



Department of Homeland Security Office of Inspector General

The Coast Guard's Boat Crew Communications System Is Unreliable

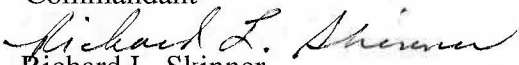




Homeland Security

MAY 13 2010

MEMORANDUM FOR: The Honorable Admiral Thad W. Allen
Commandant

FROM: 
Richard L. Skinner
Inspector General

SUBJECT: *Final Letter Report: The Coast Guard's Boat Crew
Communications System Is Unreliable*

This report addresses the effectiveness of the Coast Guard's boat crew communications system to support maritime operations. We conducted this work as part of our audit to determine whether the current Maritime Safety and Security Team (MSST) program and structure is the best approach for the Coast Guard to accomplish its maritime law enforcement and homeland security missions. We incorporated formal comments from the Chief, Office of Budget and Programs in the report.

Your office concurred with the one recommendation in the report and has taken action to resolve that recommendation. Within 90 days of the date of this memorandum, please provide our office with additional information about the activities underway or planned by the Coast Guard to address our recommendation, including responsible parties, key milestones, and other supporting information.

Consistent with our responsibility under the *Inspector General Act, as amended*, we are providing copies of our report to appropriate congressional committees with oversight and appropriation responsibility over the Department of Homeland Security. The report will be posted on our website

Should you have any questions, please call me, or your staff may contact Anne L. Richards, Assistant Inspector General for Audits, at (202) 254-4100.

Background

Coast Guard Maritime Safety and Security Team (MSST) units rely upon small boats with mounted automatic weapons to conduct their maritime law enforcement and homeland security operations. On March 25, 2007, a crew from MSST Anchorage was conducting an escort of a Washington State Ferry in Puget Sound, Washington. During a high-speed maneuver to starboard, the boat gunner was ejected from the bow of a Response Boat-Small and struck by the boat's propellers, suffering fatal injuries. According to the Coast Guard review, the lack of an effective crew communications system to support verbal exchange between the coxswain and boat gunner aboard contributed to this accident.¹

One of the Office of Boat Forces' corrective actions to address this issue was deployment of the boat crew communications system (BCCS). The Coast Guard now requires boat gunners to use the BCCS to communicate with coxswains when manning mounted automatic weapons. By late spring 2007, the standardized BCCS was being deployed across all Response Boat-Small vessels, including those used by the MSST units. This report addresses the effectiveness of the Coast Guard's BCCS to support MSST operations.

Results of Audit

The BCCS does not effectively support MSST small boat communications. Interim solutions to technical problems that cause the communication headsets to abruptly lose power have not been adequate and it could take up to 10 years for new and improved replacement equipment to be provided. Until this issue is addressed, MSST operational readiness and the safety of crew members and the boating public may be at risk.

Unreliable Boat Crew Communications to Meet Mission Needs

The BCCS is unreliable as a communications system to support the MSST in accomplishing its maritime law enforcement and homeland security missions. As illustrated in the following photo, the physical locations of the coxswain and gunner make it vitally important that they be able to communicate consistently and reliably when to begin or cease firing during mission operations.

¹ *Chief of Staff's final decision letter on the Maritime Safety and Security Team Anchorage (91111) class "A" mishap; ejection from CG 25501 in Seattle, Washington on 25 March 2007, issued April 27, 2007, pages 1 and 13.*



**A boat crew from Coast Guard Maritime Safety and Security Team 91111 demonstrates the high-speed maneuverability of a 25-foot small boat at the Port of Anchorage.
Source: Coast Guard**

There is a systemic problem with BCCS reliability across all five MSST field units that we visited. MSST personnel explained that unexpected equipment failures create potential miscommunication and potentially dangerous conditions if noncompliant vessels and crews have to be aggressively intercepted. The communications headsets have become so unreliable that boat crews resort to other methods of communication, such as hand signals, the loud hailer (a mounted loud speaker), and the coxswain yelling out the sliding door to the gunner. These workarounds each have limitations, including crew members not seeing the hand signals, mistaking one hand signal for another, or not hearing verbal commands. In addition, yelling and using the loud hailer could allow a hostile vessel to hear the coxswain or gunner's commands and evade intercept. Increased ambient noise and decreased visibility during inclement weather can further diminish the effectiveness of these workarounds.

We observed some of the difficulties described by MSST personnel when they were attempting to communicate commands to fire weapons. We made these observations during exercises conducted in a controlled environment with good weather. For example, in Los Angeles/Long Beach, we observed that the coxswain was unable to get the attention of the gunner using the BCCS headsets. He resorted to shouting out of the side window to command the gunner to fire on a threat vessel. However, the gunner never heard the command to fire.

Technical Headset Problems Not Easily Resolved

The problems with the BCCS can be attributed to batteries or components of the headsets that frequently fail during mission operations with no indicator or warning that the system will turn off. According to MSST personnel, the headset battery life is not

adequate for the MSST missions. The life of the batteries varies and quickly diminishes, leaving boat crews without a functioning communication system. The Office of Boat Forces said the correct type of battery must be installed to ensure the longest life. The Office of Boat Forces posted messages via official Coast Guard message traffic to all units directing them to install the correct battery. While the message traffic helped to communicate how to respond to the failures, our interviews with MSST program and unit personnel determined that not all personnel were aware of the posting or knew which batteries to use.

Further, a component in the headset, as originally procured, was not manufactured to procurement specifications and fails in cold weather. A warranty replacement program was implemented in February 2008 to install components that could operate in cold weather conditions. Instructions on the replacement part/recall were posted on the Office of Boat Forces website for unit personnel to review. The timeline for warranty parts replacement is based on component availability at the radio manufacturer. Currently, MSST personnel are either waiting for the replacement part availability or are unaware of the replacement part solution. Equipment reliability issues persist at MSST units, showing the continuing need for improved technology. The Office of Boat Forces is having difficulty finding a manufacturer that can provide maritized equipment that meets the technical and budget requirements of the Coast Guard communications platform.

Until improved, alternative technology can be identified, correct battery installation and warranty repairs will continue to be the Coast Guard's interim solutions to address the BCCS headset problems. Officials have stated that no additional research has been done in reference to these two issues. MSST personnel have suggested using a hardwired headset as an alternative to the BCCS. However, when interviewed regarding this suggestion, Office of Boat Forces officials said that the Response Boat-Small may not have enough power to run a hardwired system. The cost of approximately \$1,800 to retrofit each hardwired system could be prohibitive.

The Office of Boat Forces considers small boat communications a top priority, but a new Response Boat-Small with an improved communication system is not estimated to be acquired until 2012. It will take an additional eight years, until 2020, to replace the entire fleet.

Risks Posed by Unreliable Communications

Until this issue with the BCCS is satisfactorily addressed, MSST operational readiness and crew safety remain at risk. A Coast Guard official said,

“It is my opinion that gunner/coxswain communications are going to be the fault of something bad to happen down the road. Open, reliable communications from the boat coxswain to the person with their finger on the trigger of a high-caliber automatic weapon, operating in a congested domestic port is absolutely essential to mission success and catastrophe avoidance. Uninterrupted comms will be the difference between operational excellence and anything other.”

Using the unreliable BCCS also poses a safety risk to the public. For example, if a live fire situation were to occur, an MSST would use quick maneuvers to ward off threat vessels while firing the machine gun mounted on the bow of the boat. If a coxswain is unable to effectively communicate these maneuvers to the gunner, live rounds could inadvertently be fired into public areas and bystanders could be struck.

Recommendation

We recommend that the Commandant develop an interim solution to immediately address the unreliable boat crew communications system to reduce the risk of crew fatalities related to ineffective communication.

Management Comments and OIG Analysis

The Coast Guard concurred with the recommendation in our report and agreed that there have been reliability issues with the BCCS on the Response Boat – Small. The Coast Guard is recalling faulty headsets and has begun a long term research and development project to identify a solution to this problem. We consider the recommendation resolved, but it will remain open until the Coast Guard provides details and documentation on corrective actions taken so that we can determine whether these actions adequately address the substance of our finding and recommendation. The Coast Guard also provided technical comments and clarifications to the report. We have included a verbatim copy of the Coast Guard’s comments in Appendix B, and incorporated changes into the report as applicable.

Appendix A

Purpose, Scope, and Methodology

This report addresses the effectiveness of the Coast Guard's boat crew communications system to support maritime operations. We conducted this work as part of our ongoing audit to determine whether the current MSST program and structure provide the best approach for the Coast Guard to accomplish its maritime law enforcement and homeland security missions.

To accomplish this work, we reviewed policies, procedures, and issues relating to readiness, such as equipment and training programs. We interviewed Coast Guard command and personnel at Coast Guard Headquarters-Office of Boat Forces and each of the five units we visited: Los Angeles/Long Beach, California; Miami, Florida; New Orleans, Louisiana; Boston, Massachusetts; and Galveston, Texas. We also toured these facilities and observed the communication equipment being used during MSST drills on the water.

We conducted this performance audit between March 2009 and November 2009 under the authority of the *Inspector General Act of 1978*, as amended, and according to generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

We would like to extend our appreciation to the Coast Guard, in particular the Office of Boat Forces and MSST personnel, for the cooperation and courtesies extended to our staff during this audit.

Appendix B
Management Comments to the Draft Letter Report



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7501
APR 29 2010

MEMORANDUM

A handwritten signature in blue ink, appearing to read 'T. W. Jones', is written over the 'From:' line of the memorandum.

From: T. W. JONES, CAPT
COMDT (CG-82)

Reply to: Audit Manager,
Attn of: Mark Kulwicki
(202) 372-3533

To: Anne L. Richards
Assistant Inspector General for Audits

Subj: RESPONSE TO DHS-OIG DRAFT, "THE COAST GUARD'S BOAT CREW
COMMUNICATIONS SYSTEM IS UNRELIABLE"

Ref: (a) DHS Inspector General (DHS OIG) Draft Report of April 1, 2010

1. This letter transmits the Coast Guard's response to the Department of Homeland Security Inspector General (DHS OIG) draft findings and recommendation in reference (a).
2. Coast Guard concurs with the findings and recommendation.
3. If you have any questions, my point of contact is Mr. Mark Kulwicki at (202) 372-3533. Alternately, my Chief of External Coordination, CDR Todd Offutt, can be reached at (202) 372-3535.

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Enclosure: (1) USCG Comments

Appendix B

Management Comments to the Draft Letter Report

UNITED STATES COAST GUARD (USCG) RESPONSE TO DRAFT REPORT OF DHS-OIG ON BOAT CREW COMMUNICATIONS

TITLE: "THE COAST GUARD'S BOAT CREW COMMUNICATIONS SYSTEM IS UNRELIABLE"

The Coast Guard concurs with the Office of Inspector General's (OIG) recommendation in the draft report, and believes an interim solution has been fielded. The Coast Guard is also exploring a long term solution. Nonetheless, the Coast Guard appreciates the OIG's efforts in documenting this need for improvement, and offers comments under four sections: recommendation and response, technical comments, supplemental comments, and editorial comments.

RECOMMENDATIONS AND RESPONSE

OIG Recommendation: Develop an interim solution to immediately address the unreliable boat crew communications system to reduce the risk of crew fatalities related to ineffective communications.

USCG Response: Concur. The Coast Guard developed an interim solution by working with the manufacturer to resolve the problems, and provided guidance on battery selection and proper configuration to the field. The Coast Guard agrees there have been reliability issues with the Boat Crew Communications System (BCCS) on the Response Boat-Small. The two main problems are battery life and faulty headsets. Faulty headsets have been recalled and are being replaced. For the long term, the Coast Guard began a research and development project to identify solution for all boat types, including the Response Boat-Small.

TECHNICAL COMMENTS

1. Page 2, first paragraph: "There is a systemic problem with BCCS reliability across all five MSST field units that we visited." It is not unexpected that auditors observed problems with the BCCS; at least two of the MSSTs had headsets identified as faulty and were subject to the recall during the time of the audit. The report also illustrates that units may not have properly configured their BCCS, which would directly affect reliability
2. Page 2, first paragraph: The loud hailer on the Response Boat-Small is not portable. It was delivered as a component of the electronics package. The loud hailer has a built in intercom system that allows two way communication between personnel in the cabin and on the bow. Until the BCCS was fielded, it was the primary means to communicate between the gunner and coxswain. The loud hailer is now secondary.
3. Page 2, third paragraph: "According to MSST personnel, the headset battery life is not adequate for the MSST missions." There have been no reports of headset battery life failures. Issues with the headsets have generally been attributed to the headsets microphone, not the battery. The reported issues with the battery life relate to the submersible portable transceiver (SPT). The Coast Guard published guidance on battery life management of the SPT.

Appendix B

Management Comments to the Draft Letter Report

SUPPLEMENTAL COMMENTS

The Coast Guard fielded a new concept (electronic communication between crew members) and technology (wireless communication) simultaneously to a new user group. Wireless communications have limitations that must be managed when a fully wired system may not be practical because freedom of movement about the decks is a key performance specification.

Paragraph 3 on page 3 contains a statement that the cost to retrofit a hardwired system would be prohibitive. The Coast Guard is not sure that statement is true, and the current research and development project will evaluate solutions that could potentially be retrofitted into the Response Boat Small. If feasible and affordable, the Coast Guard would retrofit the Response Boat-Small's conducting mounted automatic weapons activities.

EDITORIAL COMMENTS

After the Mishap of March 25, 2007, the Coast Guard quickly leveraged the 47 foot Motor Life Boat Crew Communications System contract to improve communications between the gunner and coxswain. This system may not be the optimal solution on the Response Boat-Small. However, when properly maintained the current BCCS allows communication between the gunner and coxswain. A research and development project to identify/quantify crew communications requirements for all Coast Guard Boat Forces is underway and will address performance limitations of the currently fielded BCCS.

Appendix C
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