective of the shipyard and corporate owner.• The addition of a special contract-incentive fee gave Bath Iron Works an opportunity to earn additional profit by investing in the facility.• By changing the incentive fee structure, the Navy also gave Bath Iron Works an incentive to achieve savings.

Electric Boat

Corporation and Location	Electric Boat operates two facilities in Groton, Connecticut, and Quonset Point, Rhode Island.
Year Acquired (Corporation)	1952 (General Dynamics) ¹
Product Line	Submarines
Navy Program Overview	General Dynamics Electric Boat is the Navy's prime contractor for Virginia-class submarines. Through a teaming agreement, Electric Boat and Northrop Grumman Shipbuilding–Newport News work together to build the submarines. Each contractor is responsible for building designated sections and modules, and the contractors alternate final assembly, outfitting, and delivery. To date, the Navy has contracted to purchase submarines in three blocks. Block I includes four submarines, Block II includes six submarines, and Block III includes eight submarines.
Navy Investment Incentives over the Past 10 Years	Accelerated depreciation, special contract-incentive fees
Description of Investment Incentives	<p>Accelerated Depreciation</p> <p>In 2000, the Navy agreed to accelerate depreciation on five investments over the course of the Virginia-class Block I contract.</p> <p>In 2004, Electric Boat initiated funding long-term repair of three graving docks. The Navy agreed to accelerate depreciation of the long-term repairs to 16 years rather than over the docks' entire useful life, expected to be over 30 years.</p> <p>Special Contract-Incentive Fees</p> <p>The Virginia-class submarine Block II and Block III contracts include special incentives to reward the contractor if it develops more efficient and cost-effective practices that contribute to the production of more affordable submarines. On both contracts, the contractor can claim a</p>

¹General Dynamics was formed by a 1952 combination of Electric Boat, Canadair Ltd. and other companies.

special incentive for investing in facilities and process-improvement projects. Since the submarines are built at both Electric Boat and Newport News, both contractors can claim the incentive under these contracts.

Under the Block II contract, the contractor submits a business-case analysis to the Supervisor of Shipbuilding, Groton. Within 30 days after approval by the Supervisor of Shipbuilding and start of the project, the Navy pays the contractor a special incentive not to exceed 50 percent of the estimated investment cost. After the contractor successfully implements the project as defined in the business-case analysis, the Navy pays the contractor another special incentive not to exceed 50 percent of the original estimated investment cost. The sum of the two incentive payments cannot exceed 100 percent of the approved business-case analysis estimated investment cost.

During the Block III contract negotiations, Newport News and Electric Boat proposed facilities and equipment investments, and savings from these investments were included in the target cost. For these investments, the contractor submits a business case to claim a special incentive fee tied to the first four submarines for the amount necessary to achieve the documented corporate minimum return on investment. To claim a special incentive fee for the last four submarines on the Block III contract, the process mirrors the process under Block II. For these projects, the incentive amount can equal up to 100 percent of the approved business-case analysis estimated investment cost.

Marinette Marine Corporation

Corporation and Location	Marinette Marine Corporation is located in Marinette, Wisconsin.
Year Acquired (Corporation)	2008 (Fincantieri)
Product Line	Smaller surface ships
Navy Program Overview	The Navy has contracted with Lockheed Martin for two Littoral Combat Ships built at Marinette Marine shipyard. The Navy is currently holding a competition for remaining Littoral Combat Ships.
Navy Investment Incentives over the Past 10 Years	None

NASSCO

Corporation and Location	NASSCO operates in San Diego, California.
Year Acquired (Corporation)	1998 (General Dynamics)
Product Line	Auxiliary ships
Navy Program Overview	NASSCO builds auxiliary ships including the T-AKE for Navy sealift operations. In recent history, NASSCO's work has been divided approximately as follows: 60 percent new construction for the Navy, 20 percent repair work, and 20 percent new commercial construction. NASSCO is the only major private shipyard to perform commercial work along with Navy shipbuilding.
Navy Investment Incentives over the Past 10 Years	Early release of contract retentions
Description of Investment Incentives	The Navy used early release of contract retentions to incentivize investments at NASSCO three times over the last 10 years. In 2001, the Navy released retentions early to support the acquisition of new cranes. In 2006 and 2008, the Navy released retentions early to support investments at NASSCO, including some support for investments that were part of NASSCO's facility expansion project. These investments included projects to modernize the preoutfitting facilities such as expanding the M-Lane, improving stage of construction 4 activities, and constructing a new blast and paint facility. By releasing retentions early, the Navy helped NASSCO maintain a positive cash flow while the shipyard made new investments, NASSCO officials said.

Northrop Grumman Shipbuilding–Gulf Coast

Corporation and Location	Northrop Grumman Shipbuilding–Gulf Coast operates in Pascagoula, Mississippi, and New Orleans, Louisiana, with other support facilities.
Year Acquired (Corporation)	2001 (Northrop Grumman)
Product Line	Surface combatants, amphibious assault ships, auxiliary ships, and Coast Guard patrol boats (cutters)
Navy Program Overview	Northrop Grumman Shipbuilding–Gulf Coast builds DDG 51 surface combatants and the hangar, rear Peripheral Vertical Launching System, and the composite deckhouse for DDG 1000 surface combatants. It is also the prime contractor for the LPD 17 amphibious transport ship and the LHA 6 amphibious assault ship.
Navy Investment Incentives over the Past 10 Years	Hurricane Katrina relief funds
Description of Investment Incentives	In June 2006, Congress enacted the Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006, which included funding for infrastructure improvements at Gulf Coast shipyards that had existing Navy shipbuilding contracts and were damaged by Hurricane Katrina. Following this legislation, the Assistant Secretary of the Navy for Research, Development and Acquisition issued a memorandum that outlined goals for awarding the funding, provided general instructions for how contractors should develop business cases supporting funding requests, and established a panel to review contractor proposals for funding. Northrop Grumman Shipbuilding–Gulf Coast submitted several proposals for review and the panel awarded this shipyard one contract supporting two separate investments, with an option for a third. The contract includes funding to support purchasing equipment for a panel line at the Pascagoula, Mississippi, shipyard, an option for funding to support equipment for a panel line at the New Orleans, Louisiana, shipyard, and special tooling for the composite manufacturing facility in Gulfport, Mississippi. Disbursement of funds from the Navy to Northrop Grumman Shipbuilding–Gulf Coast is based upon completion of predetermined

construction milestones. To date, the Navy has expended 100 percent of funding on the contract for the Pascagoula panel line, 0 percent of funding on the contract for the Avondale panel line, and approximately 90 percent of funding on the contract for the composite manufacturing facility. Navy officials stated that funding for the Avondale panel line is contingent upon Northrop Grumman Shipbuilding–Gulf Coast demonstrating returns on the panel line in Pascagoula, Mississippi.

Northrop Grumman Shipbuilding– Newport News

Corporation and Location	Northrop Grumman Shipbuilding–Newport News operates in Newport News, Virginia.
Year Acquired (Corporation)	2001 (Northrop Grumman)
Product Line	Aircraft carriers, submarines
Navy Program Overview	<p>Northrop Grumman Shipbuilding–Newport News is the Navy’s prime contractor for aircraft carriers and refueling and complex overhauls. Newport News is currently constructing CVN 78, the lead ship of the new CVN 21 class of nuclear-powered aircraft carriers.</p> <p>Through a teaming agreement, Northrop Grumman Shipbuilding–Newport News also works with General Dynamics Electric Boat to build the Virginia-class submarines. Each contractor is responsible for building designated sections and modules, and the contractors alternate final assembly, outfitting, and delivery. To date, the Navy has contracted to purchase submarines in three blocks. Block I includes four submarines, Block II includes six submarines, and Block III includes eight submarines.</p>
Navy Investment Incentives Over the Past 10 Years	Accelerated depreciation, special contract-incentive fees
Description of Investment Incentives	<p>Accelerated Depreciation</p> <p>In 2003, the Navy and Newport News signed a memorandum of agreement to accelerate depreciation of a new pier, known as Pier 3. Before construction of Pier 3, Newport News had one pier where it could perform work on aircraft carriers. This pier was in use for almost 60 years and Newport News was planning to replace it in 2012. Due to a Navy scheduling conflict, Newport News was going to have two aircraft carriers that needed to be at this pier at the same time in fiscal year 2007. To address the scheduling conflict, the Navy agreed to accelerate depreciation of the new pier if Newport News accelerated its planned timeline to construct the pier. Under this agreement, Newport News is</p>

allowed to depreciate the pier over 7 years rather than over the estimated useful life of the pier, expected to be 40 years.

Special Contract-Incentive Fees

Virginia-class submarine. The Virginia-class submarine Block II and Block III contracts include special incentives to reward the contractor if it develops more efficient and cost-effective practices that contribute to the production of more affordable submarines. On both contracts, the contractor can claim a special incentive for investing in facilities and process-improvement projects. Since the submarines are built at both Electric Boat and Newport News, both contractors can claim the incentive under these contracts.

Under the Block II contract, the contractor submits a business-case analysis to the Supervisor of Shipbuilding, Groton. Within 30 days after approval by the Supervisor of Shipbuilding and start of the project, the Navy pays the contractor a special incentive not to exceed 50 percent of the estimated investment cost. After the contractor successfully implements the project as defined in the business-case analysis, the Navy pays the contractor another special incentive not to exceed 50 percent of the original estimated investment cost. The sum of the two incentive payments cannot exceed 100 percent of the approved business-case analysis estimated investment cost.

During the Block III contract negotiations, Newport News and Electric Boat proposed facilities and equipment investments, and savings from these investments were included in the target cost of the contract. For these investments, the contractor submits a business case to claim a special incentive fee tied to the first four submarines for the amount necessary to achieve the documented corporate minimum return on investment. To claim a special incentive fee for the last four submarines on the Block III contract, the process mirrors the process under Block II. For these projects, the incentive amount can equal up to 100 percent of the approved business-case analysis estimated investment cost.

CVN 78 Construction-Preparation Contract. The CVN 78 construction-preparation contract includes a special contract-incentive fee available to Newport News if it invests in 10 facilities identified during contract negotiations as investments that would contribute to reducing the construction cost of CVN 21 aircraft carriers. The special contract incentive fee for each facility is a portion of the total cost of the facility. The Navy pays the special incentive fee for each facility based upon

**Appendix II: Overview of Private Shipyards
and Summary of Navy Investment Incentives**

Newport News's progress constructing the facility. Newport News agreed to include savings from these facilities in the construction proposal.

Appendix III: Comments from the Department of Defense

Note: Page numbers in the draft report may differ from those in this report.



ACQUISITION

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
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WASHINGTON, DC 20301-3015

Mrs. Belva Martin
Acting Director, Acquisition and Sourcing Management
U.S. Government Accountability Office
441 G Street, N.W.
Washington, DC 20548

July 9, 2010

Dear Mrs. Martin,

This is the Department of Defense (DoD) response to the GAO draft report, GAO-10-686, "DEFENSE ACQUISITIONS: Guidance Needed on Navy's Use of Investment Incentives at Private Shipyards" dated June 8, 2010, (GAO Code 120846). The Department concurs with the recommendation in the report and the written response is attached.

The Department appreciates the opportunity to comment on the draft report. For further questions concerning this report, please contact CDR Brad Busch, Shipbuilding Sector Analyst, Industrial Policy, 571-256-2975.

Sincerely,

A handwritten signature in black ink, appearing to read "Brett Lambert", is written over a horizontal line.

Brett Lambert
Director
Industrial Policy

Enclosures:
As stated

GAO DRAFT REPORT DATED JUNE 8, 2010
GAO-10-686 (GAO CODE 120846)

“DEFENSE ACQUISITIONS: GUIDANCE NEEDED ON NAVY’S USE OF
INVESTMENT INCENTIVES AT PRIVATE SHIPYARDS”

DEPARTMENT OF DEFENSE COMMENTS
TO THE GAO RECOMMENDATIONS

RECOMMENDATION 1: The GAO recommends that the Secretary of Defense direct the Navy to develop a policy that identifies the intended goals and objectives of investment incentives, criteria for using incentives, and methods for validating outcomes. (See page 31/GAO Draft Report.)

DoD RESPONSE: The Department concurs with the GAO’s recommendation. The Navy agrees to issue guidance on the intended goals and objectives of investment incentives, criteria for using incentives, and methods for validating outcomes. When shipyard investment is considered, it is done as part of a holistic approach to negotiating a contract. Recognizing that there is no one-size-fits-all approach for contract incentives, the Navy’s guidance will provide direction to the program managers and contracting officers while preserving their flexibility to tailor investment incentives appropriate to their particular program needs. The Navy intends to include the guidance in a Navy best practices guidebook.

Enclosure (1)

Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

Belva Martin, (202) 512-4841 or martinb@gao.gov

Staff Acknowledgments

In addition to the contact named above, Karen Zuckerstein (Assistant Director), Matthew Butler, Kristine Hassinger, Michelle Liberatore, Aron Szapiro, and Molly Traci made major contributions to this report.

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