The Threat of the Guided-Missile Patrol Boat

Special Report

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THE THREAT OF THE GUIDED-MISSILE PATROL BOAT

The first operational use of surface-to-surface antiship missiles took place on 21 October 1967 when Egyptian guided-missile patrol boats sank the Israeli destroyer Eilat off Port Said. Launched from Osa- and Komar-class patrol boats, the Soviet-designed SS-N-2 missiles give a big punch at low unit cost to fledgling navies charged with defending coastal areas.

These boats are used by the Soviet and East European navies for close-in defense against attacking naval forces. They have been delivered to four non-Communist countries as well as to Cuba, Communist China, and North Korea. There is no evidence that North Vietnam has received any.

The Attack on the Eilat

At the time it was attacked, the Eilat was patrolling off the Egyptian coast to prevent maritime infiltration of the Sinai. Israeli ships have regularly patrolled within range of Egyptian weapons since the war in June, and the Eilat previously had passed through the area of attack several times. When it was struck, the Eilat probably was either just inside or just outside the 12-mile territorial limit claimed by Egypt.

The Israelis were on alert for a missile attack, and the crew of the Eilat knew it was being watched by land-based Egyptian radars. The Eilat's crew did not see any missile patrol boats, however, and did not realize their ship was under attack until the first of three or more missiles fired by the Egyptians was sighted at a range of about six miles. Attempts to shoot down the missile before it struck were unsuccessful.

The Israeli destroyer received a second missile hit within minutes. Disabled and without power, the Eilat floated dead in the water for nearly two hours while the crew fought to save it. Following a second attack, in which the Eilat was struck by at least one other missile, the ship sank.

The Eilat probably was attacked by two Komar-class missile...
Missile Flight Schematic

Booster Phase
5-1.8 NM

Homing Radar Activated
8 NM From Target

6-20 NM

Target Ship

Multi Unit Attack Pattern

Command Vessel
(only active radar)

Simultaneous
Launch

15 Nautical Miles

Target Ship

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boats, each of which fired two
missiles.

After a target has been ac-
quired and identified, missile
launch data can be computed in
a matter of seconds and the pa-
trol boat turned to an attack
course.

the SS-N-2 missile is effective
against a cruiser at a range of
20 miles and against a destroyer
at 15 miles, a range greater
than that of the guns on ships
of the US Navy. In practice,
the system normally is used to
a range of only about 13 miles
against a moving target.

The SS-N-2 system (Soviet
designation--P-15) is designed
to provide mobile defense
against attacking naval forces.
In the Soviet concept of opera-
tions, aircraft or other ships
are used to locate the target
and to direct the attacking
patrol boats until they can
pick up the target on their own
radars; the detection range of
the radar carried on the Osa
and Komar boats is limited by
the height of the radar antenna
to about 20 miles.

The radar aboard the boats
is used to locate the target,
provide firing data to the SS-
N-2, and assess damage after an
attack. The effective range of
the system probably could be
extended--and the element of
surprise enhanced--through the
use of a coastal radar to pro-
vide target detection and loca-
tion data. For maximum effect,
however, the missile must be
aimed and fired on the basis of
data provided either by the
ship-borne radar or by an opti-
cal system carried on the patrol
boats.
After the necessary information has been fed into the missile's guidance system, a rocket booster lifts it from its launcher and carries it to cruise altitude and speed. The missile flies toward the target at a speed of Mach 0.9 and an altitude between 300 and 1,000 feet. Because of the low altitude and high speed, defending forces have only about a minute to react.

The Komar-class guided-missile patrol boat is smaller than the Osa and carries only two missiles. A modification of the P-6 torpedo boat, it has a shorter cruising range and a speed of 37 knots.

The small sizes and low profiles of the Osas and Komars provide difficult targets for enemy radars. The boats rely on their speed and maneuverability to evade attacks by enemy surface forces. They carry antiaircraft weapons but are vulnerable to aircraft attack.

**Countermeasures**

The success of the attack against the well-trained crew of the Eilat demonstrates the capabilities of the Osas and Komars to launch a surprise strike with the SS-N-2. The best defense against the system is to attack the patrol boats before they fire their missiles. The missile's speed, low flight altitude, small radar cross-section, and built-in defense against electronic countermeasures make it difficult to counter.

The system, nevertheless, has limitations. Targets closer than five miles cannot be engaged because the SS-N-2's homing and arming mechanisms are not activated.
**Guided Missile Patrol Boats**

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<th>OSA</th>
<th>KOMAR</th>
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<tr>
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<tr>
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<td>4</td>
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<td>UAR</td>
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Two crated KOMARs on deck of Soviet cargo ship.
until the missile has flown that far. Moreover, if two targets are detected, the homing radar cannot be relied upon to seek out the preferred one. The homing radar also may be susceptible to some types of electronic countermeasures.

Firings apparently cannot be made if the air temperature falls below 40°F or rises above 104°F. A final shortcoming of the system is that targets within four miles of shore cannot be attacked from their seaward side, because "clutter" reflected by the terrain prevents the homing radar from operating properly. In such cases, the attacking patrol boat has to maneuver to fire parallel to or away from the beach.

Military Deliveries

Both boats give a fledgling navy a big punch at a low unit cost. The first deliveries of Komars outside Eastern Europe and the Communist Far East were made to Cuba and Egypt in 1962. Komars subsequently have been delivered to Algeria, Syria, and Indonesia. Eight are on order for Iraq. Osas have been delivered to Algeria and Egypt. Four that had been ordered by Sukarno before the abortive Communist coup in Indonesia in October 1965 are not likely to be delivered. Osas and Komars also have been furnished to a number of Communist countries, including China. Osa boats give the East German and Polish navies considerable firepower in the Baltic.

There is no evidence that either type of boat or the SS-N-2 missile has been delivered to North Vietnam. Chinese Osa boats have been seen in the South China Sea and could be deployed to naval bases on Hainan Island or in the Tonkin Gulf area. If either the Soviets or the Chinese were to deliver these units to the North Vietnamese, US ships operating off the North Vietnamese coast would be vulnerable to sneak attack. The boats could be dispersed among the many islands and waterways marking the Vietnamese coastline and would be difficult to detect if they moved within groups of junks and other small craft. At anchor or tied up in harbors, the Osas and Komars would be susceptible to detection and destruction by US aircraft, however.

With minor modification the SS-N-2 missile can be fired from launchers on land. The Soviets, however, are not known to have deployed this missile in shore-based sites. (SECRET NO FOREIGN DISSEM)