

**PLANNING PROCESS FOR THE
NATIONAL DISTRESS AND RESPONSE
SYSTEM MODERNIZATION PROJECT**

United States Coast Guard

Report Number: MH-2002-076

Date Issued: February 4, 2002



Memorandum

U.S. Department of
Transportation

Office of the Secretary
of Transportation

Office of Inspector General

Subject: ACTION: Report on the Audit of the Planning
Process for the National Distress and Response
System Modernization Project
United States Coast Guard
MH-2002-076

Date: February 4, 2002

From: Alexis M. Stefani 
Assistant Inspector General for Auditing

Reply to
Attn. of: JA-40

To: Commandant
United States Coast Guard

This report presents the results of the Office of Inspector General's Audit of the Planning Process for the National Distress and Response System Modernization Project (NDS Project). We initiated this audit in response to concerns expressed about the NDS Project during the March 1, 2000 hearing of the House Committee on Appropriations, Subcommittee on Transportation and Related Agencies, on Coast Guard's Fiscal Year (FY) 2001 Budget. Specifically, the Subcommittee Chairman asked why the NDS Project was not moving at a faster pace and whether interim improvements planned would prevent another fatal accident like the *Morning Dew*¹ from occurring. The *Morning Dew* accident, which was in part attributable to National Distress System (NDS) deficiencies, resulted in the death of four mariners.

The NDS, Coast Guard's primary short-range communications network, is a significant component of Coast Guard's search and rescue program. Its primary purpose is to monitor the radio distress frequency and coordinate search and rescue missions in response to mariner distress (911) calls. Its secondary purpose is to provide command and control communications for Coast Guard units performing Maritime Safety, Maritime Law Enforcement, Marine Environmental Protection, and Homeland Security missions.

¹ Details of this accident are described in the National Transportation Safety Board's Marine Accident Report: Sinking of the Recreational Sailing Vessel *Morning Dew* at the Entrance to the Harbor of Charleston, South Carolina, December 29, 1997.

This 30-year-old short-range communication system no longer supports Coast Guard's needs. System deficiencies, such as communication coverage gaps and limited direction finding capabilities, complicate Coast Guard's ability to effectively and efficiently perform search and rescue missions.

Our audit objectives were to: (1) evaluate the NDS Project's justification; (2) assess whether the NDS Project's cost and schedule estimates are reasonable; and (3) determine whether interim measures taken by the Coast Guard address NDS system deficiencies identified during the National Transportation Safety Board's (NTSB) investigation of the *Morning Dew* accident. We modified the report to reflect Coast Guard's written comments on a draft of this report. Our scope and methodology are described in Exhibit A.

RESULTS IN BRIEF

Coast Guard's plans to deploy a modernized NDS that eliminates current system deficiencies by 2006 may be jeopardized because higher than anticipated project cost estimates are prompting Coast Guard to make critical system performance and capital budget decisions. Timely completion of the project is important not only because it has been delayed since the late 1980s, but also because the interim measures taken in response to the *Morning Dew* accident were not intended to, and do not, address many of the critical system deficiencies.

The Department of Transportation's Office of Budget and Program Performance has placed the NDS on its high-risk watch list, and the Congress has expressed concern because cost estimates provided by Coast Guard contractors indicate that project costs could exceed \$1 billion. The \$1 billion system included many capabilities not currently available in the existing NDS, such as 100 percent communication coverage resulting in the closure of all major communication coverage gaps and the capability to pinpoint the location of a distressed boater.

When the contractors' cost estimates came in higher than expected, Coast Guard revised the system's performance specifications, modified the existing contracts, and lowered the system's cost estimate to \$580 million. In responding to a draft of this report, Coast Guard stated that the revised system's capabilities still exceed those of the existing NDS.

We agree that the revised system's capabilities will exceed those of the existing NDS. However, Coast Guard has eliminated or reduced capabilities in the revised system that it originally considered essential to address deficiencies in the existing system and to improve the search and rescue program. For example:

- The revised system will still contain communication coverage gaps, meaning that Coast Guard will not be able to hear and locate all mariners in distress

even when they are within the system's planned range of 20 nautical miles of shore. While it is anticipated that the gaps will not be as large or as numerous as the 88 in the existing system, their exact size and location remain unknown until one of the three contractors' proposals is finally selected.

- Coast Guard has eliminated the capability to pinpoint the location of a distressed boater. The revised system will provide only the general direction of the call. While this is an improvement over the existing system, it does not achieve the Coast Guard's stated objective for the NDS Project—to take the “search” out of search and rescue. Coast Guard may still spend significant amounts of time performing investigative procedures and wide-area searches to locate distressed mariners.

Since the September 11, 2001 terrorist attacks, Coast Guard has shifted mission emphasis—resulting in a substantial increase in homeland security missions. Coast Guard's revised NDS may not support the short-range communication needs of its homeland security mission. The NDS serves as the primary command and control system for coastal and inland missions, including homeland security. However, revisions made by Coast Guard to the system's performance specifications eliminate the capability to transfer classified information and significantly reduce its ability to talk with other Federal, state, and local agencies, including the Department of Defense.

Additionally, Coast Guard faces a significant challenge in reconciling its stated capital needs with existing budget targets. Coast Guard's stated requirements of \$1 billion per year exceed the Office of Management and Budget (OMB) budget targets by approximately \$300 million annually for each of the next 5 years. Moreover, current estimates for the NDS and the Deepwater Capability Replacement Projects are expected to consume 79 percent of OMB budget targets during the same time frame. While it is notable that Coast Guard has taken aggressive action to reduce cost estimates for NDS, Coast Guard may have to replace the capabilities that were reduced or eliminated as the system is deployed to meet operational requirements. This will not only increase the cost of the NDS project, but will further compound Coast Guard's capital acquisition challenge.

The Coast Guard's modernization of the NDS is justified. The 30-year-old short-range emergency radio system used by Coast Guard is antiquated, expensive to maintain, and difficult to upgrade. Furthermore, system deficiencies, such as communication coverage gaps, limited direction finding, and the lack of digital selective calling capabilities, impair Coast Guard's ability to effectively and efficiently perform search and rescue missions and identify hoax calls. This means that areas exist within 20 nautical miles of shore where Coast Guard cannot hear or locate distressed mariners through voice or digital (similar to email) distress communications.

Interim measures taken by the Coast Guard in response to the NTSB investigation of the Morning Dew accident were limited. The \$4 million interim measures program included replacement of voice recorders and installation of limited direction finding capabilities, which the NTSB considers inadequate. Described by Coast Guard as a “Band-Aid” approach, the interim measures program was never intended to address all the NDS deficiencies. For example, Coast Guard did not attempt to address communication coverage gaps in its interim program.

At least 88 major communication coverage gaps exist where Coast Guard cannot hear calls from mariners in distress. (See Exhibit B for a list of the major NDS communication coverage gaps.) Totalling about 21,500 square nautical miles, the communication coverage gaps represent 14 percent of the total NDS coverage area and range in size from 6 to more than 1,600 square nautical miles.

Contractors’ cost estimates indicate the NDS could cost as much as \$1 billion. Coast Guard received \$56 million over the last 6 years to develop and design system performance specifications that would meet its short-range communication needs. After working closely with Coast Guard personnel and its technical agents for several months in a competitive environment, each of the three contractors proposed systems based on these specifications costing in excess of \$1 billion. The \$1 billion system proposals contained many enhanced capabilities in comparison to the existing NDS. These capabilities included 100 percent communication coverage to eliminate all major communication coverage gaps and direction finding equipment to pinpoint the location of a distressed boater.

Coast Guard decreased the estimated cost of the contractors’ \$1 billion system by lowering performance standards. Upon review of the contractors’ initial cost estimates, Coast Guard determined that it needed to revise the system’s performance specifications to lower contractor cost estimates. Coast Guard revised the system performance specifications and reduced the system’s cost estimate to \$580 million.

The revised system’s capabilities exceed those of the current system. However, Coast Guard has eliminated or reduced capabilities from the \$1 billion system that it originally considered essential to address deficiencies in the existing system and improve the search and rescue program. For example:

- The revised system will still contain communication coverage gaps, meaning the Coast Guard will not be able to hear and locate all mariners in distress even when they are within the system’s planned range of 20 nautical miles of shore. While it is anticipated that the gaps will not be as large or as numerous as the 88 gaps in the existing system, the exact size and location remain unknown until one of the three contractors’ proposals is finally selected.

- The capability to pinpoint the location of distressed mariners has been eliminated. The revised system will provide only the general direction of the call. Compared to the \$1 billion system, the revision has negatively impacted Coast Guard's original project goal: to take the "search" out of search and rescue. Consequently, Coast Guard may have to perform other investigative procedures and conduct wide-area searches to locate distressed mariners.
- The capability to rapidly restore system outages has been reduced. The time allowed to restore critical system functions damaged during a national emergency or a natural disaster has been extended from 6 hours to 24 hours and full system functions from 12 hours to 7 days. Currently, Coast Guard has no set parameters for restoring the existing system.
- The capability to support an increased level of operations during a national emergency or a natural disaster has been reduced. Capabilities that were eliminated, such as the ability to send classified information and to talk with other agencies such as the Department of Defense, may be necessary to support some Coast Guard homeland security activities.

The NDS Project's increased cost estimate creates a challenge for Coast Guard's acquisition budget. Coast Guard's current total projected capital needs exceed the OMB funding targets by more than \$300 million annually beginning in FY 2003. Unless Coast Guard obtains a significant increase in its capital budget, it will have limited funds available to support capital needs other than NDS and the Deepwater Capability Replacement Project. These two projects consume approximately 79 percent of the FYs 2002 to 2006 OMB funding targets for Coast Guard. While it is notable that Coast Guard has taken aggressive action to reduce cost estimates for NDS, it may have to replace the capabilities that were reduced or eliminated as the system is deployed to meet operational requirements. This will not only increase the cost of the NDS project, but will further compound Coast Guard's capital acquisition challenge.

The Department and Congress have expressed concern about the NDS Project's cost and schedule. The FY 2002 appropriations conference report for the Department of Transportation requires the Secretary or Deputy Secretary of Transportation and the Director of OMB to make certifications concerning Coast Guard's FY 2003 through FY 2007 capital investment plan. Specifically, the capital investment plan, due February 2002, must contain full funding requests for Deepwater, NDS, and other essential search and rescue projects and be within OMB budget targets.

The Department of Transportation's Office of Budget and Program Performance placed the NDS Project on a high-risk watch list because of cost and schedule

concerns. The Department has indicated it will closely monitor the NDS Project and any revisions the Coast Guard makes to the cost estimates and capabilities.

Coast Guard Comments and Office of Inspector General Recommendations

In a draft of this report, we recommended that the Coast Guard develop a final NDS acquisition plan for approval of the Department prior to obligating any funds appropriated for the procurement contract, which is anticipated to be awarded in the fourth quarter of FY 2002.

Coast Guard concurred with our recommendation and stated that it fully embraces the oversight role of the Department to ensure that the project strikes the proper balance between system capabilities and cost, and arrives with the determined range of functionality along a reasonable but prompt timeline.

In its response to a draft of this report, Coast Guard stated that the revised system's capabilities still exceed the operational capabilities of the existing system. We agree that Coast Guard's revised system performance specifications will result in a system with greater capabilities than the existing system.

However, Coast Guard also stated revisions made to the system performance requirements have not significantly diminished the system's capabilities. We have revised this report to identify specific performance requirement revisions that diminish capabilities critical to performing search and rescue and homeland security missions. We have also revised the recommendation to address instances where Coast Guard reduced or eliminated critical capabilities it originally requested. Specifically, the final NDS acquisition plan should include cost estimates and milestones for adding these capabilities in the future. Also, the plan should identify how Coast Guard intends to meet its short-range communication needs in response to its increased homeland security mission. We are asking Coast Guard to provide written comments on the revised recommendation within 30 days.

BACKGROUND

Established in 1970, the National Distress System's primary purposes include monitoring the international distress frequency (VHF-FM Channel 16), known as the maritime version of 911, and providing primary command and control for Coast Guard's search and rescue activities. It also serves as the primary short-range communications network for other coastal missions, such as Maritime Law Enforcement and Marine Environmental Protection.

The existing NDS includes approximately 300 radio signal-receiving antennas mounted on towers at various high elevation locations (see Figure 1). The antenna sites are linked to 44 communication centers (see Figure 2) where Coast Guard personnel monitor Channel 16 for distress calls on the Nation's inland waterways and along the coast out to 20 nautical miles off shore.

Figure 1
Antenna Site



Figure 2
Communication Center



Coast Guard's NDS is antiquated, expensive to maintain, and difficult to upgrade. Furthermore, system deficiencies, such as communication coverage gaps, limited direction finding, and the lack of digital selective calling capabilities, impair Coast Guard's ability to effectively and efficiently perform search and rescue missions and identify hoax calls. This means that areas exist within 20 nautical miles of shore where Coast Guard cannot hear or locate distressed mariners through voice or digital (similar to email) distress communications.

Coast Guard intends to complete the planning process for modernizing NDS during FY 2002. Using an acquisition strategy similar to the Deepwater Project, Coast Guard selected three contractors in August 2000 to develop independent system designs. As of FY 2002, Coast Guard has received a total of \$56 million for the planning phase and \$35 million for the procurement phase; it has expended \$36 million. Coast Guard is scheduled to begin the procurement phase during the fourth quarter of FY 2002.

Coast Guard expects to accomplish several things with the completion of the NDS Project. The NDS Project's primary goal is to take the "search" out of search and rescue. In addition, the NDS Project will provide reliable two-way voice and data communications among Coast Guard groups, aircraft and vessels, other government agencies, and the maritime public. This includes the elimination of current communication coverage gaps in coastal and navigable waterways where there is commercial or recreational traffic. In addition, it intends to replace obsolete communications equipment with modern technology that will provide direction finding and digital selective calling capabilities.

FINDINGS

Coast Guard Has Delayed NDS Improvements

Planning for the NDS modernization project started in the late 1980's, and Coast Guard was appropriated \$3 million in 1992 to begin upgrading the system. However, serious problems with the system's infrastructure in Alaska caused the Coast Guard to redirect these funds and to change the original project's scope. Coast Guard spent a total of \$18.4 million through FY 1998 addressing system infrastructure problems in Alaska. During this period, the overall condition of the nationwide system continued to deteriorate. Coast Guard did not resume the system modernization planning process until 1997, when it issued the mission needs statement for the current NDS Project.

Escalating Project Cost Estimates Will Require Coast Guard to Make Critical System Performance and Capital Budget Decisions

The NDS Project's Cost Estimate Has Escalated

Over the last 6 years, Coast Guard received \$56 million in appropriations to plan the NDS Project. In the planning phase, Coast Guard and its technical support agent performed a significant amount of technical and market research. Spending \$2.4 million over 17 months, the technical support agent developed a demonstration project that used commercial off-the-shelf direction finding and digital selective calling technology. One of the primary purposes of the demonstration project was to assess the reasonableness of Coast Guard's system requirements before entering into the contracts with three competing contractors.

Three contractors worked directly with Coast Guard and its technical support agent to design a system that would meet the Coast Guard needs. During March 2001, each of the contractors submitted a cost proposal that exceeded \$1 billion—nearly three and a half times Coast Guard's own \$300 million cost estimate. The contractors' estimates were based on a sample of field site surveys that identified the need for significant increases in the estimated number and cost of antenna sites. Coast Guard had estimated that 75 percent of the existing 300 antenna sites could be used by the new system and that new antenna sites would cost \$65,000 to \$100,000 each. However, the contractor projections indicated that several hundred more towers would be necessary to ensure communication coverage and only about 50 percent of the existing towers could be used. Moreover, the contractor projections indicated that the cost of new antenna sites may vary considerably based on geographic location and would cost significantly more than Coast Guard estimated, ranging from \$65,000 to \$500,000 per site.

Coast Guard Made Significant Reductions to the NDS Performance Requirements to Lower Costs

When the contractors' cost estimates came in higher than expected, Coast Guard revised the system's performance specifications to lower the costs to an estimated \$580 million. In responding to a draft of this report, Coast Guard stated that the revisions do not diminish the system's capabilities. We acknowledge that the revised system's capabilities exceed those of the existing system. However, Coast Guard has eliminated or reduced capabilities from the \$1 billion system that it originally considered essential to address deficiencies in the existing system and improve the search and rescue program. For example:

- The revised system will still contain communication coverage gaps, meaning the Coast Guard will not be able to hear and locate all mariners in distress even when they are within the system's planned range of 20 nautical miles of shore. While it is anticipated that the gaps will not be as large or as numerous as the 88 gaps in the existing system, the exact size and location remain unknown until one of the three contractors' proposals is finally selected.
- Coast Guard eliminated the capability to pinpoint the location of distressed mariners. The revised system will provide only the general direction of the call. Compared to the \$1 billion system, the revision has negatively impacted Coast Guard's original project goal: to take the "search" out of search and rescue.
- The revised performance specifications have reduced the capability to rapidly repair system outages in the case of damage during a national emergency or a natural disaster. Coast Guard increased the time allowed to restore critical system functions from 6 hours to 24 hours and full system functions from 12 hours to 7 days. Currently, Coast Guard has no set parameters for restoring the existing system.
- The capability to support an increased level of operations during a national emergency or a natural disaster has been reduced. Capabilities that were eliminated, such as the ability to send classified information and to talk with other agencies such as the Department of Defense, may be necessary to support some Coast Guard homeland security activities.

These reductions will result in a revised system with significantly less capability than originally proposed. For example, the \$1 billion system provided the capability to identify the specific location of the distress call anywhere within the system's 20 nautical mile boundary using cross-localization technology. The system would do this by using signals from at least two towers strategically placed along the coastline. The point at which the two or more signals crossed would provide a specific location where Coast Guard could begin the search. This type

of technology significantly reduces the amount of time it takes to locate a distressed boater.

The revised system relies on a single line of bearing from the signal of one tower. Relying on just a single line of bearing significantly reduces Coast Guard's ability to locate a distressed boater. While Coast Guard would know the general direction of the distress call, the boater's distance from the shore or from the line of bearing would remain unknown. Depending on the strength of the signal and the range of Coast Guard's direction finding capability, the distressed caller's location could actually be anywhere from on land (a hoax call) to well beyond the 20 nautical mile mark.

Since the September 11, 2001 terrorist attacks, Coast Guard has shifted mission emphasis—resulting in a substantial increase in homeland security missions. Coast Guard's revised NDS may not support the short-range communication needs of its homeland security mission. The NDS serves as the primary command and control system for coastal and inland missions, including homeland security. However, revisions made by Coast Guard to the system's performance specifications eliminate the capability to transfer classified information and significantly reduce its ability to talk with other Federal, state, and local agencies, including the Department of Defense.

Coast Guard Faces a Challenge in Funding Its Stated Capital Acquisition Requirements

Coast Guard's total projected capital needs over the next several years exceed \$1 billion annually and surpass OMB budget targets by approximately \$300 million annually. Coast Guard stated that it intends to fully fund the NDS Project and complete it by FY 2006. However, if Coast Guard fully funds the NDS and Deepwater Projects over the next 5 years under current OMB funding targets, limited capital funds will be available for cost increases or other planned capital projects. The NDS and Deepwater Projects represent approximately 79 percent of the total OMB funding targets for FYs 2002 to 2006. While it is notable that Coast Guard has taken aggressive action to reduce cost estimates for NDS, it may have to replace the capabilities that were reduced or eliminated as the system is deployed to meet operational requirements. This will not only increase the cost of the NDS Project, but will further compound Coast Guard's capital acquisition challenge.

The Department and Congress Have Expressed Concern About the NDS Project's Cost and Schedule

In House and Senate committee reports on the Department's FY 2002 appropriations, Congress recognized the high risks of the NDS Project. Both

committees expressed concerns that Coast Guard will extend the NDS Project's schedule to ensure funding for the Deepwater Project. The conference report on the Department's FY 2002 appropriations contains direction to prohibit this from occurring. The language in the report requires certification from the Secretary or Deputy Secretary of Transportation and the Director of OMB that the Coast Guard's capital investment plan will contain full funding requests within OMB funding targets for the Deepwater, NDS and other essential search and rescue procurements. Coast Guard's capital investment plan and the certifications are due in February 2002.

The Department of Transportation's Office of Budget and Program Performance (Budget Office) has also placed the NDS Project on a high-risk watch list because of cost and schedule concerns. The Budget Office intends to take a more active role in monitoring the NDS Project and has discussed these concerns with Coast Guard. It intends to thoroughly review Coast Guard's cost estimates and any changes in the NDS Project that will impact its funding needs.

Current System Has Critical Deficiencies

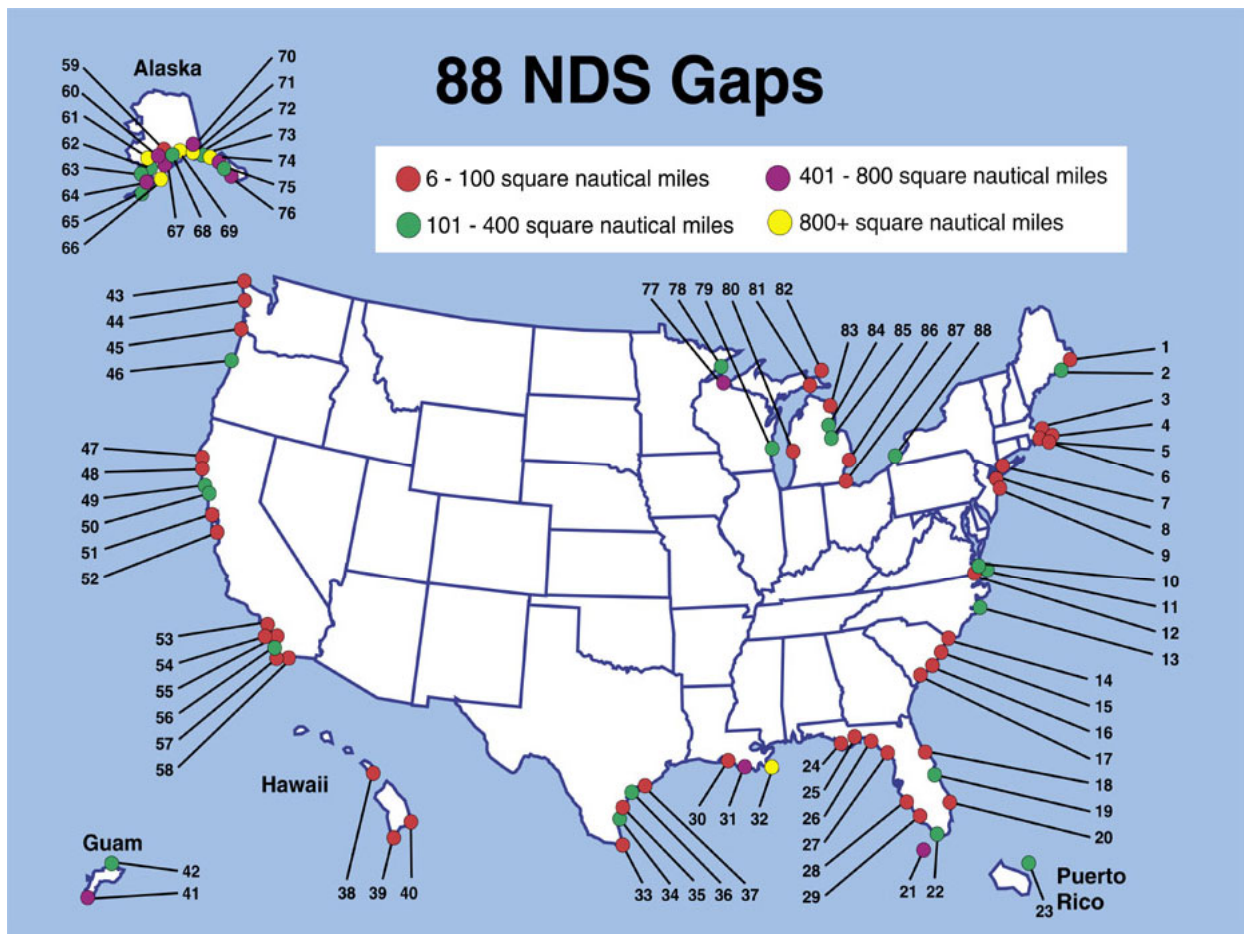
Until the new NDS is deployed, Coast Guard must continue to rely on an obsolete system that has many serious deficiencies. The NDS has exceeded its designed useful life by more than 15 years. Extensive communication coverage gaps, a limited direction finding system, and absence of digital selective calling capabilities impair Coast Guard's ability to effectively and efficiently perform search and rescue missions. This means that some instances occur when Coast Guard cannot hear distressed mariners through voice or digital (email) distress alerts or cannot locate distressed mariners timely. Additionally, NDS relies on outdated technology and equipment, which is expensive to maintain and difficult to upgrade.

Gaps in System Coverage Result in Distress Calls Not Being Heard

Communication coverage gaps are a critical NDS deficiency. A review of existing NDS coverage disclosed at least 88 communication coverage gaps, totaling 21,490 square nautical miles, throughout the system as shown in Figure 3. (See Exhibit B for a detailed listing of these communication coverage gaps.)

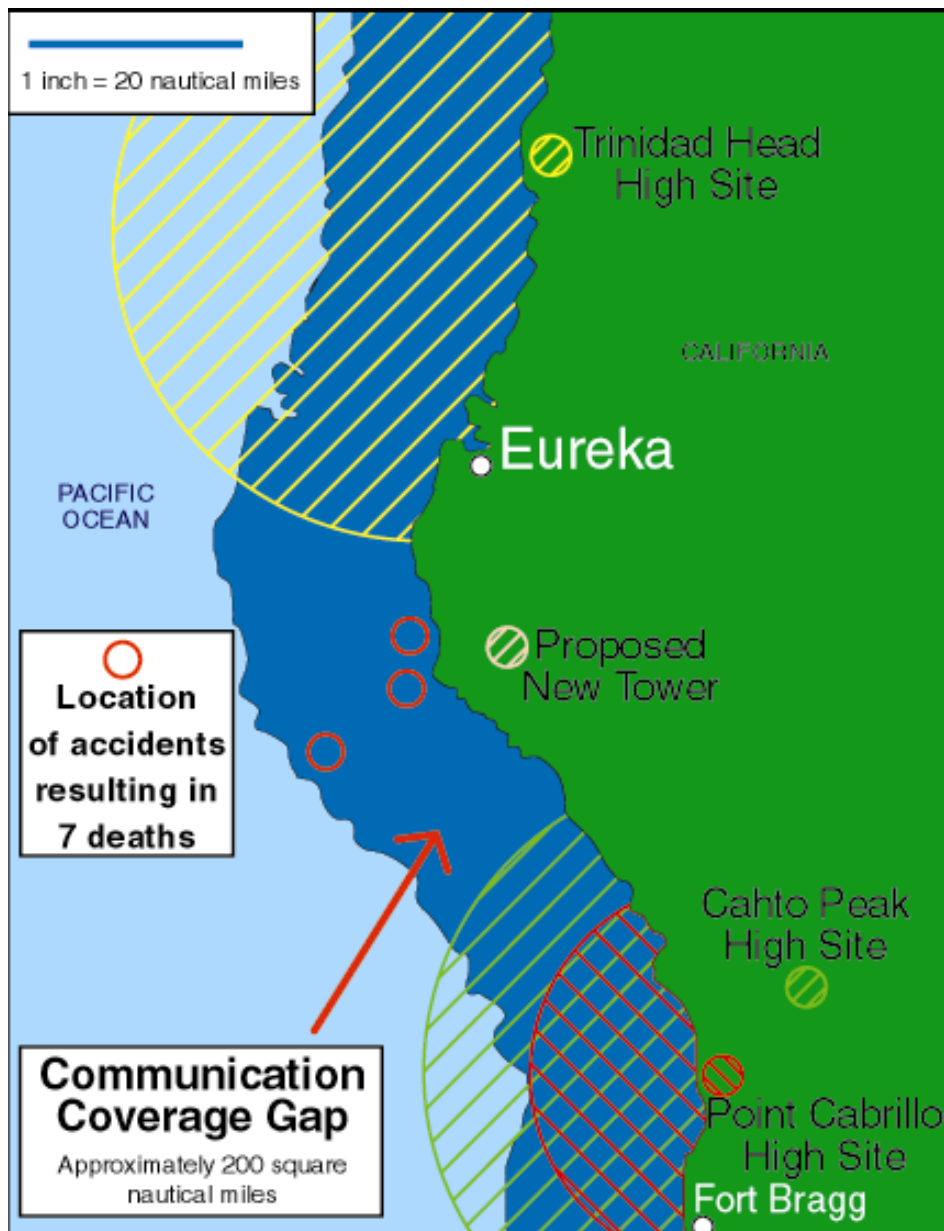
These 88 communication coverage gaps represent an area equivalent to the size of New Jersey, New Hampshire, and Maryland combined, approximately 14 percent of Coast Guard’s total area of responsibility within the 20 nautical mile boundary. Some of these communication coverage gaps are in areas with increasing recreational boating activity, such as off the Florida and California coasts.

Figure 3 - Communication Coverage Gaps



During FY 2000, Coast Guard Group Humboldt Bay, located on the Northern California Coast, conducted a study that demonstrated the seriousness of a coverage gap in its area of responsibility. Over the past 5 years, seven people have died in boating accidents in the gap area shown in Figure 4. While there is no guarantee that elimination of this gap would have saved these lives, the Coast Guard has identified the ability to save additional lives as the primary benefit of the NDS Project.

Figure 4 - California's Group Humboldt Bay NDS Coverage Gap



The Existing NDS Has No Digital Selective Calling Capabilities

Digital Selective Calling (DSC) represents the latest in VHF-FM radio communication technology, and is already being used by mariners² to send distress calls. This technology has been adopted by the International Maritime Organization under the Safety of Life at Sea Convention. Currently, Coast Guard has **no** capability to receive DSC calls from recreational mariners within the 20 nautical mile boundary. DSC would allow mariners to automatically signal Coast Guard communication centers with a digital (email) distress alert with the push of a radio button. Included in the automatically formatted distress alert would be information such as the vessel's identification, owner's name and address, contact person's telephone number, time the message was sent, and a requested radio frequency for verbal communication. The message would also contain the vessel's location if the radio contained global positioning system technology. Once Coast Guard received the call, it could acknowledge the call, move to the designated radio frequency, and establish voice contact.

Demonstration Project Validated Coast Guard's Need for Critical Direction Finding Capabilities

In an attempt to reduce the NDS Project's risk by becoming more knowledgeable about the technologies involved and the equipment available, Coast Guard funded a demonstration project. Using commercial off-the-shelf technology, the demonstration system integrated radio direction finding and digital selective calling capabilities with playback and display capabilities. The system performs after-the-fact radio direction finding analysis using cross-localization technology for any distress call and geographically displays the results on a computer screen.

The system was successfully demonstrated to Coast Guard in July 2000. Additional validation of the concept came in August 2000 when United States Coast Guard (USCG) Activities San Diego successfully used the system in a real operational situation. Alone, out of gas, adrift, and ill, a woman called Coast Guard for assistance. Thinking the woman was off Mission Beach, California, Coast Guard launched a helicopter that searched unsuccessfully for 4 hours and several hundred square miles, at a cost of \$30,845. Determined to rescue the boater, Coast Guard decided to try the demonstration system. Within minutes, search and rescue personnel located the boat off the coast of Ensenada, Mexico—approximately 59 nautical miles south of Mission Beach—and rescued the hypothermic woman.

² The Federal Communications Commission (FCC) requires all fixed-mounted 2-way radios accepted after June 1999 to contain basic DSC capabilities. As of July 2001, 3,782 recreational boaters have registered DSC radios with BoatUS, the FCC's agent.

Interim Measures Provided Limited NDS Improvements

In a report on the *Morning Dew* accident, the NTSB recommended that Coast Guard take immediate remedial actions to improve NDS. This included equipping all communication centers with radio recording/playback and direction finding capabilities. In response, Coast Guard spent approximately \$4 million and implemented some interim measures. These measures included replacement of outdated analog recorders and installation of direction finding equipment at selected sites. Described by Coast Guard as a “Band-Aid” approach, the interim measures program was never intended to fully address any of the NDS deficiencies.

While Coast Guard has installed digital voice recorders at its communication centers, the recorders have no sound filtering/enhancement capabilities. Consequently, Coast Guard personnel may not properly identify a call for help because of excessive background noise. In addition, Coast Guard has installed limited direction finding equipment, primarily at selected low tower sites. Coast Guard is providing direction finding coverage out to about 12 nautical miles, which is only 60 percent of the coastal zone coverage required. Further, the interim direction finding equipment provides for only single line of bearing coverage, with little chance for cross-localization between two tower sites. This means that Coast Guard may now know the general direction of a mariner calling for help, but not the exact location. Whenever the Coast Guard cannot determine the exact location of a mariner requesting assistance, it must perform costly and time-consuming investigative procedures and wide-area searches to locate the caller.

The Coast Guard did not attempt to address communication coverage gaps in its interim measures program. Specifically, Coast Guard Headquarters issued a directive prohibiting the installation of new high site antennas. The Pacific Area Command applied for a waiver from this moratorium and is installing a new antenna site to address the Group Humbolt Bay gap. However, other major communication coverage gaps will remain until completion of the NDS Project.

Coast Guard has also experienced significant problems deploying the interim direction finding equipment. The interim program began in 1999, and Coast Guard had completed approximately 94 percent of the planned installations as of September 2001. (See Exhibit C for a list of planned and completed installations.) Coast Guard experienced problems, such as the inability to gain approval for potential interim tower sites and lack of operating funds to support recurring maintenance and lease costs. Finally, the NTSB informed the Coast Guard in November 2000 that it does not consider the interim measures adequate because they do not fulfill its recommendations.

RECOMMENDATION

We recommend that the Commandant direct the Assistant Commandant for Acquisitions to develop a final NDS acquisition plan and obtain approval of the Department prior to obligating any funds for the procurement contract anticipated to be awarded in the fourth quarter of FY 2002. The plan should, at a minimum, identify:

- what the system capabilities will be with respect to critical functions including coverage, direction finding, and digital selective calling;
- what assets will be acquired and their cost;
- the planned full deployment schedule;
- projected funding needs by fiscal year;
- cost estimates and schedule milestones for upgrading the system to address critical capabilities that were eliminated or reduced; and
- changing communication needs in response to Coast Guard's increased homeland security missions.

U.S. COAST GUARD RESPONSE

We provided Coast Guard a draft copy of this report on September 7, 2001. Coast Guard stated in its October 30, 2001 response that it concurred with our recommendation and it fully embraces the oversight role of the Department to ensure that the project strikes the proper balance between system capabilities and cost, and arrives with the determined range of functionality along a reasonable but prompt timeline. Coast Guard stated that the reductions made in the performance requirements have not significantly reduced the system's functional capabilities below those proposed by the contractors and exceed the capabilities of the existing system. (See the Appendix for a complete copy of Coast Guard's response.)

OFFICE OF INSPECTOR GENERAL COMMENTS

We agree that Coast Guard's revised system performance requirements will result in a system with greater capabilities than the existing system. However, these revisions have significantly diminished capabilities that the Coast Guard originally considered essential for its search and rescue program and initially requested from the contractors.

We also agree that the Coast Guard needs to be concerned about maximizing capabilities while minimizing costs. Our concern is that the reduced system

requirements may not provide the capabilities necessary to effectively perform search and rescue missions or to support increased homeland security mission demands.

In a draft of this report, we recommended that the Coast Guard develop a final NDS acquisition plan for approval of the Department prior to obligating any funds appropriated for the procurement contract, which is anticipated to be awarded in the fourth quarter of FY 2002.

However, Coast Guard also stated revisions made to the system performance requirements have not significantly diminished the system's capabilities. We have revised this report to identify specific performance requirement revisions that diminish capabilities critical to performing search and rescue and homeland security missions. We have also revised the recommendation to address instances where Coast Guard reduced or eliminated critical capabilities it originally requested. Specifically, the acquisition plan should include cost estimates and milestones for adding these capabilities in the future. Also, the plan should identify how Coast Guard intends to meet its short-range communication needs in response to its increased homeland security mission.

ACTIONS REQUIRED

We request that you provide written comments concerning the revised recommendation within 30 days. If you concur with our recommendation, please indicate the specific actions taken or planned and the target dates for completion. If you do not concur, please provide an explanation of your position. Furthermore, you may provide alternative courses of action that you believe would resolve the issues presented in this report.

We appreciate the courtesies and cooperation of U.S. Coast Guard representatives during this audit. If you have any questions concerning this report, please call me at (202) 366-1992 or Thomas J. Howard, Deputy Assistant Inspector General for Maritime and Highway Safety Programs, at (202) 366-5630.

Exhibit A. Objectives, Scope and Methodology

The objectives of this review were to: (1) evaluate the NDS Project's justification; (2) assess whether the NDS Project's cost and schedule estimates are reasonable; and (3) determine whether interim measures taken by the Coast Guard address NDS system deficiencies identified during NTSB's investigation of the *Morning Dew* accident.

Our review concentrated on the NDS Project activity from FY 1996 through the present. We met with congressional staff representatives from various committees and contacted BoatUS and the Recreational Boaters Association to document the public's concerns regarding modernization or replacement of the current NDS. This audit was conducted from June 2000 to January 2002 in accordance with Governmental Auditing Standards prescribed by the Comptroller General of the United States.

We reviewed the NDS Project's Mission Analysis Report and Mission Needs Statement to assess the Coast Guard's justification for the NDS Project. We reviewed the Operational Requirements Document and the Phase I Request for Proposals to identify the Coast Guard's proposed system requirements. We validated the system needs and shortfalls identified in the justification documents through review of technical studies, field visits, and discussions with various Coast Guard field and headquarters units. Furthermore, we assessed the extent Coast Guard's interim measures program addressed system needs and the recommendations made by NTSB following its investigation of the *Morning Dew* accident.

We reviewed the Acquisition Project Baseline report submitted to the Department as well as quarterly and semiannual acquisition reports provided to Congress. We assessed the reasonableness of the Project's schedule in light of the risks identified. We also reviewed appropriations, obligations, and project expenditures to date and analyzed the Coast Guard's Agency Capital Plan and the Acquisition and Capital Improvement Appropriation History Report to determine the reasonableness of Coast Guard's funding projections.

We reviewed Coast Guard's market analysis report and the Canadian Communication System Report, and we met with industry representatives to assess the availability of off-the-shelf technology to modernize the system. To validate the benefits of using available technology, we assessed the results of the Naval Space and Warfare Systems Center's demonstration project funded by the Coast Guard under the NDS Project planning phase.

Exhibit B. Listing of Major NDS Communication Coverage Gaps as of September 2001

Gap Number	District	Region	Location	State	Size (square nautical miles)
1	1	Southwest Harbor	Near Calais	ME	14
2	1	Southwest Harbor	South of Bar Harbor	ME	387
3	1	Boston	East of Riverside	MA	17
4	1	Woods Hole	East of Chatham	MA	19
5	1	Woods Hole	South of Squibnocket	MA	35
6	1	Woods Hole	South of New Shoreham	MA	28
7	1	Moriches	South, between Fire Island and Mastic Beach	NY	37
8	1	New York	Southeast of Sandy Hook	NJ/NY	76
9	5	Atlantic City	East of Selbyville	NJ	6
10	5	Cape Hatteras	East of Knots Island south to Kitty Hawk	VA	179
11	5	Hampton Roads	East of Eastville	VA	192
12	5	Hampton Roads	East of Virginia Beach	VA	79
13	5	Fort Macon	South of Morehead City	NC	270
14	7	Charleston	South of Southport	SC	61
15	7	Charleston	East of Charleston	SC	17
16	7	Charleston	South of Edisto Island	SC	45
17	7	Charleston	East of Sapelo Island	SC	13
18	7	Mayport	Northeast of Jacksonville	FL	23
19	7	Mayport	East of Daytona Beach	FL	138

Exhibit B. Listing of Major NDS Communication Coverage Gaps as of September 2001

20	7	Mayport	Northeast of Vero Beach	FL	22
21	7	Key West	West of Key West Marquesas Keys	FL	416
22	7	Key West	West from Marco Island south to South Everglades	FL	154
23	7	Greater Antilles	East of Signal Hill	PUERTO RICO	347
24	8	Mobile	South of St. Georges Sound	FL	54
25	8	Mobile	South of Fort Walton Beach	FL	20
26	7	St. Petersburg	Southeast of St. Marks	FL	24
27	7	St. Petersburg	West of Cedar Key	FL	22
28	7	St. Petersburg	Northwest of Sarasota	FL	92
29	7	St. Petersburg	West of Fort Myers	FL	53
30	8	New Orleans	Between Grand Chenier and Atchafaya Bay	LA	61
31	8	New Orleans	South of Callou Bay	LA	622
32	8	New Orleans	Wrapping Mississippi Delta North to West	LA	820
33	8	Corpus Christi	Southwest of Baffin Bay	TX	57
34	8	Corpus Christi	Northwest of Corpus Christi	TX	179
35	8	Corpus Christi	Southwest of Matagorda Bay	TX	30
36	8	Galveston	South of Matagorda Bay	TX	153
37	8	Galveston	South of Galveston	TX	62
38	14	Honolulu	East of Maui	HI	13
39	14	Honolulu	Southwest of Kalapana	HI	63
40	14	Honolulu	South of Kaalualu Bay	HI	63
41	14	Guam	South end of Guam	GUAM	509
42	14	Guam	North end of Guam	GUAM	354
43	13	Port Angeles	Northwest of Neah Bay	WA	64

Exhibit B. Listing of Major NDS Communication Coverage Gaps as of September 2001

44	13	Port Angeles	West of Quinault Indian Reservation	WA	12
45	13	Astoria	West of Columbia River Entrance	OR	36
46	13	Astoria	West of Cape Falcon	OR	175
47	11	Humbolt Bay	West of Point St. George	CA	6
48	11	Humbolt Bay	West of Klamath	CA	14
49	11	Humbolt Bay	Southwest of Eureka	CA	200
50	11	Humbolt Bay	West of Cahto Peak	CA	165
51	11	Humbolt Bay	West of Point Arena	CA	8
52	11	San Francisco	South of Point Sur	CA	8
53	11	LA/Long Beach	West of Grover City	CA	39
54	11	LA/Long Beach	West of Lompoc	CA	12
55	11	LA/Long Beach	West of Santa Barbara	CA	20
56	11	LA/Long Beach	South of San Nicolas Island	CA	374
57	11	San Diego	South and West of San Clemente Island	CA	87
58	11	San Diego	South of San Nicolas Island	CA	20
59	17	Kodiak	Turnagain Arm	AK	66
60	17	Kodiak	West of Kenai	AK	752
61	17	Kodiak	From Port Graham to Prince William Sound	AK	1,128
62	17	Kodiak	Kamishak Bay	AK	298
63	17	Kodiak	Port Lions	AK	166
64	17	Kodiak	South of Ugak Bay	AK	891
65	17	Kodiak	Larsen Bay	AK	165
66	17	Kodiak	North and West of Tugidak Island	AK	1,425

Exhibit B. Listing of Major NDS Communication Coverage Gaps as of September 2001

67	17	Valdez	Southwest of Latouche Island	AK	665
68	17	Valdez	South of Hichinbrook Island	AK	238
69	17	Valdez	From Hichinbrook Island to Icy Bay	AK	1,648
70	17	Juneau	Between Icy Bay and Yakutuk Bay	AK	601
71	17	Juneau	Between Dry Bay and Yakutuk Bay	AK	1,123
72	17	Juneau	Glacier Bay	AK	366
73	17	Juneau	Between Mount Crillon and Port Alexander	AK	1,367
74	17	Juneau	South of Zarembo Island	AK	623
75	17	Juneau	West of Prince of Wales Island	AK	322
76	17	Juneau	West of Sukkwan Island	AK	456
77	9	Sault Ste. Marie	North along Porcupine Mountains	MI	434
78	9	Sault Ste. Marie	North of Isle Royale	MI	300
79	9	Milwaukee	East of Sheboygan	WI	334
80	9	Grand Haven	Northwest of Muskegon	MI	21
81	9	Sault Ste. Marie	Northwest of Sault St. Marie	MI	53
82	9	Sault Ste. Marie	East of Traverse City	MI	45
83	9	Detroit	East Alpena	MI	58
84	9	Detroit	Saginaw Bay	MI	282
85	9	Detroit	East Between Harbor Beach and Lexington	MI	325
86	9	Detroit	East of Sterling Heights	MI	27
87	9	Detroit	East of Sandusky, Ohio	MI	57
88	9	Buffalo	West of Erie	NY	188
Total Square Nautical Miles of Communication Coverage Gaps					21,490

Exhibit B. Listing of Major NDS Communication Coverage Gaps as of September 2001

Exhibit C. Location and Status of Interim Direction Finding Installations as of September 2001

CG District	CG Group	DF Installation Site	Status
1	Southwest Harbor	Station Jonesport	Completed
1	Southwest Harbor	Station Rockland	Completed
1	Southwest Harbor	Bass Harbor High Frequency Tower	Completed
1	Boston	Group Boston	Completed
1	Boston	Station Point Allerton	Completed
1	Boston	Station Scituate	Completed
1	Boston	Station Gloucester	Completed
1	Woods Hole	Massachusetts Maritime Academy	Completed
1	Woods Hole	Naval War College	Completed
1	Woods Hole	New Bedford Waste Water Treatment Facility	Completed
1	Woods Hole	Warwick Point Light	Completed
1	Woods Hole	West Chop Light	Completed
1	Woods Hole	Station Cape Cod Canal	Completed
1	Woods Hole	Marine Safety Field Office New Bedford	Completed
1	Woods Hole	Nobska Point Light	Completed
1	Woods Hole	ANT Bristol	Completed
1	Moriches	Station Jones Beach	Completed
1	Moriches	Timber Point Marine Police	Completed
1	Moriches	Station Fire Island	Completed
1	New York	Vessel Traffic Service Sandy Hook	Completed
1	New York	Vessel Traffic Service Perth Amboy	Completed
1	New York	Vessel Traffic Service Governors Island	Completed
1	New York	Staten Island Range Light	Completed
1	New York	Oriente Condos	Completed
1	New York	Station Burlington	Completed
1	New York	Coney Island	Completed
1	New York	Army Corps of Engineers – Jersey City	Completed
1	Long Island	Group Long Island Sound	Completed
1	Long Island	Station Eatons Neck	Completed
1	Long Island	Lynde Point Light	Completed
1	Long Island	Station New London	Completed
1	Long Island	Fishers Island	Completed
1	Portland	Seguin Light	Completed
1	Portland	Cape Elizabeth High Frequency Tower	Completed
1	Portland	Goat Island Lighthouse	Completed
5	Atlantic City	Group Atlantic City	Completed
5	Atlantic City	Station Barnegat Light	Completed
5	Atlantic City	Station Cape May	Completed
5	Atlantic City	Station Shark River	Completed
5	Atlantic City	Station Great Egg	Completed
5	Atlantic City	Bally's Casino (Hilton)	Completed

Exhibit C. Location and Status of Interim Direction Finding Installations as of September 2001

CG District	CG Group	DF Installation Site	Status
5	Cape Hatteras	Group Cape Hatteras	Completed
5	Cape Hatteras	Station Hatteras Inlet	Completed
5	Cape Hatteras	Station Oregon Inlet	Completed
5	Hampton Roads	Station Cape Charles	Completed
5	Hampton Roads	Group Hampton Roads	Completed
5	Hampton Roads	Station Little Creek	Completed
5	Hampton Roads	Station Milford Haven	Completed
5	Fort Macon	None planned	N/A
5	Baltimore	Activity Baltimore	Completed
5	Baltimore	Station Crisfield	Completed
5	Baltimore	Station Inigoes	Completed
5	Baltimore	Cove Point Light	Completed
5	Baltimore	Station Stillpond	Completed
5	Baltimore	Station Annapolis	Completed
5	Eastern Shore	Group Eastern Shore	Completed
5	Eastern Shore	Station Indian River Inlet	Completed
5	Eastern Shore	Station Ocean City	Completed
5	Philadelphia	Group Philadelphia	Completed
5	Philadelphia	Chester Rear Range Light	Completed
7	Charleston	Group Charleston	Completed
7	Charleston	Station Georgetown	Completed
7	Charleston	Station Tybee	Completed
7	Mayport	Group Mayport	Completed
7	Mayport	Station Brunswick	Completed
7	Mayport	Station Ponce De Leon Inlet	Completed
7	Mayport	Station Port Canaveral	Completed
7	Key West	Group Key West	Completed
7	Key West	Station Islamorda	Completed
7	Key West	Station Marathon	Completed
7	Greater Antilles	Air Station Borinquen	Completed
7	Greater Antilles	Station San Juan	Completed
7	Miami	Group Miami	Completed
7	Miami	Station Fort Lauderdale	Completed
7	Miami	Station Fort Pierce	Completed
7	Miami	Station Fort Worth Inlet	Completed
7	St. Petersburg	Group St. Petersburg	Incomplete
7	St. Petersburg	Station Cortez	Incomplete
7	St. Petersburg	Station Fort Myers	Completed
7	St. Petersburg	Station Sand Key	Incomplete
7	St. Petersburg	Station Yankeetown	Completed
8	Mobile	Group Mobile	Completed
8	Mobile	Station Panama City	Completed
8	Mobile	Station Pensacola	Completed
8	Mobile	Station Destin	Completed
8	Mobile	Station Pascagoula	Completed
8	Mobile	Dauphin Island	Completed

Exhibit C. Location and Status of Interim Direction Finding Installations as of September 2001

CG District	CG Group	DF Installation Site	Status
8	New Orleans	Group New Orleans	Completed
8	New Orleans	Station Grand Isle	Completed
8	New Orleans	Station Gulfport	Completed
8	New Orleans	Station Venice	Completed
8	Corpus Christi	Group Corpus Christi	Completed
8	Corpus Christi	Station Port Aransas	Completed
8	Corpus Christi	Station Port Isabel	Completed
8	Corpus Christi	Station Port O'Connor	Completed
8	Galveston	Group Galveston	Completed
8	Galveston	Station Freeport	Completed
8	Galveston	Morgan's Point	Completed
8	Galveston	Station Sabine	Completed
8	Lower Mississippi	None planned	N/A
8	Ohio Valley	None planned	N/A
8	Upper Mississippi	None planned	N/A
9	Buffalo	None planned	N/A
9	Detroit	Toledo Harbor Light	Completed
9	Detroit	Camp Perry Water Tower	Completed
9	Detroit	Ballast Island	Completed
9	Detroit	Marblehead Tower	Completed
9	Detroit	Bayview Police	Completed
9	Detroit	Harsen's Island	Completed
9	Detroit	Macomb Sheriffs	Completed
9	Detroit	St. Clair Crib	Completed
9	Detroit	Toledo Crib	Completed
9	Grand Haven	None planned	N/A
9	Milwaukee	Dever Crib	Completed
9	Milwaukee	Gary, Indiana	Completed
9	Milwaukee	Whiting, Indiana	Completed
9	Milwaukee	68 th Street Crib	Completed
9	Sault Sainte Marie	None planned	N/A
11	Humbolt Bay	Station Humbolt Bay	Completed
11	Humbolt Bay	Group Humbolt Bay	Completed
11	Humbolt Bay	Redwood Information Center	Completed
11	Humbolt Bay	Dorado Mooring/Crescent City	Completed
11	San Francisco	Station Rio Vista	Completed
11	San Francisco	Yerba Buena Island	Completed
11	San Francisco	Point San Pablo	Completed
11	San Francisco	Point Bonita	Completed
11	San Francisco	Point Rey Completed Microwave Site	Completed
11	Los Angeles/Long Beach	Vessel Traffic Information Service Fort MacArthur	Incomplete
11	Los Angeles/Long Beach	Seal Beach Lifeguard Tower	Completed
11	Los Angeles/Long Beach	Santa Monica Pier	Incomplete
11	Los Angeles/Long Beach	Point Vincente Lifeguard Tower	Completed

Exhibit C. Location and Status of Interim Direction Finding Installations as of September 2001

CG District	CG Group	DF Installation Site	Status
11	San Diego	None planned	N/A
11	Port Angeles	Group Port Angeles	Completed
11	Port Angeles	Pearson Creek	Completed
11	Port Angeles	Point Wilson	Completed
11	Port Angeles	Whidbey Island	Completed
13	Astoria	Station Grays Harbor	Completed
13	Astoria	Cape Disappointment	Completed
13	Astoria	Group Astoria	Completed
13	Astoria	Station Tillamook Lookout	Completed
13	North Bend	Grizzly Mountain	Incomplete
13	North Bend	Station Umpqua	Incomplete
13	North Bend	Station Coos Bay	Incomplete
13	North Bend	Station Yaquina Bay	Incomplete
13	Portland	None planned	N/A
13	Seattle	West Point	Completed
13	Seattle	Point Robinson	Completed
13	Seattle	Point No Point	Completed
13	Seattle	Vessel Traffic Information Service Village Point	Completed
14	Hawaii	Air Station Barbers Point	Completed
14	Hawaii	Diamond Head Lighthouse	Completed
14	Hawaii	Kona Fire Station	Completed
14	Hawaii	Natural Energy Lab	Completed
14	Hawaii	Wailuku Bay Harbormaster	Completed
14	Hawaii	Kula Fire Station	Completed
14	Guam	Orote Point	Completed
14	Guam	Naval Computer and Telecommunications Station Building 150	Completed
14	Guam	Marizo Mayor's Office	Completed
17	Juneau	None planned	N/A
17	Kodiak	None planned	N/A

Status of DF Installations at Sites			
Total Sites Completed	140	Total Sites Incomplete	9
Total % Completed	94%	Total % Incomplete	6%

Exhibit C. Location and Status of Interim Direction Finding Installations as of September 2001

Exhibit D. Major Contributors to This Report

Steve Rybicki	Program Director
Richard Noll	Project Manager
Ruth Blevins	Senior Analyst
Katya Mischenko	Analyst
Calvin Moore	Analyst
Shirley Murphy	Editor

Appendix. Coast Guard ResponseU.S. Department
of TransportationUnited States
Coast Guard**Memorandum**

Subject: DOTIG REPORT: AUDIT OF THE PLANNING
PROCESS FOR THE NATIONAL DISTRESS AND
RESPONSE SYSTEM MODERNIZATION PROJECT

Date: 30 OCT 2001
7500

From: Commandant; U.S. Coast Guard

Reply to: G-CQM
Attn. of: Mark Kulwicki
267-2294

To: Assistant Inspector General for Auditing

Ref: (a) DOTIG Draft Report dated September 7, 2001

1. Enclosed is the U.S. Coast Guard response to the recommendations presented in the Department of Transportation Inspector General (DOTIG) report on the "Audit of the planning Process for the National Distress and Response System Modernization Project".

2. The response is for your consideration and inclusion in your final report on this matter. For additional information concerning this response, please contact Rear Admiral Harvey Johnson, at 267-1436.

 A handwritten signature in black ink, appearing to be "T. W. J. J. J.", written over a horizontal line.

T. W. J. J. J.
Vice Admiral, U. S. Coast Guard
Chief of Staff

Encl: (1) U.S. Coast Guard Response to DOTIG Recommendations

STATEMENT ON DEPARTMENT OF TRANSPORTATION INSPECTOR GENERAL (DOTIG) REPORT

I. TITLE: “Audit of the Planning Process for the National Distress and Response System Modernization Project,” Project No. 00M3005M000, September 7, 2001.

II. U.S. COAST GUARD POSITION

The United States Coast Guard (USCG) is employing an integrated systems approach to acquire the National Distress and Response System Modernization Project (NDRSMP). The USCG is using a two-phased acquisition approach that in the first phase seeks industry consultation to determine how new technologies can significantly improve the existing National Distress System by providing core capabilities at a reasonable cost. The second phase implements a final design to install the new Distress and Response System. NDRSMP will usher in a new era of operational efficiency in the coastal environment concurrent and in consonance with the new capabilities that will be provided by the Coast Guard’s Deepwater project.

NDRSMP will receive maritime distress and emergency alerts and facilitate a command and control of assets for all operational missions that occur in the coastal and internal waterway areas. In addition to distress call monitoring and response, the system will provide recording, archiving and playback of all voice transmissions, assist in determining the position of the distress caller, and provide for the position tracking of Coast Guard vessels. The system will also provide the capability to disseminate Marine Safety Information, protect transmission of sensitive Coast Guard mission information, meet the Presidential Decision Directive 63 (PDD63) regarding the nation’s critical infrastructure, and enable the United States to meet SOLAS II requirements by providing Digital Selective Calling (DSC) capability in the A-1 coastal area (area measured 20 nautical miles seaward from the territorial sea baseline). NDRSMP will result in a fully capable, integrated distress response and Coast Guard command and control communications system, able to support efficient operational accomplishment across the full spectrum of Coast Guard mission areas.

The Coast Guard concurs with the DOTIG’s recommendation and fully embraces the oversight role of the Department to ensure that the project strikes the proper balance between system capabilities and cost, and arrives with the determined range of functionality along a reasonable but prompt timeline. In November 2000, at the Coast Guard’s initiative, NDRSMP was added to the Bi-Monthly DOT Major Project Status Report. This report provides baseline and updated information on the project’s acquisition cost, schedule and performance. Though not the only form of exchange on

Appendix. Coast Guard Response

major projects, the report has been a useful mechanism to highlight project issues and engage oversight by the Department.

We have the following observations about the Results in Brief:

The Coast Guard's modernization of the National Distress System is justified.

The Coast Guard is pleased that the DOTIG joins with many others to recognize the deficiencies of the existing 30-year old short-range emergency system and to support its replacement and modernization.

Interim measures augment NDS with critical functionality pending arrival of NDRS.

When operational events demonstrated an immediate need to address several critical system deficiencies, the Coast Guard developed an interim plan to serve as a bridge between the limitations of the existing NDS and the expected functionality of an integrated NDRSMP. The interim measures included installation of digital voice recorders (with archiving and immediate playback capability), direction-finding (DF) equipment and increases to command center staffing as immediate system enhancements to strengthen the response system pending arrival of NDRSMP. At a cost of \$4M, the rapid installation of digital voice recorders is complete, DF equipment nearly complete, and increased staffing continues under a multi-year phased plan. The Coast Guard has described these interim measures as *limited*, recognizing that other NDS deficiencies remained and that the interim equipment did not meet the functionality standards that will be included in NDRSMP. Nonetheless, these interim actions represent a significant improvement from the baseline system and enhance the Coast Guard's capability to save lives. The Coast Guard accepts NTSB's and DOTIG's assessment of the interim measures as limited, with the perspective that the best approach to achieving our shared interest in safety and saving lives is to address the critical deficiencies with interim measures while remaining steadfast in our focus on fielding NDRSMP as an integrated solution. Hence, the Coast Guard does not look favorably on a capability-by-capability interim approach that would layer new or improved capabilities one upon another only to divert resources and unduly delay the integrated system that is so desperately needed.

NDRSMP strikes the proper balance between system capabilities and cost, and will arrive with superior functionality along a reasonable but prompt timeline.

Phase One Design Demonstration and Validation of the Coast Guard's two-phased acquisition approach was designed to seek unconstrained industry solutions to determine how, and at what cost, new technologies could significantly improve the existing National Distress System: it did not represent a Coast Guard vision of the final design. The initial Operational Requirements Document (ORD) and Contract Specifications were intentionally prepared to explore the limits of technology and better understand the various parameters of cost. These acquisition documents required the three System Integration Contractors (SICs) to not only submit an initial construct for the new NDRS,

Appendix. Coast Guard Response

but also to recommend modifications that would retain maximum system capability at minimum cost. The Coast Guard sought recommendations for the same purpose from the NDRSM Project and Technical Support Agents (Booz-Allen & Hamilton, and the Navy's Space and Naval Warfare Systems Center (SPAWAR)). Hence, while the initial project estimates were low and the initial Life Cycle Cost Estimates (LCCEs) were somewhat higher than expected, the existence of a gap between the two, and the resultant opportunity to achieve cost reductions by tradeoffs that did not diminish capability, were not unexpected: both were by design.

Where the DOTIG draws attention to the LCCE multiple as three times over the initial baseline, that ratio is relevant only to the extent that it reflects attainment of the Coast Guard's objective to better understand the various parameters of cost. The ratio is irrelevant when portrayed as an unexpected event or a metric for project (mis)management. Likewise, the DOTIG's view that the Coast Guard has revised the system requirements by lowering performance standards is unfounded. The SIC response to the initial ORD and specification was never intended to portray the final design, but primarily to explore the limits of technology. In terms of functionality and cost, the revised ORD and specification (which support the new project baseline range of \$475M to \$580M) represents a more accurate and well considered baseline of the Coast Guard's expectation for final cost and design. It is important to note that the revised ORD, as was the case with the initial ORD, contains provisions that will support future decisions to evaluate once again the final system design and weigh potential adjustments to achieve maximum system capability at minimum cost.

The Coast Guard relied primarily on the expertise of the three System Integration Contractors and the Project and Technical Support Agents to strike a reasoned balance between system capabilities and cost. By reviewing the detailed analysis, the Coast Guard learned that it could – and should -- make a number of reasonable changes in several functional, performance and technical areas that would reduce total ownership cost without compromising needed performance. The Coast Guard gained a better understanding of technology and cost factors, identified the natural break points where cost exceeded value, and resolved apparent inconsistencies in performance standards. For example:

The Coast Guard found that it could potentially save nearly \$70M by modifying the availability requirement from 99.95 percent to the industry standard of 99.5 percent. As a practical matter, the phone line over which the signal is transmitted is only available to the industry standard. This changed our allowable system down time from less than 1 minute per day to less than 8 minutes per day. The current NDS has no system monitoring capability and therefore has no availability standards.

There was potential to save \$60M by specifying restoration of critical functions in 24 hrs vice the originally specified 6 hrs and changing full system recovery time from 12 hrs to 7 days. A review of previous natural disasters and/or catastrophic events and actual restoration time periods demonstrated that these changes were reasonable.

Appendix. Coast Guard Response

A revision to the position localization requirement permitted a reduction of nearly 300 towers, offered the potential savings of nearly \$200M, and brought no significant reduction in the Coast Guard's capability to locate a mariner in distress. The revised ORD changes the position localization requirement from a maximum area of uncertainty of less than or equal to 25 square nautical miles to a single line of bearing with an accuracy of plus or minus 2 degrees. The initial performance specification drove a number of cost factors; primary among them was the number of towers required to meet the extended coverage for all areas. Under the revised performance specification, a distress call at the 20 nautical mile boundary, with the DF antenna located on the shoreline, incurs an area of uncertainty less than 14 square nautical miles, well below the initial standard of 25 square nautical miles.

These and other modifications brought final system design into sharper focus. As described in the table below and defined by the revised ORD and revised specification (supported by the revised baseline range of \$475M to \$580M), NDRSMP will provide a far more capable system at a reasonable cost.

Existing NDRS vs. NDRSMP

	CAPABILITIES	EXISTING NDRS	NDRSMP
Monitor Distress Calls	Continuous Uninterrupted Channel 16 VHF-FM Guard	NO	YES
	Channel 70 VHF-FM DSC	NO	YES
	Communications Coverage	Numerous Gaps	20NM Goal
	Direction Finding	NO	YES
Alert Response Assets	Automatic Asset Tracking	NO	YES
	Data Communications	NO	YES
	Public Safety Interoperability	NO	YES
	Full Coverage Protected Comms	NO	YES
Coordinate Response Activities	Automatic Marine Broadcasts	NO	YES
	Geographic Display	NO	YES
	Number of Simultaneous Communications Channels	1	6
	Archiving/Recording	Voice	Voice/Data
	Operational Availability	unknown	99.50%
	Recoverability	No Systematic Plan	24-hours for critical functions

The Coast Guard expects to achieve full operational capability of NDRSMP by FY-06 concurrent with Deepwater.

The Coast Guard's NDRSMP project management and revisions in system design are positively responsive to the dual concern of the DOTIG, first, the magnitude of the Coast Guard Acquisition, Construction and Improvement (AC&I) budget and Capital Investment Plan (CIP) presents a challenge and second, the Department and Congress have concerns for NDRSMP cost and schedule. Whereas the premise for DOTIG

Appendix. Coast Guard Response

concern is a project cost approaching \$1B and a CIP reservation of \$300M, neither figure is correct. As reflected in this response, the Coast Guard estimates the project cost at \$580M and has updated the CIP accordingly. The House report language "...encourages the Coast Guard to simplify this program so that essential modernization requirements can be met without delay to the current schedule." Coast Guard actions to revise the ORD and specification have been aimed in that direction and we are confident that we will hit the mark. Without intending to diminish either the challenge or the level of concern, it is important to note that both the House and Senate reports in the FY02 Transportation Appropriations Bill recognized the value to the nation and the Coast Guard of both NDRSMP and Deepwater by identifying a significantly higher level of AC&I funding for FY-02: \$600M in the House and \$669M in the Senate, both increased against the average AC&I appropriation for the 1990s of \$396M. The Coast Guard remains committed to the Department, Congress and the mariner to resolve all concerns by delivering a highly capable, integrated National Distress and Response System by the end of FY-06.

III. RECOMMENDATIONS AND RESPONSES

The Coast Guard fully concurs with the recommendation, but does so from a different perspective. Where the DOTIG recommends a submission of an acquisition plan from the perspective that Departmental oversight is essential to save the project from cost driven shortfalls in capability, the Coast Guard approaches Departmental oversight with confidence in our approach and ability to meet the expectations of the Department, Congress, the maritime community and the operational Coast Guard who need the capabilities described.

The Coast Guard's two-phased, integrated systems approach has provided a detailed and analytical review of the wide range of technology solutions, each screened with a pragmatic eye on cost and value to arrive at a baseline design that encompasses maximum capability at minimum cost. This process has been driven by an imperative to meet the current and future needs of the operational Coast Guard, not by reverse engineering to avoid the consequences of an expectedly large initial estimate of LCCEs for an unconstrained system. The revised ORD and specifications represent a sound statement of NDRS performance requirements and confidence that the system can be delivered according to the following timeline and cost estimates.

The planned full deployment schedule is as follows:

FY03 – Complete Developmental and Operational Test and Evaluation, Initial Operating Capability at Groups Atlantic City & Eastern Shore, Low Rate Initial Production for Groups St Petersburg, Mobile, Seattle, & Port Angeles

FY04 – 35% of Coastal Groups complete. Field NDRSMP to Activities New York, Groups Moriches, Long Island Sound, Philadelphia, Activities Baltimore, Groups Hampton Roads, Key West, Miami, Mayport, Corpus Christi, Galveston, New Orleans, Astoria, Portland, & North Bend

FY05 – 70% of Coastal Groups complete. Field NDRSMP to Group’s Woods Hole, Boston, Portland, Southwest Harbor, Cape Hatteras, Fort Macon, Charleston, Buffalo, Detroit, Grand Haven, Humbolt Bay, San Francisco, LA/LB, & Activities San Diego
FY06 – 100% of Coastal Groups complete. Field NDRSMP to Group’s Milwaukee, Sault Ste. Marie, Honolulu, District 17 (Juneau), Air Station Kodiak, & Marine Safety Office Valdez. Groups Ohio Valley, Upper Mississippi River, Lower Mississippi River, Greater Antilles Section (GANTSEC), & Marianas Section (MARSEC) receive full NDRSMP equipment upgrades without increased communications coverage.

The projected funding requirements by fiscal year per the revised ORD is as follows:

Funding Year (Major Milestone)	Estimate
Funding to Date	\$49M
FY02 (Contract Award)	\$42M
FY03 (Operational Testing/IOC)	\$90M
FY04 (35% Groups Operational)	\$134M
FY05 (70% Groups Operational)	\$137M
<u>FY06 (100% Groups Operational)</u>	<u>\$74M</u>
Project Funding Target	\$526M
- Approved APB range is \$475M-\$580M	

Responding to DOTIG’s recommendation that the acquisition report contain “what assets will be acquired and their cost,” it should be noted that the NDRSMP acquisition approach allows the Systems Integrator Contractor to determine the final assets to be acquired within the scope of the project (and their corresponding cost). Accordingly, these assets cannot be specifically determined prior to the award of the procurement contract.