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*Office of Inspector General*  
*Audit Report*

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**Coastal Patrol Boat Acquisition**

**U.S. Coast Guard**

**Report Number: MA-1998-033**

**Date Issued: December 21, 1998**





U.S. Department of  
Transportation

Office of the Secretary  
Of Transportation


Office of Inspector General

# Memorandum

Subject: ACTION: Report on Coastal Patrol Boat  
Acquisition, United States Coast Guard  
MA-1999-033

Date: December 21, 1998

From:

  
Lawrence H. Weinrob

Assistant Inspector General for Auditing

Reply to

Attn of: JA-1

To:

Commandant  
United States Coast Guard

On October 16, 1998, we issued a draft report on the United States Coast Guard (Coast Guard) acquisition of new coastal patrol boats. The draft addressed the (1) process used by the Coast Guard to determine whether the coastal patrol boat is ready for full production and (2) status of Coast Guard actions to establish the quantity of coastal patrol boats needed and the homeport location for each coastal patrol boat. On October 23, 1998, the Coast Guard met with the Department of Transportation's Acquisition Review Council and was subsequently granted approval to begin full-rate production of the new coastal patrol boat. On November 19, 1998, the Coast Guard provided a written response to the recommendations contained in our draft report. This report summarizes the conclusions and recommendations contained in the draft report, results of the meeting with the Transportation System Acquisition Review Council, and the Coast Guard's response to our draft report.

The Coast Guard is procuring the 87-foot Marine Protector Class patrol boat to replace its 37 82-foot Point Class patrol boats that are at the end of their useful life. Patrol boats are used in support of the Coast Guard's missions, including enforcement of laws and treaties, drug interdiction, search and rescue, marine environmental responses, and recreational boating safety. Coastal patrol boats operate within 200 nautical miles of the shoreline.

The Coast Guard plans to acquire a total of 50 new coastal patrol boats at an estimated total cost of \$307.2 million. Operational test and evaluation of the new coastal patrol boat was conducted from May through June 1998. An independent

assessment of the operational test and evaluation was conducted simultaneously by the Coast Guard Research and Development Center.

## RESULTS IN BRIEF

In our draft report, we recommended that the Coast Guard request tentative approval for full-rate production and delay exercising the first full production option pending resolution of the (1) issues identified in the operational test and evaluation and independent operational test and evaluation, (2) need for engineering change proposals related to the recommendations identified during testing of the lead boat, and (3) number of patrol boats to be acquired. The Coast Guard addressed our recommendations during their October 23, 1998, presentation to the Transportation System Acquisition Review Council, citing corrective actions that were planned, underway, or completed.

On November 5, 1998, the Transportation System Acquisition Review Council approved the coastal patrol boat for full-rate production. It also conditionally approved the proposed total of 50 new patrol boats contingent upon Coast Guard revising its justification. In the interim, the Coast Guard can only exercise options for 23 additional patrol boats. This limits the total number of boats authorized for construction to 32, including the lead boat and 8 low-rate initial production boats.

In their November 19, 1998, written response to our draft report, the Coast Guard concurred with all three recommendations and cited actions planned, underway, or completed to resolve the 5 critical operational issues and the 12 recommended structural, performance, and safety enhancements. The Coast Guard also cited its efforts to complete engineering change proposals and to provide the necessary supplemental information to support its request for 50 boats. *Although all of the issues are not yet resolved, the actions planned and underway by the Coast Guard are responsive to the recommendations in our draft report.*

On October 21, 1998, additional funding for coastal patrol boats was included in the FY 1999 Emergency Supplement Appropriation. While this does not increase the number of boats to be acquired, it does provide Coast Guard the ability to procure the new boats sooner than planned. If Coast Guard implements an expedited acquisition schedule, it may face challenges in ensuring the availability of required crews and operations and maintenance funding.

**DRAFT REPORT RECOMMENDED TENTATIVE  
APPROVAL OF FULL-RATE PRODUCTION**

In our October 16, 1998 draft report, we noted that the Coast Guard was recommending that it proceed to full-rate production of the new coastal patrol boat based on the results of the operational test and evaluation and an independent assessment by the Coast Guard Research and Development Center. Although the Coast Guard developed a comprehensive test and evaluation plan, we found that some of the Critical Operational Issues were not resolved. The test and evaluation also identified structural, performance, and safety enhancements that needed to be made to the boat. These issues are identified below.

**Critical Operational Issues Not Resolved:**

- Reliability, Maintainability, and Availability were not fully evaluated because the operational test and evaluation period was not long enough.
- Small Boat Operations were not fully evaluated because the boat was not tested in extreme weather conditions of minor icing and tropical heat.
- The surface search radar was unreliable, difficult to re-boot, and experienced unexplained failures. Also, two welds on the upper mast section failed.
- A waiver to eliminate the requirement to maintain hand written logs/charts has not been obtained in favor of automated technology to retain data.
- The heating, ventilation, and air conditioning system did not operate properly during the operational test and evaluation.

**Structural, Performance, and Safety Enhancements Identified:**

- Excessive noise/low speed of cutter boat.
- Alternative man-over-board pickup/brow site on board cutter.
- Quick acting watertight scuttle for Forecastle.
- Streamlining anchoring system/add pelican hook.
- Eliminate bolt heads on soft patch.
- Adding additional flush hatch in soft patch to allow engine room fire fighting from deck.
- Installing appropriate 3M-brand non-skid system on all cutters.
- Adding redundant radar.
- Adding appropriate real time speed indicator for radar interface.
- Isolating/Separating raw water systems for generators and for main diesel engines.
- Increasing visibility of pilothouse by moving flag box.
- Adding explosimeter, oxygen indicator, fire finder and immersion suits to outfit list.

We also were unable to determine the Coast Guard's basis for requesting a total of 50 new coastal patrol boats. Supporting documentation specified the goals to be achieved from the acquisition and cited studies of mission requirements and other factors, but did not provide an explanation of how the quantity was determined. Moreover, at that time, the Commandant had not formally approved any of the options on quantity that were forwarded to him in August 1998.

We further reported that the Coast Guard's determination on homeport locations for the new coastal patrol boats was incomplete. Although the Coast Guard had plans for 37 of the requested boats, homeport locations had only been approved for the first 7 new patrol boats. Coast Guard's plans were to finalize homeport locations once the actual patrol boat fleet size was approved.

The Coast Guard recognized the need to address the issues identified as a result of operational test and evaluation and to finalize its decisions on the number of boats and homeport locations. As a result, actions were planned or underway to resolve the open Critical Operational Issues and implement boat enhancements. We recommended that the Coast Guard request tentative approval for full production from the Department of Transportation and delay exercising the first full production option pending resolution of the:

- Issues identified during operational test and evaluation and the independent assessment,
- Issues identified during operational test and evaluation and the independent assessment,
- Need for engineering change proposals and equitable adjustments to the price in accordance with contract terms, and
- Number of patrol boats to be acquired.

#### THE TRANSPORTATION SYSTEM ACQUISITION REVIEW COUNCIL APPROVED FULL-RATE PRODUCTION

On October 23, 1998, the Coast Guard met with the Department's Transportation Systems Acquisition Review Council, chaired by the Deputy Secretary of Transportation. At this meeting, the Coast Guard recommended that they be authorized to proceed with full production based on the results of the operational test and evaluation and the independent assessment by the Coast Guard Research and Development Center. The Coast Guard also stated that the Commandant had approved the option of acquiring a total of 50 new coastal patrol boats and asked that

the Transportation Systems Acquisition Review Council do the same. At the time, the Coast Guard had already exercised options for 9 boats and was requesting authorization to exercise options for 41 additional boats.

During the presentation to the Transportation Systems Acquisition Review Council, the Coast Guard also addressed the conclusions and recommendations contained in our draft report. Specifically, the Coast Guard outlined actions planned, underway, and completed to address the unresolved Critical Operational Issues and recommendations for structure, performance, and safety enhancements.

In a Decision Memorandum dated November 5, 1998, the Deputy Secretary approved the new coastal patrol boat as ready for Full Production. The Deputy Secretary also conditionally approved the proposed total of 50 new patrol boats contingent upon the Coast Guard reevaluating and rejustifying a fleet of 50 boats. Until the Coast Guard completes its analysis and briefs the Transportation System Acquisition Review Council on the results, the Coast Guard can only exercise options for 23 additional patrol boats. This limits the total number of boats authorized for construction to 32, including the lead boat and 8 low-rate initial production boats.

#### MANAGEMENT COMMENTS ON DRAFT REPORT

On November 19, 1998, we received a written response from the Coast Guard Chief of Staff addressing the recommendations contained in our October 16, 1998 draft report. The Coast Guard concurred with the recommendations and cited actions planned, underway, or completed to address each recommendation. The following paragraphs summarize the Coast Guard's response to each recommendation and our assessment of their response. A copy of the Coast Guard's complete response is included as an attachment to this report.

#### Recommendations

**Recommendation 1** - Resolve the issues identified during the Operational Test and Evaluation and Independent Operational Test and Evaluation.

The Coast Guard concurred with this recommendation and stated that the issues and their status were addressed during its presentation to the Transportation Systems Acquisition Review Council on October 23, 1998. The paragraphs below summarize Coast Guard actions to address the 5 critical operational issues and 12 structural, performance, and safety enhancements cited in our draft report as unresolved. The Coast Guard considers these issues to have been addressed based on the discussion of their status at the October 23, 1998, Transportation Systems Acquisition Review Council. However, as noted below, some of the actions are not complete.

## Critical Operational Issues

**Reliability, Maintainability, and Availability** - The Coast Guard's response states that the reliability, maintainability, and availability assessment can only be determined after years of operation and that no major acquisition has ever fully resolved this issue during operational test and evaluation. Notwithstanding, the Coast Guard noted that during the two-month testing period, the operational availability of the patrol boat was 98 percent. The Coast Guard also noted that the operational test and evaluation plan anticipated a limitation in scope due to a short testing period that may not allow full resolution of this issue. The Coast Guard considers the issue satisfactorily resolved despite the limitation. We agree that this limitation should not prevent the Coast Guard from proceeding with full-rate production as authorized by the Transportation System Acquisition Review Council.

**Small Boat Operations** - The Coast Guard anticipated a scope limitation when developing the test plan for small boat operations. The small boat has not been tested in extreme weather conditions of tropical heat and minor icing. Although we received no documentation, the Coast Guard told us it plans to monitor the performance of the small boat as these conditions are experienced. The Coast Guard considers the issue satisfactorily resolved despite the limitation. We agree that this limitation should not prevent the Coast Guard from proceeding with full-rate production as authorized by the Transportation System Acquisition Review Council.

**Surface Search Radar and Mast** - The Coast Guard has installed a new production surface search radar that has tested effectively in detecting, acquiring, and tracking surface vessels and meets the complete satisfaction of the Office of Cutter Management. In addition, an engineering change proposal requiring a redesign to correct structural problems in the patrol boat mast has been implemented. The new mast has been installed on all boats except the lead boat, which will be retrofitted in early January 1999. The Coast Guard considers these issues satisfactorily resolved. We agree.

**Cutter Operations** - The Coast Guard stated that this issue was satisfactorily tested and only reported as partially resolved because the Operational Test Director suggested a potential improvement to eliminate the hand written logs/charts. Eliminating hand written logs/charts was not an element of the original test plan, therefore the Coast Guard considers the issue satisfactorily resolved. We agree.

**Accommodations** - Recent data indicates the need for a larger compressor to support the heating, ventilation, and air conditioning system. The contractor is working with the subcontractor to correct the problem. In the interim, the Coast Guard is

withholding \$20,000 per boat from the contract price until the contractor satisfies the requirement. This issue is not satisfactorily resolved. The Coast Guard's actions are responsive to our recommendation.

### Structural, Performance, and Safety Enhancements

The Coast Guard has a coastal patrol boat Configuration Control Board responsible for reviewing and approving all coastal patrol boat recommendations. For the 12 structural, performance, and safety enhancement recommendations made by the Office of Cutter Management, the Configuration Control Board has either (1) submitted an engineering change proposal (ECP) or (2) determined that the recommendation was not necessary, cost prohibitive or technically not feasible. The status of each recommendation is shown below. We consider the actions taken or planned to be responsive to the recommendation.

- Alternative man-over-board pickup/brow site on board cutter. (Approved-resolving through contractor)
- Installing appropriate 3M-brand non-skid system on all cutters. (Approved-ECP G-070)
- Adding redundant radar. (Approved-ECP G-081)
- Adding appropriate real time speed indicator for radar interface. (Approved-resolving through contractor)
- Adding explosimeter, oxygen indicator, fire finder and immersion suits to outfit list. (Approved-added to outfit list)
- Excessive noise/low speed of cutter boat. (Approved-satisfactory/ECP G-084)
- Quick acting watertight scuttle for Forecastle. (Approved-ECP G-082)
- Streamlining anchoring system/add pelican hook. (Approved-ECP G-085)
- Eliminate bolt heads on soft patch. (Approved-ECP G-082)
- Isolating/Separating raw water system for generators and for main diesel engines. (Approved-ECP G-083)
- Adding additional flush hatch in soft patch to allow engine room fire fighting from deck. (Disapproved)
- Increasing visibility of pilothouse by moving flag box. (Disapproved)

**Recommendation 2** - Complete the assessment of the need for engineering change proposals related to recommendations identified during testing of the lead boat. This should include appropriate, equitable adjustments to the price in accordance with contract terms.

The Coast Guard concurred with this recommendation and referenced instances where engineering change proposals that related to recommendations identified during



testing of the lead boat were implemented. We were provided a copy of the “CPB Recommendation Master List” which shows the current status on all recommended changes. The Coast Guard also emphasized that the contracting officer is required to ensure that all contract changes include consideration that is fair and reasonable. The actions taken are responsive to the recommendation.

**Recommendation 3** - Finalize the number of patrol boats to be acquired.

The Coast Guard concurred, in part, with this recommendation because internally a target number of 50 coastal patrol boats was approved. However, the Transportation System Acquisition Review Council only authorized execution of options for 23 additional boats temporarily limiting the total to 32. The Coast Guard was directed to develop supplemental information to support acquiring the additional boats and to continue semi-annual briefings on this project.

The Coast Guard also noted that in the FY 1999 Supplemental Appropriation, Congress appropriated funds to support the acquisition of additional coastal patrol boats during this Fiscal Year. This brings the total number of new coastal patrol boats for which funds have been appropriated to 45. While this action does not increase the total number of boats to be acquired, it does provide the Coast Guard the ability to acquire the new boats sooner than originally planned. If Coast Guard implements an expedited acquisition schedule, it may face challenges in ensuring the availability of required crews and operations and maintenance funding.

AUDIT COMMENTS

Although all of the issues are not yet resolved, the actions planned and underway by Coast Guard are responsive to the recommendations in our draft report. The Coast Guard’s progress in implementing the actions planned and underway is subject to the audit followup provisions of DOT Order 8000.1C.

We appreciate the courtesies and assistance extended to our staff during this audit. If I can answer any questions or be of further assistance, please feel free to call me at (202) 366-1992 or Thomas J. Howard, Deputy Assistant Inspector General for Maritime and Departmental Programs, at (202) 493-0331.

Attachment

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U.S. Department  
of Transportation  
United States  
Coast Guard



# Memorandum

Subject: DOTIG REPORT (AUDIT OF COASTAL PATROL  
BOAT ACQUISITION)

From: Commandant, U.S. Coast Guard

To: Assistant Inspector General for Auditing


Ref: (a) DOTIG Draft Report (MA-1999-XXX, October 16, 1998)

19 NOV 1998

Date: 7500

Reply to: G-AWP  
Attn. of: CAPT Pete Boyd  
202-267-0834

1. Enclosed you will find the U.S. Coast Guard response to the recommendations presented in the Department of Transportation Inspector General (DOTIG) audit on the Coastal Patrol Boat Project.
2. For additional information concerning this response, please contact CAPT Pete Boyd at the above number.

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

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

Attachment



**STATEMENT ON DEPARTMENT OF TRANSPORTATION INSPECTOR  
GENERAL (DOTIG) REPORT**

**I. TITLE: Coastal Patrol Boat Acquisition, DOTIG Report MA-1999-XXX,  
October 16, 1998**

**II. U.S. COAST GUARD POSITION**

Based on the Coastal Patrol Boat TSARC KDP 4 brief held on October 23, the Coast Guard received approval to enter the Production and Deployment phase of Coastal Patrol Boats (CPBs). Coastal Patrol Boats are an essential asset in executing Coast Guard multi-missions, and are particularly critical to drug interdiction efforts.

I offer the following amplifying information to demonstrate how the issues identified in your report have already been addressed and resolved.

The **primary purpose** of Operational Test & Evaluation (OT&E) Plan is to evaluate the operational effectiveness and suitability of the Marine Protector Class CPB. The **secondary purpose** is to identify potential areas for improvement.

**Sponsor Operational Test and Evaluation**

Revisions to Exhibit B of your report are strongly recommended to better interpret our OT&E Report (regarding Critical Operational Issues). Critical Operational Issues (COIs) #3 and #4 were described by the sponsor as "Partially Resolved (SAT)" not "Partially Resolved" as indicated in Exhibit B. Partially Resolved (SAT) indicates that the COI is satisfactory and either a limitation in scope was encountered and/or a potential improvement was suggested by the Operational Test Director. COI #5 was the only unsatisfactory COI noted in the OT&E Report. This COI was later resolved by Follow-on OT&E (with a production radar) as indicated in the IOT&E Report. The Sponsor was completely satisfied with the performance of CPB and recommends proceeding to full production.

**Independent Operational Test and Evaluation**

The IOTEA indicated that COI's #1 and #2 were "Partially Resolved." COI #1 is an evaluation to determine if the CPB has the reliability, maintainability, and availability (RMA) to meet operational requirements. The OT&E Plan indicated a limitation in scope due to a short testing period that may not allow full resolution of this COI. However, the single data point collected during the two-month testing period indicated that CPB operational availability was 98% (requirement is 90%) as noted in the IOT&E Report. In fact, no major Coast Guard acquisition has ever fully resolved this COI during OT&E since comprehensive RMA assessments can only be determined after years of operation. COI #2 is an evaluation to determine if the CPB provides the necessary crew accommodations to allow 72-hour patrols. This COI was fully resolved except for concerns over the air conditioning (A/C) system. The A/C system is still considered marginal and we continue to withhold \$20K upon delivery of each CPB until our requirements are satisfied. The builder is actively working with their subcontractor to resolve the problem. Recent data from full-scale tests indicate that the sub-contractor underestimated the heat load. We expect the builder to propose a larger compressor to provide additional cooling capacity.

**ENCLOSURE ( 1 )**

The Sponsor and the Independent Operational Test and Evaluation Advisor (IOTEA) determined that the CPB was operationally effective and suitable and recommended proceeding into full-production. Both reports also included numerous recommendations for improvements, which have been addressed by the CPB Configuration Control Board.

### III. RECOMMENDATIONS AND RESPONSES:

DOTIG recommended that the Coast Guard request tentative approval to move into full-rate production and delay the first full production option pending:

1. Resolution of the issues identified during Operational Test and Evaluation and Independent Operational Test and Evaluation.

**Concur – These issues have been addressed and their status discussed at TSARC KDP 4 to the satisfaction of the Deputy Secretary and the Assistant IG for Auditing.**

2. Completion of the assessment of the need for engineering change proposals related to recommendations identified during testing of the lead boat. This should include appropriate, equitable adjustments to price in accordance with contract terms.

**Concur – Your report praises our efforts to fully incorporate safety, performance and structural enhancements into the production boats. For instance, ECP-080 corrected structural problems with the mast – the second boat (WPB-87302) was delivered with the redesigned mast and WPB-87301 will be retrofitted in Jan '99. The IOT&E and OT&E Reports note that the CPB could anchor effectively but recommended suggestions to improve the design. ECP-085 incorporated their recommendations and was approved by the CPB Configuration Control Board. The Assistant IG for Auditing was provided with the "CPB Recommendation Master List" which provides the current status on all recommended changes. The Coast Guard contracting officer is required to ensure that all contract changes include consideration that is fair and reasonable.**

3. Finalization of the number of patrol boats to be acquired.

**Concur – in-part. The Coast Guard has internally approved a target number of 50 Coastal Patrol Boats. Subsequent to the issuance of your draft report, at KDP 4, TSARC conditionally approved the acquisition of 50 boats and authorized immediate execution of options up to 32 CPBs. The Coast Guard has agreed to provide supplemental information in support of acquiring boats beyond current replacement capability (boats 33-50). In the FY99 Supplemental Appropriation, Congress indicated strong support for the Coast Guard's plans to use these boats in expansion of the current drug interdiction efforts and appropriated funds to support the acquisition of 15 additional CPBs. Through FY99, Congress has appropriated funds for 45 CPBs.**