

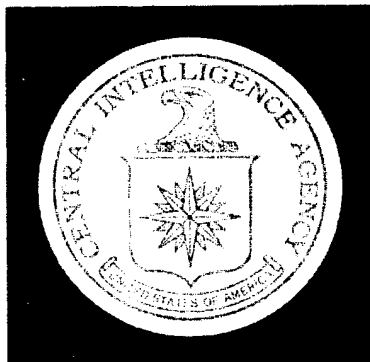
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DIRECTORATE OF  
INTELLIGENCE

*The Threat of the Guided-Missile Patrol Boat*

Special Report  
WEEKLY REVIEW

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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

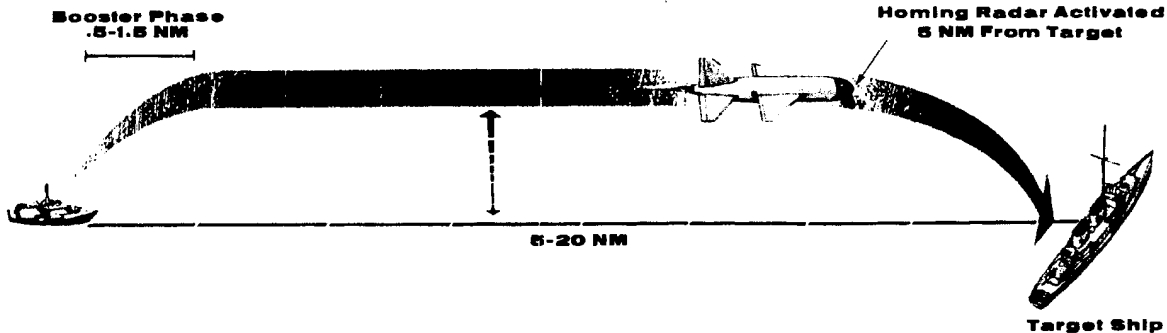
did not see any missile patrol boats, however, and did not realize their ship was under attack until the first of three or more missiles fired by the Egyptians was sighted at a range of about six miles. Attempts to shoot down the missile before it struck were unsuccessful.

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

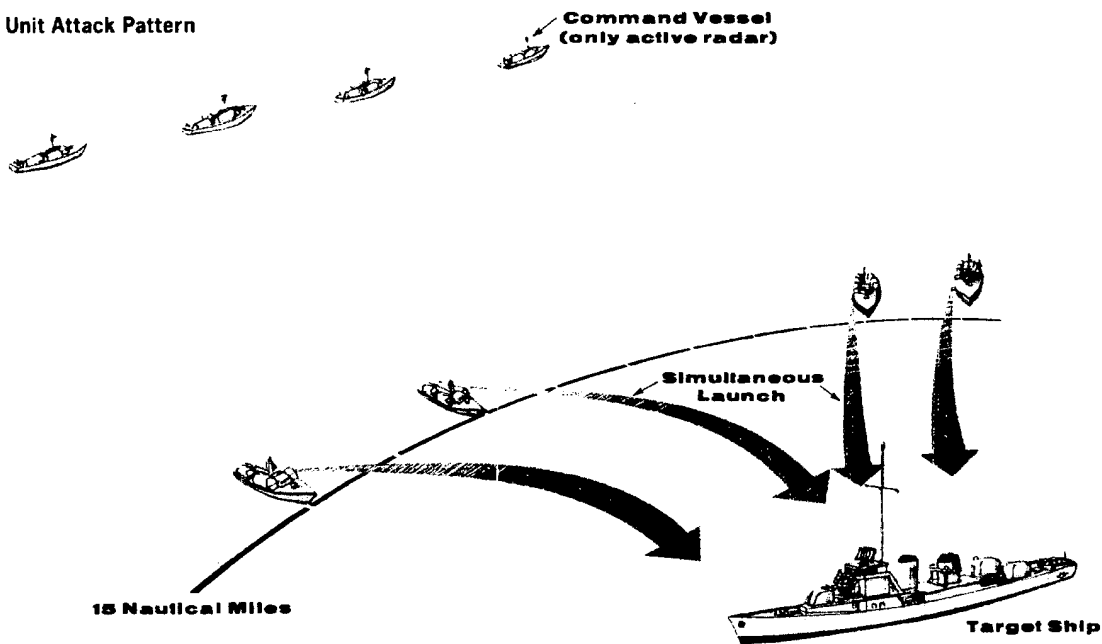
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Missile Flight Schematic



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Multi Unit Attack Pattern

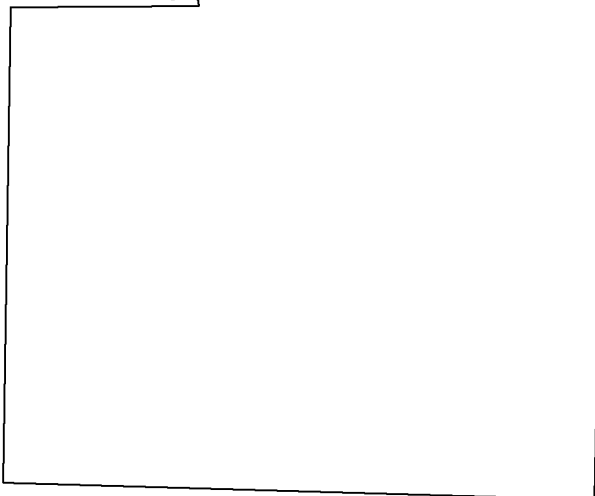


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boats, each of which fired two missiles.

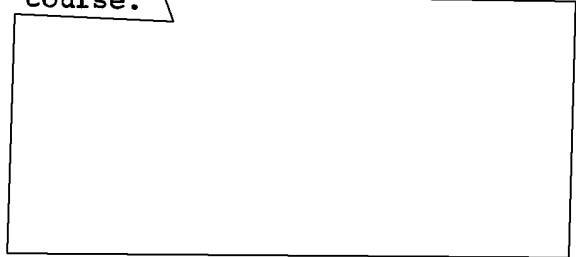


There is no evidence that Soviet advisers in Egypt assisted in the attack.

The SS-N-2 Missile System

The SS-N-2 system (Soviet designation--P-15) is designed to provide mobile defense against attacking naval forces. In the Soviet concept of operations, 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.

After a target has been acquired and identified, missile launch data can be computed in a matter of seconds and the patrol boat turned to an attack course.

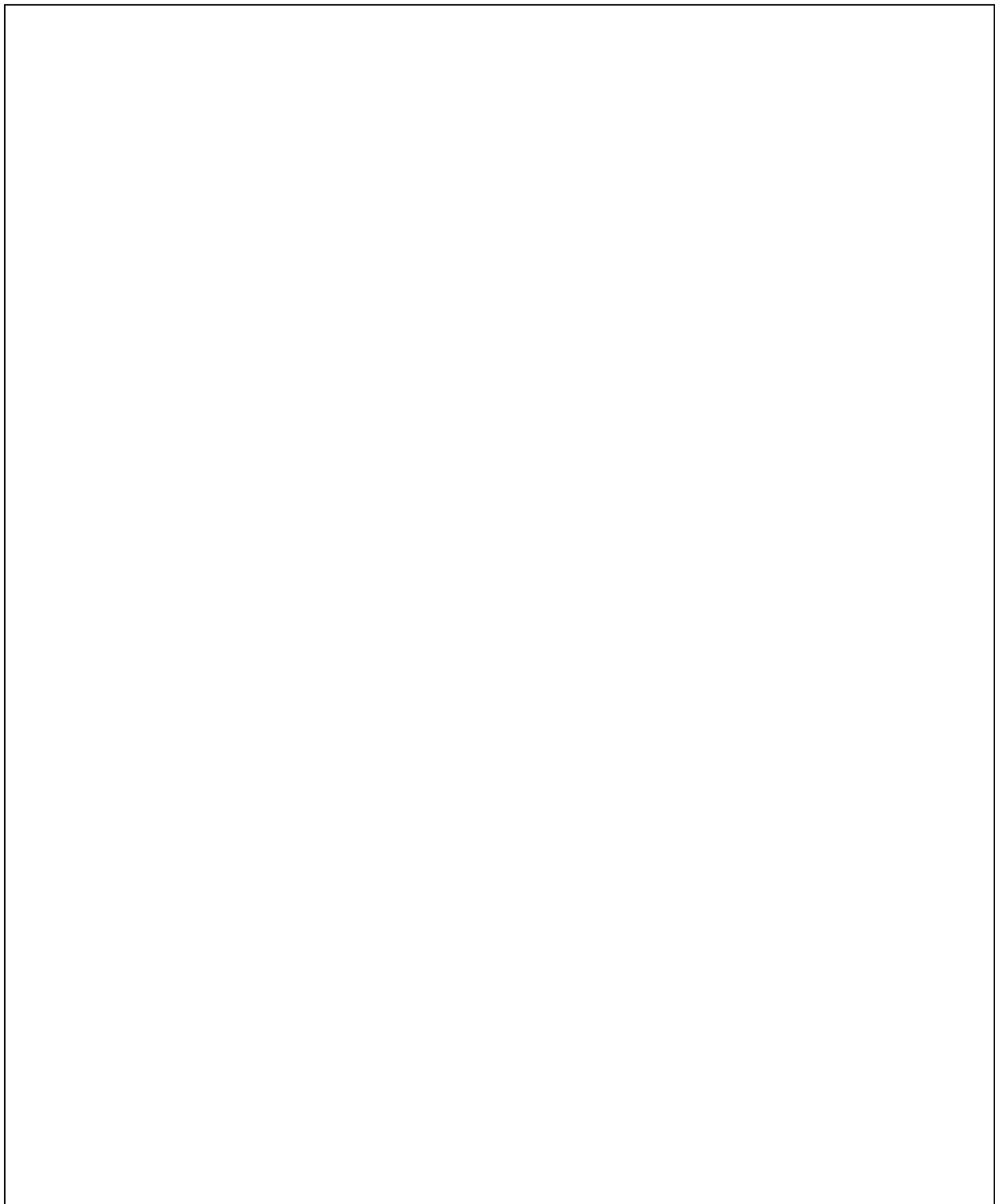


the SS-N-2 missile is effective against a cruiser at a range of 20 miles and against a destroyer at 15 miles, a range greater than that of the guns on ships of the US Navy. In practice, the system normally is used to a range of only about 13 miles against a moving target.

The 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 provide target detection and location 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 optical system carried on the patrol boats.

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EO 12958  
3.4(b)(1) >25Yrs  
(S)



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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 Patrol Boats

The Osa-class guided-missile patrol boat was designed specifically to launch the SS-N-2 missile. Each Osa carries four missiles in covered launchers. Its 9.5-foot draft and speed of 40 knots gives the boat great flexibility in operating from protected coves, from which it can attack ships as far away as 150 miles. The Osa boats, with a displacement of 208 tons, probably are capable of launching their missiles in fairly heavy seas and in winds up to 30 knots.

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 anti-aircraft 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

|                 | OSA    | KOMAR        |
|-----------------|--------|--------------|
| USSR            | 90     | 54           |
| East Germany    | 12     |              |
| Poland          | 8      |              |
| Rumania         | 5      |              |
| Communist China | 4 (+1) | 3 (+1)       |
| North Korea     | 4      |              |
| Yugoslavia      | 3      |              |
| Cuba            |        | 18           |
| Algeria         | 3      | 6            |
| Indonesia       |        | 12           |
| Iraq            |        | 8 (on order) |
| Syria           |        | 4            |
| UAR             | 12     | 8            |



Two crated KOMARs on deck of  
Soviet cargo ship.

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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 4° 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)~~