

## COASTAL MINE HUNTER (MHC 51)



### Navy ACAT IC Program

Total Number of Systems:	12
Total Program Cost (TY\$):	\$1730M
Average Unit Cost (TY\$):	\$143M
Full-rate production:	2QFY90

### Prime Contractor

Intermarine USA & Avondale Shipyard

### SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2010

The 12-ship Coastal Mine Hunter (MHC) program and an earlier program to construct 14 Mine Countermeasures Ships were initiated to replace minesweepers constructed in the 1950s. The mission of the Coastal Mine Hunter is to detect, localize, identify, and neutralize current and future threat mines in littoral areas, harbors, and coastal waters worldwide. The MHC is a vital part of *dominant maneuver* in maritime scenarios, contributing to both strategic and tactical mobility of naval and land forces. The MHC is also part of *full-dimensional protection*, since naval mines inflict personnel and material casualties as well as deny freedom of action.

The design of MHC is based on the Italian LERICI class of mine hunters. Constructed of glass-reinforced plastic, the ship is 188 feet long, has a beam of 36 feet, and displaces about 895 tons. Non-magnetic diesel engines drive cycloidal propellers. In another departure from conventional design, major machinery platforms are suspended from the main deck to provide acoustic isolation and shock dampening.

The combat system includes the AN/SYQ-13 Navigation, Command, and Control System; the AN/SLQ-48 Mine Neutralization System; the AN/SQQ-32 Minehunting Sonar; and .50 caliber machine guns.

## **BACKGROUND INFORMATION**

The Navy completed a shock trial of USS OSPREY (MHC 51) in September 1995 at the Underwater Test Facility, Aberdeen Proving Ground, MD. Although the MHC 51 Class ship is not under DOT&E LFT&E oversight, the MHC 51 Shock Trial was of special interest because it was the first U. S. Navy Shock Trial on a hull constructed mostly of composite material. It provided an opportunity to study the shock response of a composite hull and assess the effectiveness of shock-isolated-cradle structures in protecting shipboard equipment. It was also the first Shock Trial at a land-based facility. The Navy extrapolated trial results to full design level shock conditions and instituted the design changes deemed appropriate and feasible. Preliminary results of this Shock Trial were addressed in the classified version of our 1997 annual report. The Navy's final report was received by DOT&E in October 1998 and will be addressed in the MHC B-LRIP report.

The TEMP approved by DOT&E in 1995 called for a series of three operational tests. Two of the tests were to be conducted in 2QFY96 to evaluate mine hunting effectiveness (OT-III A) and mine sweeping effectiveness against moored mines (OT-III B). The schedule for a third test to evaluate the MHC's influence mine sweeping effectiveness (OT-III C) was undetermined because of program uncertainties. The Navy subsequently canceled plans to field modular mine sweeping systems for the MHC, obviating the requirement for OT-III B/C as described in the TEMP. Shock trial preparations and post-shock repairs delayed the start of OT-III A to 2QFY97. OT-III A was completed aboard USS OSPREY and USS BLACK HAWK (MHC 58) in 1997.

## **TEST & EVALUATION ACTIVITY**

FOT&E (OT-III B) was conducted aboard USS RAVEN (MHC 61) March 1-16, 1999. DOT&E approved the test plan and DOT&E representatives observed the testing. This FOT&E was added to reexamine aspects of MHC 51 performance found deficient in OT-III A. The ship's crew operated and maintained the ship throughout the test. OPTEVFOR personnel embarked during Phase III of Combat System Ship Qualification Trials (CSSQT) to commence collection of reliability, maintainability, and availability data. Formal OT commenced with CSSQT Phase IV. Test operations included mine hunting and mine neutralization in the shallow coastal waters near Panama City, Florida and in deeper water in the Gulf of Mexico. There were also several periods of testing conducted on the Coastal Systems Station instrumented range. That testing was designed to measure the ship's magnetic and acoustic signatures and evaluate its susceptibility to one type of bottom influence mine. OPTEVFOR determined that it was unable to accredit the Navy's Total Mine Simulation System for the purpose of extending the susceptibility evaluation to additional threat mines.

## **TEST & EVALUATION ASSESSMENT**

OT-III A and OT-III B were conducted in accordance with the test plans approved by DOT&E. Although these tests were adequate for the purpose of evaluating the operational effectiveness and

suitability of the MHC, a lack of variety in environmental conditions, limited threat replication, and a relatively short test exposure make it necessary to qualify the test results.

At the conclusion of OT-III A, MHC was assessed operationally effective but not operationally suitable. MHC can readily detect, classify, identify, and neutralize mines in favorable environmental conditions.

The ships tested during OT-III A were not operationally suitable because of unsatisfactory reliability and maintainability performance of the AN/SQQ-32 sonar and AN/SLQ-48 Mine Neutralization System and less than adequate logistics support. These factors were also responsible for below-threshold operational availability. The technical documentation was not adequate for equipment maintenance, and the training of maintenance personnel was suspect, as evidenced by the test ships' excessive reliance on civilian technicians for assistance with equipment repairs.

OPTEVFOR's planning and execution of OT-III B was exceptionally robust. The OT-III B final test report was completed in November 1999, finding the MHC operationally effective and operationally suitable, however the survivability critical operational issue was unresolved. DOT&E's assessment of the test results and the MHC B-LRIP are in progress.

