

USCGC TAMPA (WMEC 902)

# Service— Old & New

## The Military Readiness Capability of the Coast Guard 270 Foot Medium Endurance Cutter

by CDR J. A. Pierson, Jr., '65

### Introducing the 270' WMEC.

The Coast Guard is currently building a new class of ship, the 270 foot medium endurance cutter (270' MEC), designed to perform in the mission areas of Enforcement of Laws and Treaties, Search and Rescue, Maritime Safety Activities, Marine Environmental Protection, and Military Readiness. This article will focus on the planned Military Readiness employment.

In accordance with past practices, the Navy is providing weapons systems that will enable the new cutters to be employed in selected military roles. The Coast Guard has funding to install and has reserved necessary space and weight compensation for the Navy equipment. Under present planning guidance, many of the systems will not be installed unless a major mobilization requires deployment of the 270' MECs. There has been considerable discussion, both formal and informal, regarding the decision to employ the 270' MEC as a military platform. Discussions center on the perceived limited inherent capability of the relatively small and slow (20 knots) 270' MEC and the lack of major military systems on the larger, more capable 378' high endurance cutters (HEC).

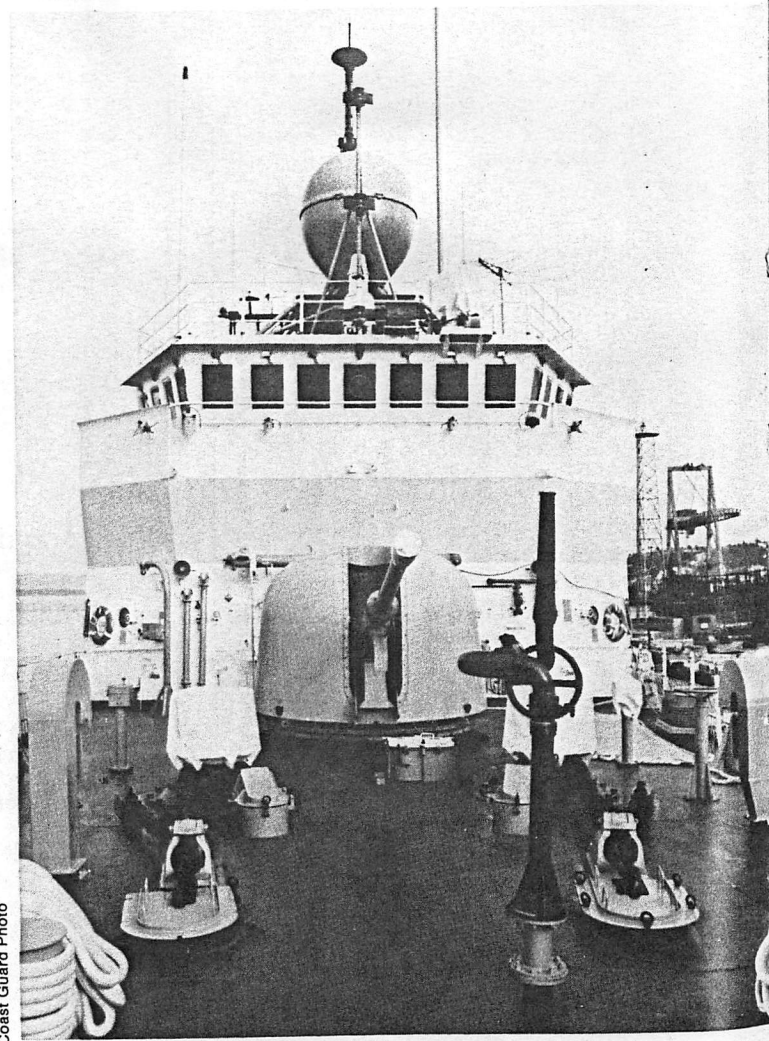
### Background and Operational Requirements.

The 270' WMEC design commenced in the mid-1970's. It was to be a replacement for several older classes of cutters, some constructed as long ago as the late 1930's. For Military Readiness, the designated task statement for the 270' MEC reads in part:

"In time of war or national emergency: coastal surveillance and interdiction, surface and underwater intelligence gathering and/or inshore under-seas warfare, including mine countermeasures."<sup>1</sup>

The areas of operation are described as:

... "the waters off the East, West, and Gulf Coast of the United States, the coastal waters of southern



Coast Guard Photo

MK 75, 76mm Gun. Capable of firing up to 85 rounds per minute at both surface and high-speed air targets. Large dome houses the MK92 Gun Fire Control System Antennas. The MK92 System can track two targets and engage one of them simultaneously. It will control both the MK 75 gun and the Harpoon surface-to-surface missile.

and southeastern Alaska, and the waters surrounding the Hawaiian Islands. In conjunction with possible future extensions of Coast Guard responsibility (e.g., Guam) and/or war time employment may be called upon to operate in other tropical and temperate zone waters. Operations generally will be limited to distances up to 200 miles offshore, but occasional sorties to greater distances will be required."<sup>2</sup>

Two of the design engineers, Messrs. Chatterton and Braithwaite, have provided a thorough review of the history and evolution of the 270' WMEC in their article.<sup>3</sup> Two issues are of particular interest: Design changes caused by the requirement to allow for installation of military systems and the speed criterion of 20 knots.

As one might expect, the design was significantly impacted by plans for the installation of military weapons systems. On a small vessel, space and weight considerations require that compromises be made: This design impact is particularly evident in the ship's living, storage and maintenance spaces.

The speed issue was cost driven. Twenty (20) knots proved to be the design criterion that fell at a major breakpoint on the cost curve. Justification was based primarily on peacetime Coast Guard missions; specifically, 20 knots allows the cutter to overtake 90 percent of the world's vessels that might be encountered during the conduct of the cutter's peacetime missions. A deployed helicopter would be used for high-speed search, rescue and surveillance requirements. From a military viewpoint, a speed of twenty knots was determined to be acceptable, given cost and other operational considerations.<sup>4</sup>

Table 1 summarizes the 270' MEC military capability to combat threats from any type of environment: air, surface, or underwater. The 270' MEC will not be adequately equipped to accomplish any significant military role until the major weapons and sensor systems (which will not be installed initially) are on board and are operational. This may not occur for several years.

#### Can They Fight?

The Navy recently completed a study of FFX alternatives. (FFX is the designation of a new class of frigates planned for the Navy Reserve Force (NRF) program.) Their specific mission would be:

"In wartime to supplement planned and existing ASW forces in an Anti-Submarine warfare environment and to provide self-defense against air and surface threats; in peacetime to attain and maintain the ability to mobilize rapidly and carry out the wartime mission."<sup>5</sup>

The study concentrated on two classes of vessels, the Coast Guard's 270' MEC and the Navy's FFG 7. The 270' MEC was found to have serious deficiencies and was deemed an unsatisfactory candidate. Specifically the report stated that it lacked, "requisite capability to perform convoy escort and general frigate ASW duties."<sup>6</sup>

A different Navy study, working with the same data used in the FFX study, found the 270' MEC to be an acceptable escort/ASW platform. It recommended building 22 additional ships of the class, as well as 11 additional 378' high endurance cutters to help meet the United States' maritime military commitments/requirements.<sup>7</sup> The study concluded, "It is obvious that the Coast Guard 270' MEC and 378' HEC are ships of moderate cost that can be bought in quantity to maintain U.S. Naval superiority."<sup>7</sup> Documents prepared at Coast Guard

**TABLE I**

*Summary of 270' MEC Sensor/Weapons Systems.*

Wartime Threat	Present Weapons/Sensors	Future Weapons/Sensors
Air	MK-75, 76mm Gun	Phalanx CIWS
	MK-92 (V1) GFCS	COMDAC
	AN/SLQ-32 (V2) ESM	
	MK-36 SRBOC	
	IFF	
Surface	MK-75, 76mm Gun	Harpoon Missile
	MK-92 (V1) GFC	LAMPS
		COMDAC
Submarine	XBT	LAMPS
		TACTAS
		COMDAC

Headquarters that discuss and justify the 270 MEC's military capabilities, particularly the 20 knot speed, reflect extensive analysis of the issue. They note discussions with various Navy representatives who found 20 knots acceptable.<sup>8</sup>

Given this sampling of diverse opinions held by individuals who are experts in their fields, what is the "right answer"? As with many weapons systems and force mix questions, the answer is, "it depends." Specifically it depends on the following:

- A complete installation and a proper selection of systems necessary to accomplish the assigned missions. The military weapons planned for the 270' MEC parallel those being installed on the Navy's FFG-7's. There has been some reduction in the numbers of equipments due to the smaller size of the 270' MEC, however, the type and variety of equipment appear to be adequate to combat single air, surface, or sub-surface threats. The absence of a Navy Tactical Data System (NTDS) is perhaps one significant limitation, though the degree of reduced capability, if any, will depend on the Coast Guard's success in developing the Command, Display and Control (COMDAC) software. Referring again to Table 1, the 270' MEC will, upon delivery, have a shortage of systems designed to fight air threats, surface threats, and sub-surface threats. It will also lack the "intelligence" needed to fight as an integrated system, either in the form of COMDAC or NTDS.

- Type of employment. Certainly, the 270' MEC will never be adequate in a carrier battle group. When fully operational it will, however, be equipped properly for most convoy duty. (The ship's 20 knot maximum speed would preclude escorting high speed commercial vessels such as SL-7's, with their 30+ knot speed capability. The 270' MEC would not last long if it were operating independently in a high/multi-threat environment. However, the vessel is very well equipped for and capable of independent operations in a low-threat area where an attack would be expected from only one of the three operating mediums (air, surface, or sub-surface).

- Validity of assumptions. The military success of any vessel is very sensitive to assumptions regarding the operational environment and the tactical capabilities of the deployed systems vis-a-vis those of the enemy. Only in actual combat can these assumptions be verified. In the interim we are limited to postulation, analyses, and exercises. The assumptions and task statements for the 270' MEC in the Military Readiness area appear to be well within reason for a vessel of its size, crew, and outfitting.

- Level of crew training. A vessel may be equipped with the latest systems and sensors but still be unable to accomplish its mission successfully if the crew lacks adequate training. With the advent of present-day high-technology advanced weapons and sensors, integrated by sophisticated computerized control systems, training has become a critical element in accomplishing assigned wartime tasking. The technicians and operators on a 270' MEC require considerably more training than those of the much larger 378' HEC. To ensure a trained crew requires that adequate time be set aside for training and that the equipment for training be available. As pointed out earlier, in all likelihood, the weapons systems will be a

long time in coming. The negative impact on crew training is obvious. When the weapons are installed, training time may be difficult to arrange. Underway Refresher Training would be required to develop crew proficiency with the new weapons systems and sensors before deployment. Whether we would be able to schedule the required training time during a general wartime scenario is an open question.

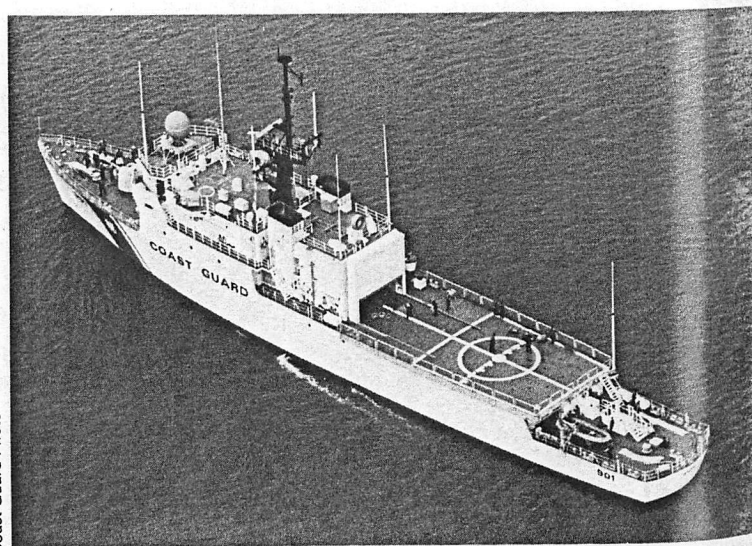
### What Type of Fight Can They Handle?

It appears that there are several wartime missions for which a fully outfitted 270' MEC would be well suited.

- Low to medium speed (less than 15 knots) convoy escort duty. During an extended conflict, Sea Lines of Communication (SLOC's) will be our major arteries for re-supply. A recent Navy study of convoy requirements states that the initial 1500 miles of the wartime export SLOC's are likely to be in a low-threat environment.<sup>9</sup> Similarly, the last 1500 miles of import SLOC's are likely to be in low-threat areas. Economic SLOC's in United States coastal waters and to and from Alaska and Hawaii also are expected to be in low-threat areas.

An analysis of merchant vessel speed data from 1979 shows that 70 percent of merchant transits would be at 15 knots or less.<sup>10</sup> Using a requirement for a five-knot escort speed advantage to allow a four-ship screen to be refueled at the rate of one ship per day, the desired performance objectives for vessels assigned to escort fifteen knot (or less) convoys are:<sup>11</sup>

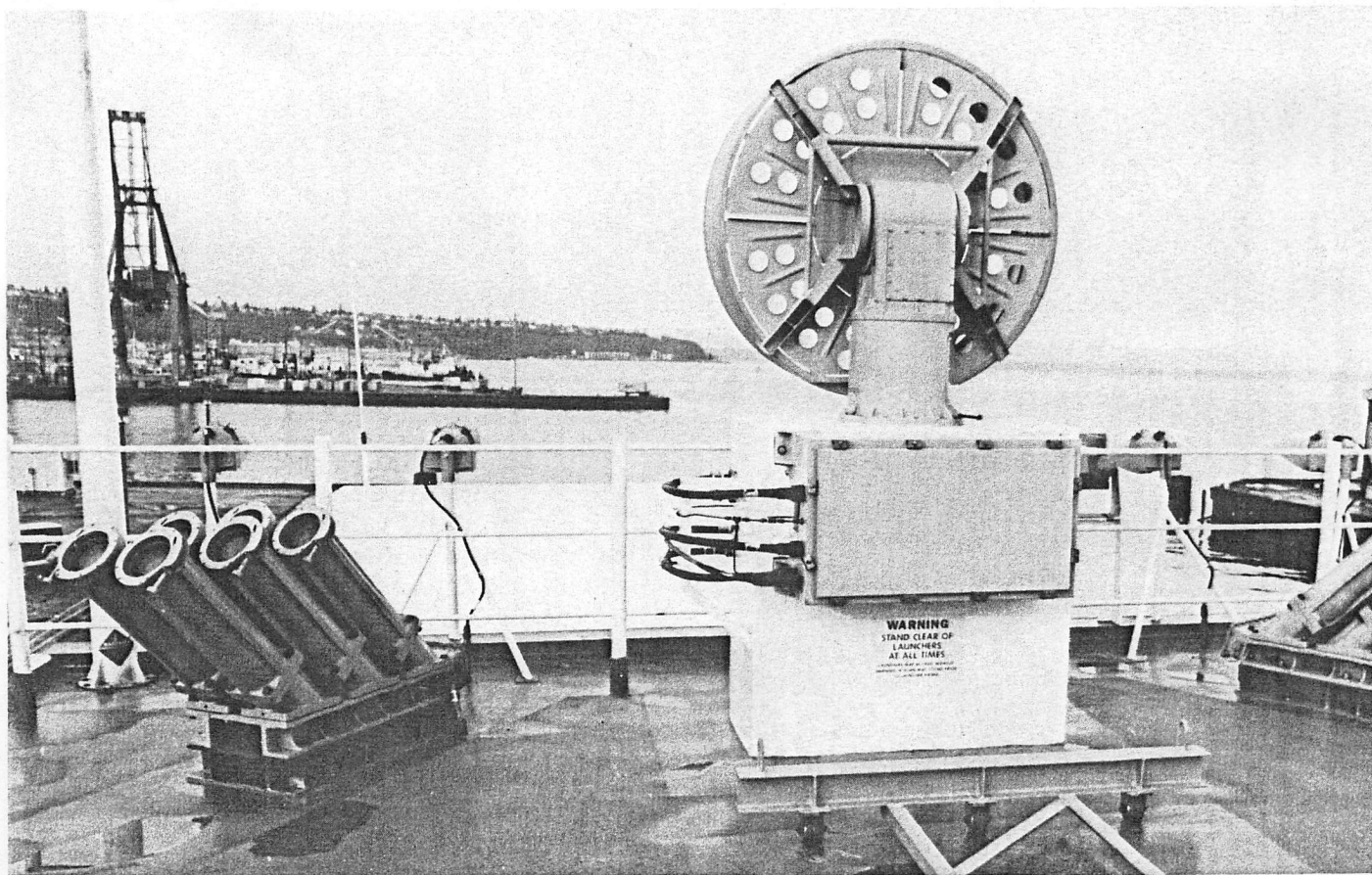
- Sustained cruising/search speed of 16 knots.
- Maximum speed of at least 21 knots.
- Passive search capability to at least the first convergence zone at cruising speed, with a ship silencing technique to optimize passive capability and minimize counter-detection.
- Landing platform for helicopters of up to 20,000 pounds; hangar desired.



Coast Guard Photo

*This aerial photograph of the Cutter BEAR provides a good view of the arrangement of equipment on the weather decks.*





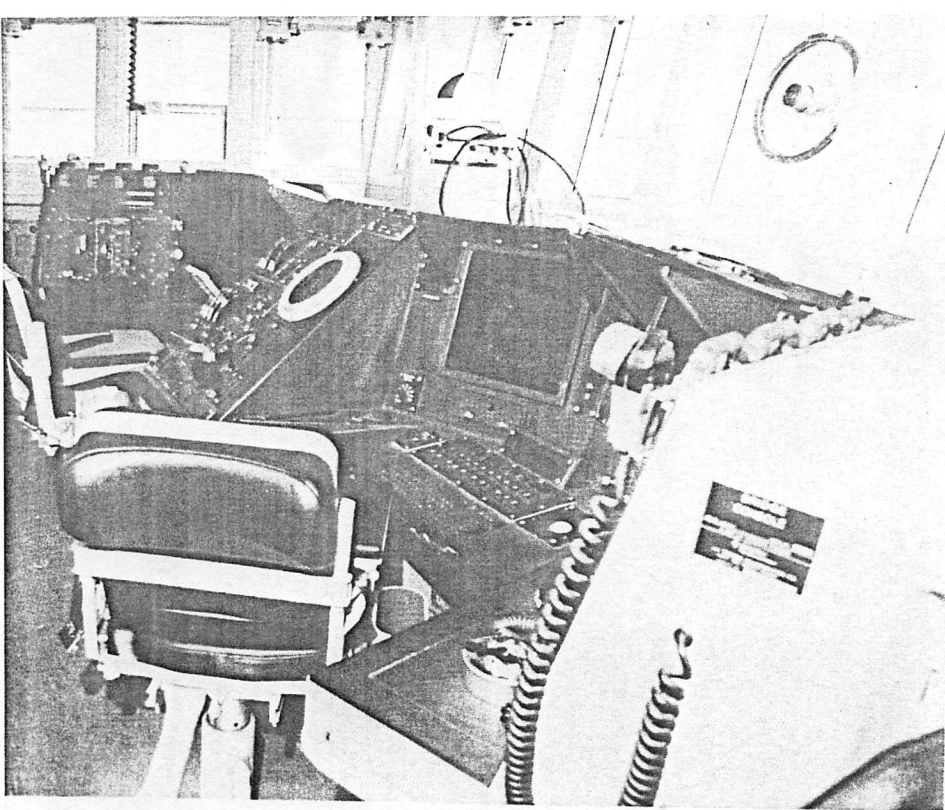
*Super Rapid Blooming Chaff (Super RBOC). Super RBOC is a mortar-like system used to deploy chaff as a decoy material to deceive an incoming missile. The antenna is part of the Satellite communication system being installed on the 270's.*

- The command, control, and communications necessary to coordinate ASW operations with other ships and aircraft.
- Active acoustic prosecution capability (inner screen vessels only), with shipboard launch capability.
- Unrefueled endurance of approximately 5,000 nautical miles at 14-16 knots search speed.
- Anti-submarine and anti-air self-defense capability.

The criteria for the outer screen equate very closely to the performance capabilities of the 270' MEC. Deficiencies are the 21 knots (vice the 270' MEC's 20 knots) maximum speed, the ship silencing technique, and the shipboard weapon launch capability for ASW (the 270' MEC has only the airborne LAMPS weapons systems). The estimated requirement for convoys in a wartime environment is 304 vessels; 178 escort vessels are now available, leaving a shortage of 126.<sup>12</sup> These numbers are considered minimum requirements to meet convoy objectives. Since convoys function only in wartime, they quite properly are the responsibility, at least in a low-threat environment for low-to-medium speed convoys, of the Navy Reserve and the Coast Guard. As a point of interest, the study (of convoy requirements) concluded that the Coast Guard should build at least 33 more cutters of the HEC-378/MEC-270 classes to accomplish its peacetime duties and to assist in meeting wartime convoy requirements.<sup>13</sup>



*AN/SLQ-32 Electronics Warfare System Antenna. The AN/SLQ-32 is designed to detect, track, and identify contacts by analysis and classification of radar signals.*



270' MEC Bridge. This view of the bridge gives a good idea of the planned extensive use of computers for Command and Control in the 270' design.

Coast Guard Photo

- Sanitizing areas of interest. During wartime there would be frequent requirements to sweep particular maritime regions and ensure that they are free of submarine, surface, and air threats. Areas that might require this treatment are straits (such as the Strait of Florida or the Yucatan), the passes in and out of the Caribbean, open waters where convoys are marshalling, and the entrances to major ports. Vessels performing this mission should be able to identify and successfully combat air, surface and subsurface threats; command and control multi-ship or combined air and ship operations; low cost; and operate independently when necessary. Speed would not be a primary consideration. This general description fits the 270' MEC very well. There are very few Navy ships, not otherwise committed in wartime planning, available for this type of duty.

- Wartime Search and Rescue (SAR). A Navy Search and Rescue evaluations group found a shortage in available forces for this mission.<sup>14</sup> It identified requirements for vessels that are capable of responding rapidly, conducting search operations, coordinating rescues of people in perilous locations, minimizing loss of life and property, stabilizing the situation for continued operations, and performing the SAR tasks efficiently. These are the same general SAR duties presently performed by Coast Guard cutters, with the additional requirement simultaneously to protect themselves and those they are rescuing. The 270' MEC, using LAMPS, TACTAS, and the ESM suite for search and detection, and standard equipment and procedures for rescue, is ideally equipped for this mission. The vessel will also have adequate weapons (MK 75 gun, Harpoon, Phalanx, and LAMPS) to protect itself in the low or medium threat portion of a general war scenario. In a limited war of crisis similar to that of Viet Nam, the 270' MEC would perform very well as an on-scene SAR vessel. The Navy Wartime Search and Rescue requirements study recommended that the Coast Guard buy 20

additional HEC-378/MEC-270 cutters for this mission.<sup>15</sup> This is another area where the Navy has few available dedicated resources.

- Mine Countermeasures (MCM). U.S. assets for mine countermeasures are in very short supply and the potential threat is great. The 270' MEC, due to its magnetic hull signature and lack of mine-hunting sonar, could not be used effectively as an independent MCM vessel. It could be used, however, in tandem with the Navy's planned new MCM vessels.<sup>16</sup> Specifically, the MCM vessel would have mine-hunting sonar and mine sweeping capability, while the 270' MEC would provide helo capability and necessary weapons systems to protect both vessels.

- Search and Interdiction. This mission is related to the sanitizing function mentioned previously. In this case, however, the vessel would be used to search out and interdict a contact previously identified by some other platform or sensor. This could occur during a barrier patrol or an open ocean search. Since, in general, speed would not be a critical criterion for this mission, and since the areas for search and interdiction would often be in low-threat regions (particularly in the western Atlantic and eastern Pacific), the 270' MEC would be a very capable platform for this mission.

#### What Remains To Be Done?

If we accept the validity of the 270' MEC's wartime missions, then we must ask about the delivery schedule for the critical weapons systems, particularly Harpoon, LAMPS, and TACTAS. Without these systems the vessels are, in a sense, "paper tigers" imparting a false impression of available fire power. A partial outfitting, such as we now have, contributes little to the Coast Guard peacetime mission, ties up systems that might be better used on a more fully equipped Navy vessel, and leaves a ship's crew frustrated at refresher training or during exercises with the Navy.





Coast Guard Photo

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Are the taxpayers getting their money's worth in Coast Guard military readiness? In terms of number of vessels, the Coast Guard ranks among the top ten navies in the world; however, as a "Navy" we are generally untrained in, and unequipped for, today's high-technology warfare techniques. What more cost-effective way is there to increase our nation's maritime military might than to take a capable seagoing platform that has a vital peacetime mission and equip it properly for a military mission?

(A recent article in the *Armed Forces Journal* about our thinly stretched and outnumbered Navy suggests that the Coast Guard be given the military maritime responsibility for the Caribbean. This would free a considerable Naval force for other areas. It would also give the Coast Guard an identified geographical area of military responsibility and, hopefully, the modern equipment to accomplish the mission.<sup>17</sup> The types of maritime military operations expected in the Caribbean — surveillance, interdiction, and ASW sweeps of chokepoints on SLOCs — match well with the Coast Guard's peacetime missions; particularly, enforcement of laws and treaties. If appropriate amphibious and support vessels were added to the Coast Guard's fleet, there would also be support for any required contingency force landing. Of course, air support and ground force requirements would remain the responsibility of present DOD components.)

In summary, the 270' MEC has a valid and important military role to play but, upon delivery to the Coast Guard, will lack the weapons systems necessary to accomplish the mission. I recommend that one of the 270's be

fully equipped with all weapons systems as soon as possible. This prototype platform would allow us to arrive at a more definitive answer to the question, "But Can She Fight?" Additionally, the Navy and Coast Guard should embark on a mutually beneficial and cost-effective build-up of our maritime forces by outfitting the 270' MEC and 378' HEC with a full suite of weapons systems and sensors. Finally, we should consider a new Coast Guard ship building program tied to an expansion of Coast Guard military responsibility. This would meet military needs that presently lack adequate resources, would allow the Coast Guard to more fully meet its peacetime missions, and would free more capable Navy ships for open ocean, high/multi threat, warfare. ■

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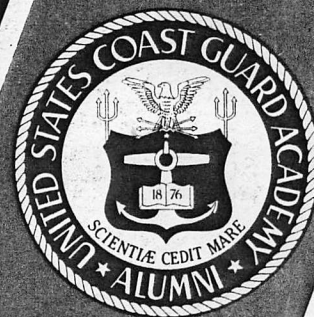
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