

Helicopter Anti-missile System

The Nord AS.12 described

By JAMES HAY STEVENS



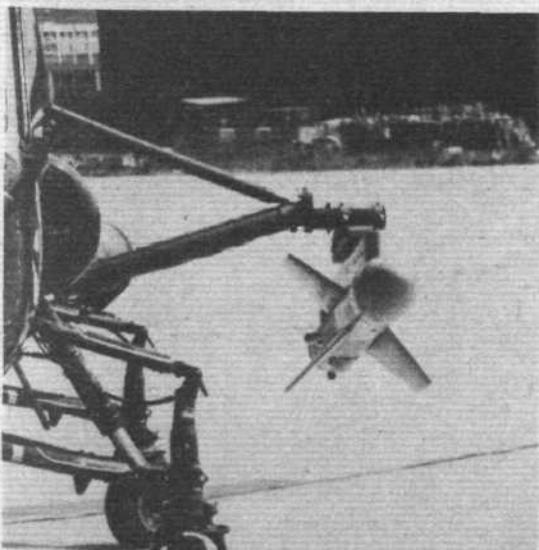
A Nord AS.12 installation on a Westland Wasp of the Royal Navy

WESTERN NAVAL AUTHORITIES were shaken just over a year ago by the sinking of the Israeli destroyer *Eilat* by Styx SSMs launched from a Komar-class patrol boat—historically the first loss of a warship by missiles fired from another warship. There seems to be no shipborne countermeasure available, or in immediate prospect, in the West to meet this comparatively old weapon (described in *Flight's* World Missiles issue last week, page 790) on its own terms; it represents a gap in the armoury. Writing in *La Revue de Défense Nationale*, a French naval officer, Cdr P. L. Lauru, has described the incident in detail and also tabulated possible countermeasures with reference to those available in the next five years.

The Incident There was no radar watch on board *Eilat*, but the exhaust trail of the Styx was seen in time for manoeuvring and gunfire, both proving useless. The missile changed course as it approached and struck amidships, followed in two minutes by a second almost in the same place. About an hour and a half later a third missile hit the stern. The ship capsized and sank in half an hour and a few minutes later a fourth Styx exploded among survivors in the water. The first missile fired by the Egyptian vessel stopped the *Eilat*, a 2,500-ton ex-RN Z-class escort destroyer, and three in all sank it.

The Russian Komar patrol boats, which carry two Styx, are 80-ton wooden vessels 89ft long with a maximum speed of 40kt. The Russians also have the Osa class in service. These have a steel hull, displace 120 tons and are 131ft long, with a speed of 35kt. They are armed with four Styx and two double-barrelled 80mm guns with radar fire control. Both classes have

An AS.12 is carried on an outrigger on each side of the Westland Wasp



small radar silhouettes and, since they are coastal boats (max range about 300 n.m.), are well suited to hiding in the radar "shadow" of islands and promontories.

The Styx (NATO code name) weapon system consists of a delta-wing "aeroplane," span 7.6ft, length 21.3ft, fuselage diameter 2.6ft, and weighing some 17,600lb, of which the warhead accounts for about 1,100lb. A jettisonable solid-propellant booster rocket is mounted beneath the fuselage, which is mostly filled with liquid propellant for the sustainer rocket. The speed is Mach 0.9 (590kt) at 300/1,000ft and the practical range is thought to be about 15 n.m.

The missile is launched under guidance of the patrol boat's search radar, which is supposed to have a range of about 25 n.m. A computer fed with target range, bearing, course and speed from the radar guides the missile through its autopilot. The Styx also carries either a radar search head, or a passive infra-red detector, which corrects its course in the closing stages of the flight—probably at about 5 n.m.

In the patrol boats the Styx is mounted on covered ramps pointing about 12° outboard. There are no spare missiles and, because they are shock sensitive, the vessels have to be manoeuvred so as to restrict rolling. This seems to be the major limitation on operation of this weapon.

Without having a similar (and superior) SSM with which to start a duel, opposition to Styx can take the following forms: "blinding" the patrol boat's radar; disabling the boat; jamming, or decoying, the missile; destroying it. In his survey Cdr Lauru considers that detection of the patrol boat radar emissions is difficult and that the small size of the Styx (1 sq m radar cross-section) flying low makes it difficult to acquire on anti-aircraft missile radars. Decoy systems also rely upon identification of the boat and/or the launched missile. He concludes that, although the French Navy's Mandragore SAM will be ideal—in 1975—the only current weapons to meet the threat are airborne ASMs to destroy the boats. He mentions the AS.30, AS.12 and (ultimately), the Martel; but says that if there is no aircraft carrier the corvettes and frigates can only protect themselves by helicopters carrying the Nord AS.12 teleguided ASM.

The present Nord helicopter ASM weapon system, developed from a decade of experience with Alouettes of the Armée de l'Air, is simple yet sophisticated in that it has a highly developed gyro-stabilised magnifying sight. The SS.11 anti-tank missile can be replaced by the heavier AS.12, and it is in this form that the Nord weapon system has been ordered in quantity for Wasp helicopters in the Royal Navy's frigate force.

The Nord-Aviation weapon system for helicopters has been in service with French army aviation for a number of years, first on the Sud-Aviation Alouette 2 and now on the Alouette 3. In fact, the refined and developed system now in use bears only a superficial resemblance to the early version. Key to the current installation, which has been fitted not only to the Alouette but to such diverse types as the Westland Wasp and Bell Iroquois, is the Bézu gyro-stabilised sight, which enables

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