



U.S. House of Representatives
Committee on Transportation and Infrastructure

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SUMMARY OF SUBJECT MATTER

TO: Members of the Committee on Transportation and Infrastructure

FROM: Committee on Transportation and Infrastructure Oversight and Investigations Staff

SUBJECT: Hearing on Compliance with Requirements of the Coast Guard's Deepwater Contract

PURPOSE OF HEARING

The Committee on Transportation and Infrastructure will meet on Wednesday, April 18, 2007, at 2:00 p.m. to review evidence developed through a staff investigation of the \$24 billion Deepwater acquisitions program. The staff investigation examined in depth the contract management and decision-making processes within the Coast Guard (CG) and its contractor partner, Integrated Coast Guard Systems (ICGS) (comprised of Lockheed Martin Corporation and Northrop Grumman Corporation). The Committee will hear from representatives from the above-named ICGS partners, as well as independent technical experts regarding the extent to which the requirements of the Deepwater contract have not been met – particularly on the lengthening of the 110-foot patrol boats to 123 feet.

BACKGROUND

Executive Summary

It is now well-documented that the 123 program was critically flawed in significant areas of initial design, contract execution, construction, and testing. Independent reviews and Congressional hearings have established that very rigid adherence to an aggressive schedule, which was commonly referred to within the CG as “ruthless execution”, generated bad decisions, design compromises, equipage of ships with below-standard materials, and rushed deliveries that led to the production and acceptance of eight unusable vessels, all of which have been taken out of service. An analysis is underway by the CG on how the equipment on these boats might be salvaged and reused on other vessels.

What has not been previously documented is the extent to which most of the more serious flaws were well-known within both the CG and ICGS early in the Deepwater program, and the extent to which these issues were raised by key personnel within the program to the highest levels of contractor management. The warnings were consistently rejected by senior contractor management, and the program continued to progress. Equipment that did not meet contract specifications appears to have been knowingly installed, possibly as part of an effort to keep costs down. For example, documents uncovered in this investigation revealed that the Command, Control, Communication, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) contractor did not appear to be following its own guidelines for installation of these systems and did not appear to be following approved TEMPEST certification standards¹ as set forth by the National Security Agency (NSA) for transmission of classified information. It is clear that all eight 123s were initially delivered without being TEMPEST certified.

In addition, the CG was warned of the design flaws by the U.S. Navy long before the design that guided extension of the 110-foot patrol boat to 123 feet was finalized. Offers by the Navy to assist in the evaluation of the initial conversion design or in the investigation and resolution of cracks that occurred in the ships after they were converted were not accepted by the CG.

There is also a disturbing suggestion of contractor cover-ups – and evidence that installation flaws were accepted by the CG and that the ships were “self-certified” by the CG. In any event, vessels were delivered that did not meet the performance specifications stipulated in the Deepwater contract. Further, it appears that these ships operated for some period of time without being properly TEMPEST certified and that national security could have been compromised as a result. The blame lies both within the CG and the ICGS contractor consortium. However, that point is now moot regarding the 123s as these ships are to be stripped of items that can be re-used and then scrapped because of their extensive hull flaws.

The DHS Inspector General recently released a report (DHS OIG-07-27) of an investigation of some of these allegations raised by a “whistleblower”, but that investigation did not dig deeply enough to fully expose the severity of the problems raised by the whistleblower. The design compromises that occurred on the 123s raise questions as to whether a better process will be followed in future projects, such as on the first National Security Cutter (NSC) (the *Bertholf*) and potentially other NSCs now under construction at the Ingalls Shipyard.

Overview of Deepwater

The Deepwater program is a series of procurements intended to be create a “system of systems” – meaning a suite of assets that are fully integrated and feature inter-compatible command/control/communication systems called C4ISR. The program, which is currently expected to cost \$24 billion and to require 25 years to complete, encompasses 91 cutters, 124 small surface craft, and 244 new or converted aircraft, including both helicopters and fixed-wing airplanes.

¹ TEMPEST certification refers to approved methods set forth by the NSA to assure that communications systems dealing with classified national security information do not leak electronic emanations that can be picked up over the airwaves through various eavesdropping methods and then deciphered. Without a proper TEMPEST certification, communications systems are not allowed to be linked to secure communications systems because they may compromise national security.

The Deepwater program began its initial planning stages in the 1990s. On June 25, 2002, the Coast Guard awarded the Deepwater program to a consortium comprised of Lockheed Martin and Northrop Grumman and now identified as the Integrated Coast Guard Systems (ICGS). This team is serving as the lead systems integrator – meaning that its role is to oversee the acquisition of all planned systems and to ensure that they are integrated in the “system of systems” to support the Coast Guard’s missions. The ICGS team has broad powers to determine the best way of acquiring assets required for the Deepwater program, including making decisions about whether ICGS itself will build assets using the members of their own teams or whether it will openly compete acquisitions.

The contract awarded in 2002 was an indefinite delivery, indefinite quantity contract with a five-year baseline ending in 2007. The contract included five potential additional award terms of up to five years each (in other words, the contract could be extended for as long as 25 years). On May 19, 2006, the Coast Guard announced that it planned to award a 43-month contract extension to the consortium, which extended the contract through January 2011.

Importantly, the original plan for Deepwater was submitted prior to 9/11/2001 and was expected to cost \$17 billion. After 9/11, the Coast Guard’s mission was revised to encompass significant new homeland security functions and its asset needs were re-analyzed – yielding a new plan for Deepwater (submitted to Congress on March 25, 2005) that increased its costs to the current \$24 billion and increased its procurement period from 20 years to the current 25 years.

Cutter Acquisitions Under Deepwater

A brief overview of the main cutter acquisitions to be completed under Deepwater is provided below:

- **National Security Cutter (NSC):** At more than 400 feet, the NSC is the largest ship to be acquired through Deepwater. A total of eight cutters are to be produced. The first two keels have been laid – and the Coast Guard reports that NSC 1, the *Bertholf*, successfully powered its consoles on March 1, 2007. The NSC is a significant part of the total Deepwater acquisition – and is expected to cost as much as 12 percent of the entire Deepwater budget.
- **Fast Response Cutter (FRC):** The FRC will be the smallest of the three cutters proposed for acquisition under Deepwater, but the final length has not been determined (it is likely to be between 120 and 160 feet). The development of this cutter has been troubled by failures of the initial design effort – which was expected to involve the use of a composite hull. As a result of these design problems, the Coast Guard has split the FRC into two series (A and B) and has announced that the B series will be acquired first, will be competitively bid by the Coast Guard (not using the ICGS team), and will rely on an off-the-shelf design. A total of 58 FRCs are expected to be built.
- **Offshore Patrol Cutter (OPC):** Work on the design of the OPC will not begin until fiscal year 2009. At the present time, the OPC is expected to be 360 feet long and 25 total OPCs are expected to be acquired.

Legacy Cutter Upgrades: In addition to the new cutter acquisitions planned under Deepwater, a number of cutters already in service – called “legacy cutters” – are planned to be

rehabilitated as part of Deepwater to extend their service lives. Among these was a group of 49 110-foot patrol boats which were to be lengthened to 123 feet and then retained in service until replaced by the 58 new FRCs.

In the early years of the Deepwater contract, a total of eight 110-foot patrol boats were lengthened to 123 feet and placed back into active service. Soon after re-entering service, the lengthened hulls began to experience cracks and were placed on restricted duty. As the cracks grew larger, the boats were deemed to present a safety hazard and were removed from service. The removal of the eight failed, 123-foot patrol boats from service has left a service-hour gap in the Florida/Caribbean service area.

123 Hull Cracks: There is documented evidence that the effort to lengthen the 110-foot patrol boats was ill-advised from an engineering standpoint. The Navy's Combatant Craft Department (CCD) advised the lead technical Coast Guard naval architect on the Deepwater project in August and September 2002 that there were problems with the proposed design for the lengthened 123-foot patrol boat. This was long before the design was finalized. These warnings were based on issues that the Navy identified in lengthening a 170-foot cutter (which was a sister ship series to the 110-foot cutter utilized by the Coast Guard) to 179 feet. The Navy overcame these problems by significantly strengthening the hull girder sections, but this was a costly modification. The Navy advised the CG to add the same strengthening measures to any 110-foot vessels lengthened to 123 feet – especially in light of the fact that the Navy extension represented only 5 percent of the overall vessel length, while the CG extension was 12 percent of hull length. The Navy believed the extra length on the 110-foot cutter would subject the CG design to far greater stresses than on the Navy boat. These Navy warnings went unheeded by the CG or the contractors. Further, after the first lengthened 123-foot patrol boat – the *Matagorda* – failed, the Coast Guard attempted design modifications (using thicker hull plating) but was again warned by Navy CCD that this solution would be insufficient to produce seaworthy ships unless the hull girder sections were significantly strengthened. As warned by the Navy, the thicker hull plating solution attempted by the CG also failed. All eight 123-foot ships are planned for salvage.

C4ISR: In addition to procurements of cutters (and planes), a central part of the Deepwater program involves the implementation of major upgrades and improvements to the Coast Guard's command, control, communications, computers, intelligence, surveillance, and reconnaissance systems, known as C4ISR. Deepwater is expected to produce C4ISR systems are fully compatible across all assets. Such an interoperable system is expected to improve the ability of the Coast Guard to share and integrate information from all sources about the maritime domain, creating an operating picture of the domain that will now be common to all assets. For this reason, the enhanced C4ISR capabilities are expected to improve the ability of the Coast Guard to mobilize and control assets directed to respond to specific threats.

Problems with the Deepwater Contract

A number of different reports have been issued by a variety of sources detailing the problems with the Deepwater contract. A brief overview of these reports and their findings is presented below.

DHS IG Report on Information Technology Systems in Deepwater: The Department of Homeland Security Inspector General's Office (DHS IG) issued a report in August 2006 entitled

“Improvements Needed in the U.S. Coast Guard’s Acquisition and Implementation of Deepwater Information Technology Systems”. In part, this report examined tests that were performed on the C4ISR system (which is a combination of hardware and software) to assess its functionality. Under federal regulations, agencies must prove that new IT systems function properly in a “production-like” test environment and that they contain needed safeguards. The report indicates that there were problems with the simulator equipment used at the Lockheed Martin facility to test the C4ISR systems and to identify vulnerabilities in the system. Specifically, the report found that the simulator had “difficulty calculating how C4ISR systems work in real situations on cutters or at shore sites; the simulators therefore may produce inaccurate results.” DHS IG also found the following: “... because the contractor has not compared simulator performance to that of real C4ISR systems, discrepancies may result when the C4ISR systems are deployed to new assets or shore sites.” Importantly, DHS IG found that the simulator system being used to test the functionality of the C4ISR was not itself certified or accredited. The Coast Guard recognized the value of certifying and accrediting the simulators – but the contractor has refused to obtain the certification and accreditation, asserting that it would cost too much to obtain.

The DHS IG report also discussed problems found with the actual functionality of the C4ISR systems. DHS IG states that a version of the C4ISR on the 123s received authorization to operate while the contractor worked to address vulnerabilities identified with it (this implies interim authorization to operate). In April 2006, the Coast Guard’s SIPRNET Management Office informed the managers of Deepwater that if the vulnerabilities with the C4ISR system on the 123s were not resolved in 45 days, the system would be denied authorization to access SIPRNET (the government’s classified internet system). After the Coast Guard provided information on best practices in software development, the vulnerabilities were apparently resolved by May 2006.

Finally, this report found that although Coast Guard officials were involved in high-level Deepwater IT requirements definitions processes; they had limited influence over contractor decisions made to meet these requirements under the Deepwater contract.

DHS IG Report on the NSC: The DHS IG issued a report on the NSC entitled “Acquisition of the National Security Cutter” dated January 2007. In this report, the DHS IG indicated that the Deepwater contract requires that the NSC be built to be underway at least 230 days per year for 30 years; the Coast Guard disagrees with the DHS IG’s claims and argues that the Deepwater contract requires that the ship be built to be underway only for 185 days. The DHS IG report further claims that weaknesses in the first two NSC hulls will lead the hulls to crack – and argues that the failures in the design of the NSC are due to the Coast Guard’s failure to properly oversee the NSC contract. Presently, the Coast Guard is working to determine how to strengthen these hulls so that NSC 1 and NSC 2 can achieve what it claims is the required number of days underway each year (185 days). Negotiations are on-going regarding the specific repairs that must be made to the hulls, the cost of these repairs, and how and when the repairs will be completed and by whom.

Defense Acquisition University Report on the Deepwater Program: The Defense Acquisition University (DAU) issued a report dated February 2007 studying the problems that have occurred in the Deepwater contract. This report finds that a need to quickly recapitalize the Coast Guard with a broad portfolio of new and complex assets led the Coast Guard to use the “system of systems” strategy.

However, this is a complicated strategy to implement and the DAU finds that the Coast Guard's implementation of the strategy has been challenged by the following factors:

- The scope and complexity of design changes that were necessary to respond to the threats presented by the events of 9/11 and that were added after many key engineering milestones had already been crossed;
- Funding provided at levels below those negotiated in the ICGS contract;
- Use of a contract structure inappropriate to the changing missions and requirements of the program and to the major systems integration tasks that were required;
- Industry emphasis on work sharing among joint venture partners that minimized the use of other U.S. industry and existing Coast Guard infrastructure;
- Insufficient numbers of Coast Guard acquisition personnel and insufficient experience in major systems acquisition; and
- Lack of a management model and processes sufficient for the management and oversight of the major systems acquisitions to be made under Deepwater.

The DAU report indicates that these factors threaten to prevent the Coast Guard from being able to complete all of the acquisitions planned under Deepwater within the planned \$24 billion budget and suggests that changes in acquisitions requirements or adjustments to the budget may be needed. The DAU study also recommends specific changes in the Coast Guard's acquisition strategy and the structure and management of the Deepwater contract.

DHS IG Report on the 123-Foot Patrol Boats: Following the receipt of a whistleblower complaint on its Hotline, the DHS IG launched an investigation to determine whether the 123-foot patrol boat and the smaller, 24.6-foot Prosecutor crafts designed to be launched from the 123-foot cutter and other larger cutters contained safety and security vulnerabilities due to the failure of contractors to meet the requirements of the Deepwater contract. The specific complaints investigated by the DHS IG are detailed below.

- **Non Low-Smoke Cabling:** The whistleblower alleged that the 123-foot cutters had been outfitted with non low-smoke cabling – in direct contravention of the requirements of the Deepwater contract. In the event of an on-board fire, the use of non-low smoke cabling could have exposed the crew to excessive toxic smoke. The DHS IG confirmed that the whistleblower's accusations were correct. Indeed, non low-smoke cabling had been used – in contravention of contractual requirements. Further, the DHS IG found that the Coast Guard had accepted the delivery of the 123-foot patrol boats with the non low-smoke cabling without documenting the potential hazards that this cabling posed to crew members in the event of an on-board fire.
- **Topside Equipment:** The whistleblower alleged that the ICGS team installed "topside" (meaning on the top/outside of the ship) equipment for the C4ISR on the 123-foot patrol boat and on the Prosecutor that did not meet Deepwater contract specifications and that may not have been operational in all weather conditions that the 123 and the prosecutor was expected to face. The DHS IG confirmed that 30 items on each 123 and 12 on the Prosecutors do not meet the contractual requirements on environmental survivability. The DHS IG report further states that the contractor knowingly, and in violation of the contract,

indicated on the self-certification documents that requirements for the boats to survive and operate in extreme weather are “not really beneficial”.

- **TEMPEST Test Problems:** The whistleblower alleged that the ICGS team installed cabling in the C4ISR hardware system that could pose a TEMPEST hazard – meaning that it could “leak” classified information. The DHS IG found that the cabling used in the 123-foot cutter (called aluminum/mylar shielded cable) met the minimum contract specifications but was not as durable as cabling that is braided, metallic, and shielded. The DHS IG report states that while braided, shielded cables are the best option under TEMPEST certification requirements, the contractor was not bound to use them and that the aluminum/mylar cables they did use passed instrumented TEMPEST testing, as claimed by the CG. However, the Committee’s investigation has found that the C4ISR configuration failed the visual TEMPEST tests – which are less rigorous than the instrumented tests – which calls into question how the equipment could have passed an instrumented TEMPEST test. Coast Guard records indicate that an instrumented TEMPEST test was performed on the first 123, MATAGORDA, in February 2004, and this test noted deficiencies. According to the Coast Guard, another instrumented TEMPEST test was not performed on a 123 until the USGC PADRE was sent for a test in July 2006. Visual TEMPEST discrepancies remained in the 123s; a class waiver was granted for some of these problems in July 2005 and individual waivers were granted for deficiencies on each of the 123s during 2005 and 2006. Numerous problems plagued the ability of the C4ISR systems to handle classified information – and it appears that Authority to Operate (ATO) these systems may have been granted before all of the problems were resolved. Thus, according to Coast Guard records, MATAGORDA received ATO for its system in January 2005, although in an evaluation assessment of the entire C4ISR system conducted in March-April 2005 by the Navy, the C4ISR system is still identified as “high risk.” An independent TEMPEST testing expert (retained by the Committee) has extensively reviewed all C4ISR/TEMPEST testing records supplied by the CG and has confirmed that several of the deficiencies that were granted waivers should have been repaired rather than waived.

- **360-Degree Topside Cameras:** The whistleblower alleged that the video surveillance system installed on the 123 cutter does not provide a 360-degree field of view. The DHS IG report confirms that the video surveillance systems provide less than 360-degree coverage, but concludes that such coverage is not stipulated in the contract. However, although the contract is ambiguous, this appears to be incorrect. Northrop Grumman’s contract specifies 2 cameras were to be mast-mounted, remotely controllable, and with pan-tilt and zoom functions. Other Coast Guard vessels had camera systems that provide 360-degree coverage, which makes it difficult to conclude that the requirement would be different for the 123s.
 - Importantly, Lockheed Martin submitted a waiver request to allow for less than 360 degree coverage, and the CG accepted it. The DHS IG report states that it is disturbing that Lockheed Martin would knowingly install a system with blind spots and that the Coast Guard would accept it.
 - The DHS IG report also mentions that investigators are concerned that the vague specifications of the Deepwater contract could lead to the installation of camera

surveillance systems on other assets – including the NSCs – that do not provided 360-degree coverage.

- The DHS IG report further states that the CG should clarify the contract requirement for future CG vessels. It is a serious concern that a shipboard surveillance system would contain gaps in coverage.

Beyond the individual facts of each accusation made by the whistleblower and examined by the DHS IG, the whistleblower appears to have raised the instances of non-compliance with the Deepwater contract's requirements on the 123-foot patrol boat to the ICGS team. It further appears that the senior management of ICGS partner, Lockheed Martin, may have chosen to ignore these warnings.

While the 123-foot patrol boats are no longer in service (due to cracks in the hulls), the number and type of contract violations alleged to have occurred in the equipment installed on the 123-foot cutters is deeply troubling. This hearing will also examine whether some or all of systems on the 123s may have been installed on the NSC.

PREVIOUS COMMITTEE ACTION

The Subcommittee on Coast Guard and Maritime Transportation has held two hearings on the Deepwater acquisition during the 110th Congress. The first hearing was held on January 30, 2007, and considered the entire Deepwater contract, with a focus on problems involving the NSC. A second hearing was held on March 8, 2007, on the Coast Guard's fiscal year 2008 budget; that hearing received testimony on Deepwater from both the DHS IG and the Government Accountability Office.

WITNESSES

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