

We Need High-Speed Vessels Again

By Captain Jeff Kline, U.S. Navy

Picture a slightly different time. A high-speed vessel, *HSV-23*, loiters just north of the Yucatan Channel. The 25-man crew has been patrolling the northern Caribbean. Their missions: provide visual confirmation of shipping heading toward southeastern U.S. ports and visible deterrence for homeland security, and be on call for emergencies.

Suddenly, *HSV-23* receives intelligence on a South American vessel suspected of carrying a dangerous chemical compound. (Prior to the patrol, the crew was augmented by a special boarding team in case of such a possibility.) The combat information center plots the last known position of the suspect vessel and directs the assigned intelligence, surveillance, and reconnaissance (ISR) platform to conduct an open-ocean search. The target is 600

nautical miles (nm) to the south, heading northeast at 20 knots. The intercept plot is calculated to be ten hours. Orders from the bridge start the gas-turbine engines that turn the large water-jet propulsors and the intercept is under way.

The 11 September terrorist attack has promoted a reappraisal of the Navy's capabilities, functions, force structure, and missions.¹ In addition to the familiar roles of power projection and overseas presence, an old, basic mission has returned—close-in defense of the U.S. homeland. The Navy's role in supporting the Coast Guard and assisting civilian agencies in defense of the nation's coasts and ports can be fulfilled with its current forces. Battle groups, teamed with shore-based maritime patrol aircraft using national intelligence and organic sensors, can find,

intercept, board, and—if necessary—detain a vessel on the high seas that may be attempting to infiltrate our coasts. Naval forces have years of experience in maritime interdiction and counterdrug operations. But major fleet commitments to the war on terrorism overseas mean that there are insufficient ships to conduct both missions for an extended period.

If the Navy is to maintain an effective role in maritime homeland security, several options are available for providing necessary platforms. In the short term, the only feasible option is to increase the readiness of the ships and aircraft in the interdeployment training cycle to provide "ready destroyers" and "ready aircraft" to meet search, intercept, and escort requirements. A longer-term—and more expensive—option is to increase produc-

tu- its are ro- the he we he be s. te- It ed nt e, le sh gn E - M re .. - e e f :

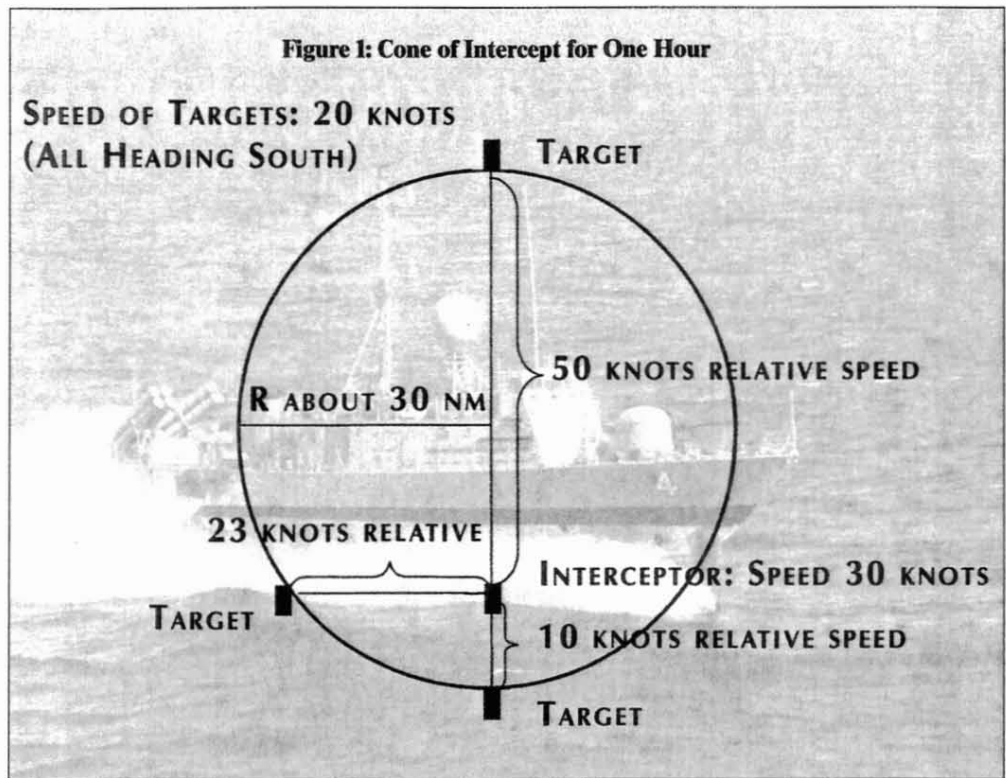
tion of the *Arleigh Burke* (DDG-51)-class guided-missile destroyers and accelerate delivery of a new maritime patrol aircraft. Finally, the Navy could develop a high-speed vessel for the "junior side" of its mix of combatants that could—if properly linked with intelligence and surveillance agencies—fulfill the homeland security mission effectively and economically. This relatively inexpensive option would accomplish the mission and free blue-water forces for the war overseas.

It is useful to revisit the concept of creating a force of small, fast, inexpensive combatants as interceptors to conduct sea-denial operations near coasts. There is a parallel between the Navy's littoral warfare doctrine and maritime homeland security.

Creation of command nodes—such as those of the Joint Interagency Task Force—tied to the national intelligence network and using operational sensors such as Global Hawk, could direct high-speed Navy combatants and Coast Guard cutters to suspect vessels. The intelligence network as well as the fast interceptors could be manned by active and reserve personnel.

Why a high-speed vessel (HSV)? First, because we need many of them soon. The HSV is a developed design requiring only slight modification that should allow us to lay keels within six months of contract. Its design would profit from our previous HSV experience with the Navy's guided-missile hydrofoils (PHMs) and other craft. A candidate would be about 1,000 tons, with an efficient mode of propulsion for sustained loitering, yet the capability to obtain speeds of 50 knots. It would accommodate unmanned aerial vehicles and small helicopters, carry two to four rigid-hulled inflatable boats, and be armed heavily enough to pose a serious threat to merchant ships or armed boats. It would be described best as a hybrid of a corvette, small cutter, and patrol craft.

An efficient interceptor must be capable of high speed to increase its ability to cover large amounts of ocean. To illustrate, I consider a 30-knot interceptor versus a 50-knot interceptor. Assume a suspect vessel has a speed of 20 knots



COURTESY OF AUTHOR

(although many threats may be faster) and a desired intercept time of no longer than one hour. The maximum relative speed a 30-knot interceptor can obtain on a vessel going 20 knots is when the two are steaming directly at each other. The worst case for the 30-knot interceptor is to be in a tail chase 10 nm astern of the target. A "cone of intercept" can be created to visualize where a threat vessel can be relative to the 30-knot interceptor and still be within intercept range—see Figure 1.

The cone of intercept in this example is a circle with a radius of 30 nm and an area of 2,830 square miles. Thus, for a 30-knot interceptor, the maximum one-hour coverage that can be provided is 2,830 square miles against a 20-knot suspect vessel. The same cone of intercept for a 50-knot interceptor will produce coverage of 7,850 square miles or a 2.8 ratio advantage. The advantage is constant regardless of how many hours we extend the desired intercept time. It means that one high-speed vessel can provide the capability of almost three 30-knot interceptors if we increase its speed by 60%. In addition to intercepts, patrol and emergency-response tasks are better fulfilled with HSVs. Again, because of their higher speed, fewer vessels are needed to meet mission requirements.

This is not a huge conceptual leap in the employment of naval forces. The scenario at the beginning of this note is true.

The "slightly different time" was the early 1990s, the HSV was the USS *Acquila* (PHM-4), and the dangerous chemicals were drugs. The special boarding team was a Coast Guard law-enforcement detachment and the ISR platform was a Navy P-3 Orion. The intercept was made successfully.

As a former hydrofoil sailor, I can attest to the engineering problems posed by the PHMs, which have been removed from the inventory. Nonetheless, they were solid contributors to a sound counterdrug concept of operations. The Navy would profit from its experiences in the operational as well as the design realm.

The Navy can meet its homeland defense goals quickly and inexpensively by developing a high-speed vessel that will provide better coverage in fewer numbers than fast patrol boats and destroyers. Combined with an increase in UAV production and establishment of coastal command-and-control nodes, it is a most promising concept.

¹Chief of Naval Operations Adm. Vernon Clark, USN, "Setting Our Course in the Terror War," (remarks at the Naval War College), 29 October 2001.

Captain Kline last served as deputy operations officer on the Sixth Fleet staff. He now holds the operations research tactical chair at the Naval Postgraduate School.