



MILITARY NOTES

UNITED STATES

'Maverick' Missile

The *Maverick* missile developed for use against ground targets is now entering production. Deliveries will start in late 1972.

The *Maverick*'s "shoot and scoot" capability is provided by a miniature television camera in the missile's nosecone that homes in on a target.

The missile's nose camera is focused on a target by the pilot and locked on by the press of a button. After launch, the camera remains fixed on the target, automatically guiding the missile to impact on the precise spot at which the television camera is looking. Meanwhile, the pilot is free to attack other targets or scoot away from the air vicinity.

Tests show that the *Maverick* will be particularly effective in ground support missions. The missile is expected to provide a dramatic increase in the strike capability of aircraft against such hard point targets as field fortifications, radar sites, buildings, tanks, and armored vehicles.

During flight tests using *F-4 Phantom* and *A-7D Corsair II* jets, the *Maverick* has been launched from slant ranges of a few thousand feet to many miles, and from high altitudes down to treetop level.

The *Maverick*, designated the *AGM- 65A*, is 97 inches long and 12 inches in diameter, has a 28-inch wingspan, and weighs less than 500 pounds. It carries a warhead designed for high penetration.—News release.

'UTTAS'

In June 1972, the Army expects to select two contractors to develop the Utility Tactical Transport Aircraft System (*UTTAS*). Each of the contractors will build six helicopters to be used in a lengthy competitive flyoff which will last through the mid- 1970's.

The *UTTAS* will replace the *UH-1* series of helicopters now in service. The Army envisions a requirement in the 1980's for a transport helicopter capable of carrying an 11-man squad at high altitudes and in hot, tropical environments. Designed to meet these performance specifications, the *UTTAS* will feature twin engines, controls which will not be shattered by small arms fire, armor protection for critical components, and a protected fuel system.

Maintenance should also be much easier. Periodic maintenance inspections will be required after 300 flight hours as opposed to only 100 hours for the *UH-1* series.

Eventually, the Army plans to buy 1,100 of the new helicopters at an estimated cost of 1.4 million dollars each. The comparable cost of a *UH-1* helicopter is about \$400,000.—News item.

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FMC Corporation

A high-mobility utility vehicle, designed for severe off-road use, as well as high-speed highway travel, has been introduced. With an operating range of 300 miles, and capable of speeds of up to 80 miles per hour, the XR311 has about the same exterior dimensions as the M155 $\frac{3}{4}$ -ton truck now in use. Large, low-pressure tires enable the XR311 to climb 60-percent grades and 20-inch obstacles. The vehicle can ford 30 inches of water. It is powered with a 215-horsepower gasoline engine and features a three-speed automatic transmission and four-wheel drive. The low silhouette, quiet operation, and minimum smoke signature of the XR311 make it difficult to detect.

Several versions are available, including a reconnaissance version with a .50-caliber machine gun, an anti-armor version mounting a TOW missile system, and a command and control version with radio communications Equipment.—News release.

‘SuperScout’

The first prototype of an all-weather light observation helicopter, engineered for mid-intensity combat environments, has been unveiled.

The project was inspired by the requirement for an advanced scout in the Army’s New Initiatives Program. The helicopter, called the OH-6C SuperScout, is a second-generation growth version of the Army OH-6A Cayuse.

The helicopter has more than two and a half times the payload of the OH-6A and is

up to one-third faster. It uses the same five-bladed main rotor and four-bladed tail rotor as “The Quiet One.”

Future scout helicopters will require all-weather instrumentation, night vision displays for terrain avoidance and target acquisition, added armor for helicopter and crew protection, and defensive armament. The addition of these features creates a requirement for a greater payload. —News release.

Army Generals

Official figures show the Army has 564 general officers, including colonels on the promotion list. Of these, 269 are US Military Academy graduates. There are 125 generals from the Reserve Officers' Training Corps,

112 from Officer Candidate Schools, 25 from the Army Reserve, five from the National Guard, and 28 received direct commissions.—News item.

Air-Launched 'Redeye'



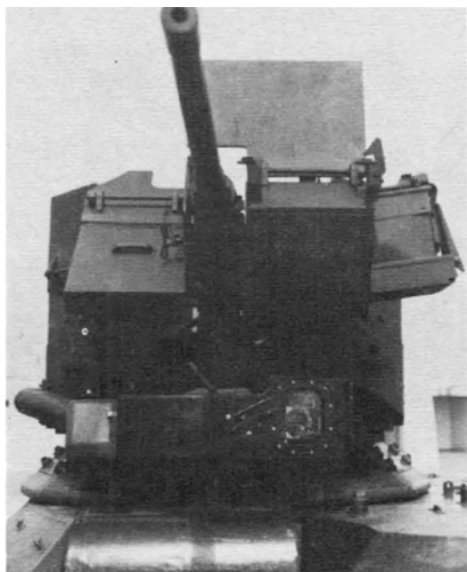
General Dynamics World

A new version of the *Redeye* heat-seeking missile has been proposed for helicopter use. The new system is called the Multi-Mission *Redeye* Air-Launched Missile (*MRAM*). Two of the new missiles would be carried in pods mounted on each side of a helicopter. When launched, the heat-seeking missiles would guide themselves to a ground target, such as a tank, while the attacking helicopter took evasive maneuvers.

Proponents claim *MRAM* would greatly enhance the combat survivability of helicopters. Only minor modifications would be required to mount the system on existing aircraft. Existing target acquisition and sighting equipment could be used to launch the missiles. The basic *Redeye*, a one-man, shoulder-fired, antiaircraft weapon, is operational with the Army and the Marine Corps.—News release.

Laser Rangefinders

A contract for production of laser rangefinders for the US Army's *M551 Sheridan* armored reconnaissance vehicle has been awarded. Prototype rangefinder systems are now completing field evaluation by the Army. The rangefinder consists of a ruby laser, telescope-like optics, and associated panels and electronics. In operation, the rangefinder is aimed at the target, utilizing self-contained



Hughes Aircraft Corporation

Laser rangefinder (window, right of center) on turret of US Army's *M551 Sheridan* armored reconnaissance vehicle

pointing optics, and the laser is fired. The light beam reflects off the target and back into a receiver telescope. The system automatically registers the elapsed time for the laser beam's round trip, computes the distance in meters, and displays the range on a readout.

With this information, tank crewmen can fire conventional armament with an improved probability of scoring a first-round hit.—News release.

Tank Gun Lasers

A contract for developing a ruby laser rangefinder for the *M60A1* tank has been awarded. The laser will be integrated into a new fire control system which features a ballistic computer now under development.

The laser and computer will enable the crew to fire its first round more quickly and will increase the probability of scoring a first-round hit.

The computer receives inputs from the laser system and several other sensors which provide it with information about target range, windage, tracking rates, gun wear, propellant temperature, and the tank's cant angle. It also accepts inputs of air density and air temperature. With this information, the computer can provide split-second instructions to the tank crew on precisely where to aim the gun.

The range to the target, a critical factor in firing accuracy, is provided by the laser rangefinder. In operation, the telescope-like optics of the rangefinder are aimed at a target, and the laser is fired. The light beam, traveling at 186,000 miles per second, reflects off the target and back into a receiver telescope.

The system registers the elapsed time for the laser beam's round trip and computes the precise range, producing a numerical readout in the tank commander's eyepiece and feeding a signal to the computer. The rangefinder being developed for the *M60A1* tank equipped with a 105-millimeter gun will utilize hardware and technology derived from laser rangefinders developed earlier for the Army's *M60A1E2* tank and *M551 Sheridan* armored reconnaissance airborne assault vehicle, both of which carry 152-millimeter gunlauncher systems.—News release.

'M60A1E2'



US Army Photos

The *M60A1E2* main battle tank is undergoing service testing at Fort Knox, Kentucky. The tank is an updated version of the Army's standard main battle tank. An all new, fully stabilized compact turret is mounted on the proved chassis of the *M60A1*. The modified tank features a 152-millimeter gun launcher capable of firing either conventional ammunition or *Shillelagh* missiles. The turret design offers significant improvements in night vision, ballistic protection, and command capabilities. The *M60A1E2* weighs 57 tons and has a cruising range of about 280 miles.—US Army release.



SWEDEN

Mobilization Strength



International Defense Review

Swedish armored brigade on an exercise using S tanks and FV-302 armored personnel carriers

According to recently released figures, Sweden could mobilize 700,000 men in 30 army brigades plus 600 combat aircraft and 110 warships in two to three days. Of the 700,000 men mobilized, about 600,000 would be in the army; the rest would belong to the air force and the navy. The army brigades would have a strength of 5,000 to 6,000 men supported by staff, communications, and maintenance units. Territorial and local defense forces would provide an additional 100 battalions plus about 400 to 500 independent companies.

The 30 brigades of the army are of three types: infantry, armored, and Norrland brigades. The latter are similar to infantry brigades, but are especially equipped with amphibious tracked vehicles for operation in the northern parts of the country during both winter and summer. One Swedish brigade, with supporting elements, is expected to be able to repel a landing operation on a front of approximately five to 20 miles.

Swedish divisions are made up of one or more brigades and usually have a strength of about 15,000 men. The composition varies according to the mission, and territorial forces may be included. Special divisional supporting units include battalions of 155-millimeter, self-propelled guns with a range of 24 kilometers; radar-controlled 57-millimeter and 40-millimeter antiaircraft gun units; and army light aircraft and helicopter squadrons.

Military service is compulsory in Sweden for all men between the ages of 18 and 47. When called, conscripts serve 10 months' active duty for basic training, followed by three weeks of training every four years. Officer conscripts receive considerably longer training. In peacetime, the Swedish Army consists of 18,000 regular officers and noncommissioned officers, 36,500 conscript trainees, and 100,000 reservists in training for 14 to 40 days.—News item.

CANADA

Tilt-Wing Aircraft

The *CL-84-1* tilt-wing vertical and short takeoff and landing evaluation aircraft recently demonstrated its gun-firing capabilities.

Since the firing trials, using a 7.62-millimeter mini-gun pod, were conducted to assess gun-firing effects on flight characteristics and not to obtain high target scores, the simplest form of reflector sight was used. Nevertheless, a high degree of accuracy was recorded in three configurations:

- At 40 knots, with the wing at a 40-degree tilt (short takeoff and landing mode), the score was 84 percent of possible hits on target.
- At hover, with wings at 90 degrees, hits were 71 percent.
- At 200 knots, with wing down and locked, the score was 30 percent.

In the conventional configuration, the first target was engaged at a range of 1,000 feet with the *CL-84-1* flying at 200 knots in a shallow dive. Later, in the same configuration, two passes were made on second and third targets with the aircraft weaving to assess the steadiness of the splash pattern.

Over land, the aircraft was hovered 1,000 feet from the target, and, in the first sortie, the fire was held steadily on the target during each burst. In the second, fire 'was initially aimed off to the right, then swung rapidly onto the target by yawing the aircraft.

The final hover sortie was probably the most significant, the results suggesting that adequate suppressive fire during hover rescues could be provided without the need of a turret.

The ability to select and hold a fuselage angle while remaining stationary in hover gives the *CL-84-1* an advantage over the helicopter which is committed to move fore or aft when the nose is depressed or raised. Finally, the aircraft was aimed at a point between the targets, and, by lowering and raising the nose, fire was raked back and forth between a 500 and 1,000-foot range.—News item.



General Dynamics World

GREAT BRITAIN

Military Capability Increased

In October, Great Britain announced that it was increasing the size of its regular military forces. Recruiting, up last year to 42,000 from a low of 28,000 in 1968, will allow four infantry battalions which had been reduced to company size to be restored to full strength. One is the famous Argyll and Sutherland Highlanders.

The Royal Navy will receive two Sheffield class destroyers and four

Amazon class frigates. Two additional squadrons of Buccaneer low-level strike aircraft have been ordered for the Royal Air Force.

These increases follow the decision to increase British military capability as the nation enters the European Common Market. It will partially alleviate the shortage of regular infantry caused by the violence in Northern Ireland.—News item.

Royal Navy

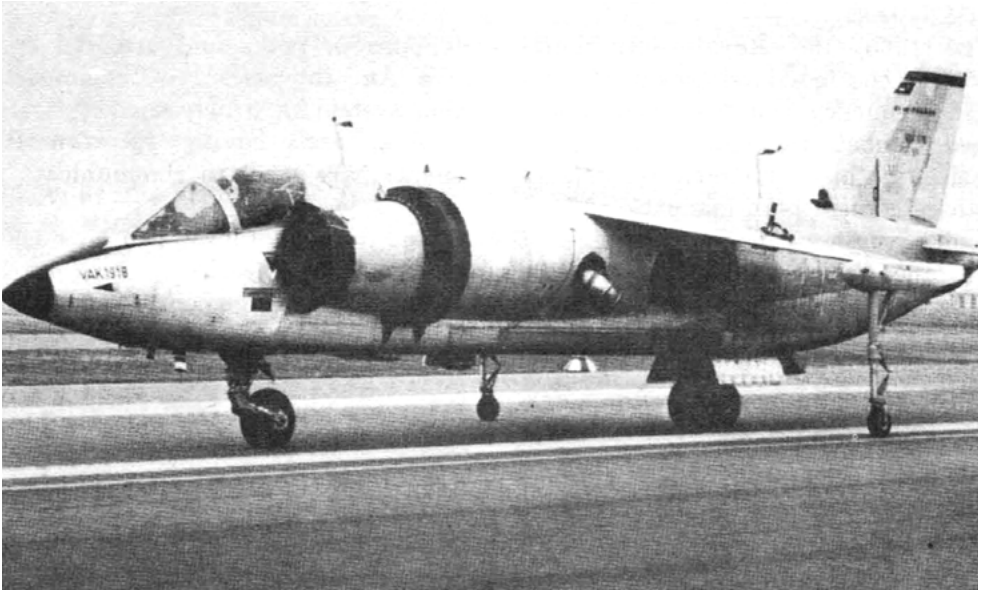


Royal Marine commando embarked on HMS *Albion*

Royal Marines

With the departure of major British naval units from Singapore, there are now three Royal Navy commands at sea. The first flotilla consists of guided-missile destroyers and frigate squadrons. The second flotilla includes cruisers, and guided-missile destroyers and frigates. The third flotilla is an amphibious force built around the carriers HMS *Ark Royal* and HMS *Eagle*. The force includes the two commando carriers, *Albion* and *Bulwark*, each carrying Royal Marines, supporting assault ships, and other amphibious vessels.—News item.

MRCA



Interavia

VAK 191B MRCA test bed

The British Ministry of Defense announced in September that development work being carried out on the multi-role combat aircraft (MRCA) being developed jointly by Britain, West Germany, and Italy will continue on the same cost and work-sharing basis as during the past year.

The MRCA is a twin-engined, two-seat supersonic aircraft. Estimated cost of the development phase is 600 million dollars.

The aircraft, each of which will cost an estimated 3.6 million dollars, will be capable of more than twice the speed of sound, yet will land and take off at a very slow speed. The swing-wing design will also permit prolonged high-speed flight at very low altitude.

All three governments require reconnaissance and trainer versions. In addition, specifications call for air-to-surface capabilities during low visibility and interceptor and strike roles.

Seven prototypes will be built—three in Britain, three in Germany, and one in Italy.—News release.

DENMARK

Force Reductions

Denmark plans to reduce its standing army by almost half. The current strength of the Danish Army would be cut from 13,000 to about 7,000. The population of the nation is about five million. Draftees would serve six months in local defense units and then transfer to the reserves. The Danes claim that they would still be able to

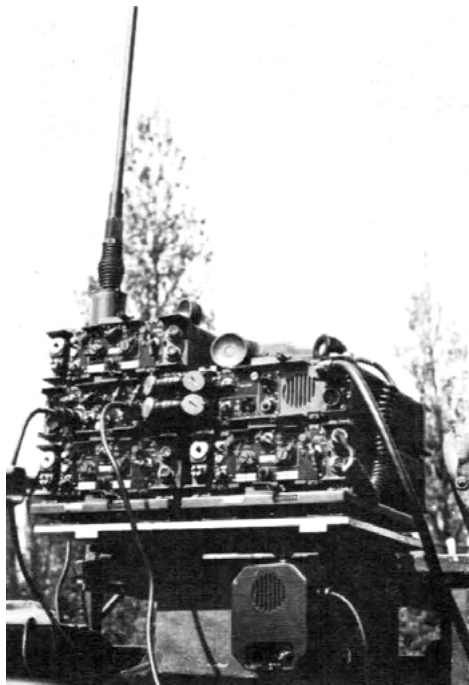
mobilize a force of 70,000 men. The plan would also reduce the size of the Danish Air Force and Navy. The new organization is based upon the assumption that the major challenges to Denmark's security in the future are likely to be on the level of political pressure and threats rather than outright invasion.—News item.

THE NETHERLANDS

Radio Systems

In 1965, the Royal Netherlands Army requested development of very high frequency and frequency modulated combat area radio equipment. Basically, this equipment consists of transceivers in both man-pack and vehicular versions having a

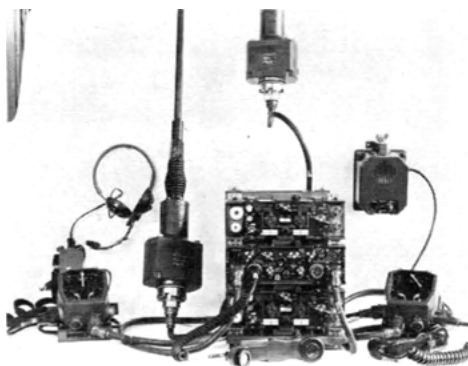
- An intercommunications system for use in tanks and armored cars.
- An inter-vehicular communication system in which separate transceivers, each having its own frequency, are used to communicate at various levels.



A "stacked" system consisting of two 30-kilometer and one eight-kilometer transceivers

range of five miles which can be extended by using an RF amplifier for a range of 20 miles. It is compatible with the equipment in present use.

Special design has resulted in a system which is economical yet reliable and easy to maintain. The basic unit of the various communication systems is the transceiver which can provide:



*Philips Telecommunication Photos,
the Netherlands*

A system consisting of one 30-kilometer and one eight-kilometer transceivers with an intercommunication system for vehicular use

The individual units can be stacked to provide increased capabilities. When this arrangement is adopted, a central control unit and a loudspeaker control unit are used. Two or three stacks can be used alongside each other. A system can contain up to three transceivers. The intercommunication and control system makes use of a cable which runs through all compartments of the vehicle. The advantage of this system is that it is not necessary for the stacks to be arranged side by side; any arrangement of the stacks and control boxes is possible. The transceivers provide 880 channels in the 26 to 70 frequency range.—News release.