

# British Aircraft Corporation Limited

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NEWS RELEASE

VICKERS-ARMSTRONGS (AIRCRAFT) LIMITED

60/672

25th August 1960

## V I G I L A N T

British Aircraft Corporation announces that the War Office has ordered the Vickers Vigilant for Assessment Trials by the Infantry. These trials are expected to take place early next year. There is world-wide interest in Vigilant and adequate production resources are now available in the newly formed British Aircraft Corporation.

The development of Vigilant (the Vickers Visual Guided Infantry Light ANti-Tank weapon) was started about three years ago as a private venture project, with user influence brought to bear by close liaison with the Army. The first control missiles were fired in September 1958 and development is now nearing completion, after firing about 100 rounds.

The VIGILANT is an anti-tank wire guided missile which is small, compact and light enough to be carried by one man. It has no control box or other ancillary gear, the missile being launched from its box and guided by means of a hand-held sighting device. The missile is instantly ready for use as there is no field assembly or testing necessary. The total system weighs about 45 lb.

Not only is it a handy infantry weapon, but its small size and weight make it readily adaptable for fitting to light reconnaissance and other fighting vehicles. Its ruggedness and instant readiness for action make it attractive for air-borne operation.

VIGILANT's special feature is its accurate and easily operated control system. This solves the costly training problem normally experienced with small anti-tank guided weapons. The average soldier can quickly learn to use it, and refresher courses are only needed after long periods. Far fewer training missiles will be required than for other weapons of this type. This easy-to-learn control system is based on a velocity control technique, whereby the movement of the thumb tip merely changes the heading of the missile. The operator has therefore a much easier task than in acceleration control methods which require the operator to smooth a curvilinear flight path on to a line of sight.

Development records show that the missile can be brought on to the line of sight at extremely close range. The control system, of course, is assisted by the outstanding manoeuvrability of the missile allowing the operator to swing the missile rapidly on to the sight line resulting in unrivalled short range performance.

At longer ranges, the accuracy is much better than that of a gun and at the maximum range of approximately 1 mile a trained operator can select the vulnerable part of the tank and so increase the chances of a kill. Moreover, this accuracy also enables the infantryman to engage the enemy tank in the protected hull down position. There is no risk of counterfire as it is impossible to detect the launching of a Vigilant.

A particularly large and heavy warhead is provided enabling every Vigilant armed soldier to become a lethal tank destroyer from concealed positions out to long ranges. It is exceptional in terms of payload carried, and shows a marked superiority over other weapons when measured in terms of performance against total equipment weight and manpower. Alternative warheads can be fitted for roles other than the anti-tank one.

The following are some possible field applications of the weapon, arising from its portable rugged nature and absence of ancillary equipment.

In marine commando operations the Vigilant can, for the first time, enable invading troops to engage instantly and effectively any armour contesting the landing.

In airborne operations the paratrooper can drop with his Vigilant and engage enemy armour within seconds of landing. Other forms of anti-tank armament, because of their heavy and bulky nature, must be dropped separately. The paratrooper on landing may be faced with the hazard of running a considerable distance, unloading the anti-tank armament and then setting it up, before being able to engage the enemy. Vigilant affords valuable protection during the critical phase of derigging the heavy equipment drop when the airborne forces are most vulnerable.

In association with the helicopter, the Vigilant can provide the Army with great flexibility in anti-tank operations. A helicopter with rack-mounted missiles could provide a very effective method of rapidly meeting and defeating suddenly developed and widely separated tank threats. Alternatively, troop-carrying helicopters could be used for the rapid transport of Vigilant armed soldiers to otherwise inaccessible favourable terrain for defence against attacking armour.

Vigilant missiles set up in a prepared position might also be used in conjunction with the helicopter, the firing and control of the ground launched missiles being carried out from the helicopter. This 'Jack-in-the-box' technique could be used with advantage where the terrain was such that some features, for instance a copse or low hill, obscured the direct view of the enemy armour.

Altogether it is thus considered to be by far the most effective one-man anti-tank weapon yet devised.

# VIGILANT

## MAIN CHARACTERISTICS

### TRULY ONE MAN PORTABLE

Not only low weight but small due to 11 inch wing span.

### VELOCITY CONTROL

Training task comparable to learning to ride a bicycle. Acceleration control like learning to ride a bicycle on a tightrope.

### LOCAL AUTOPILOT

Provides velocity control. It allows a small wing span which must otherwise be 28 inches to give stability in flight. It corrects for gust disturbances which cannot be corrected by the human operator. It provides consistent launching with automatic level out.

### WARHEAD

A recognised optimum design for use against the heaviest tank.

### RANGE

Maximum 1,500 yards. Optimum choice for infantry weapon. Few targets available beyond.

Minimum 250 yards with good lethality. Have had 50% hits at 180 yards in trials. Unrivalled by any existing missile.

### TRAINING

5 hours on simulator. 2 to 5 live firings. Permissible lapse in practice greater than 3 months, up to 2 years observed.

Acceleration system needs operator kept in constant practice.

### ACCURACY

A trained operator can hold missile consistently within 18 inches from sight line.

### SPEED

Velocity control allows higher speed than competitors. 450 to 500 ft/sec. This matches average target availability.

### MANOEUVRE

Low aspect ratio wing does not stall. 30° incidence permissible. This is equivalent to a swivelling rocket. Hence manoeuvre available at low speed after launch.

Velocity control improves as maximum permissible manoeuvre increases.

Acceleration control requires manoeuvre to be restricted to allow human operator to keep the system stable.

### NO BATTERIES

Electric batteries for missile use have always been unreliable. 100% spares is a typical and modest requirement. Replaced in Vigilant by the smallest and simplest turbo-alternator.

### COST

About 50% more than competitors per missile. Total logistic cost considerably less.

AFJ

24th August 1960

Guided Weapons Department,  
Vickers-Armstrongs (Aircraft) Ltd.,  
Weybridge, Surrey.

**THIS  
IS  
'VIGILANT'**

THE MOST ACCURATE AND LETHAL ONE-MAN GUIDED WEAPON SYSTEM EVER DEVELOPED  
THIS DESIGN STUDY WAS STARTED IN 1957 AS A PRIVATE VENTURE, AND NOW, IN LESS THAN 4 YEARS,  
VICKERS ARE PRODUCING VIGILANTS FOR THE ARMED FORCES.

<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>THE FUTURE</u>
FEASIBILITY STUDY COMPLETED	FIRST PROGRAMMED MISSILES FIRED	AFTER FIRING 6 GUIDED ROUNDS, DEMONSTRATION TO U.S. ARMY AT REDSTONE, ALABAMA, IN MARCH.	MOVING TARGET FIRINGS ON AN ANTI-TANK RANGE 5 HITS AND 4 NEAR MISSES WITH 10 RELIABLE MISSILES BY ONE EXPERIENCED AND TWO TRAINEE VICKERS OPERATORS	ACHIEVING THE ULTIMATE IN RELIABILITY AND ACCURACY
PREMININARY DESIGN & DEVELOPMENT	SATISFACTORY RESULTS ENABLED PROGRAMMED FIRINGS TO BE CURTAILED AND ALL EFFORT DIRECTED TO FULLY CONTROLLED MISSILES	2 HITS BY U.S. ARMY OPERATORS WITH 14 RELIABLE MISSILES	MISSILE RELIABILITY 83%	MASS PRODUCTION AT LOW COST
'HARDWARE' MISSILES PRODUCED & FIRED TO PROVE:-	FIRST CONTROLLED MISSILES FIRED	PRESENTATION TO N.A.T.O. AT LARKHILL IN SEPT.	FLIGHT TRIALS WITH WARHEAD & FUZE	
MOTOR		7 HITS WITH 8 RELIABLE MISSILES BY BEST VICKERS OPERATOR	REFINEMENTS TO CONTROL SYSTEM	
AERODYNAMICS		MISSILE RELIABILITY 75%	PRODUCTION OF EVALUATION ORDERS	
WIRE DISPENSING & TELEMETRY				

NO CHANGE TO ORIGINAL AERODYNAMIC DESIGN OR CONTROL SYSTEM PHILOSOPHY

**'The Vigilant'**  
**Artists Drawings**

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Our Artist illustrates some of these applications of 'The Vigilant' in Marine Commando operations 'The Vigilant' for the first time enables invading troops to be able to engage instantly and effectively armour contesting a landing.

In airborne operations enemy armour can be engaged within seconds of landing, other forms of anti-tank armament because of its heavy and bulky nature must be dropped separately. The paratrooper on landing may be faced with the hazard of running a considerable distance, unloading the anti-tank armament and then setting it up, before being able to engage the enemy.

In association with the helicopter 'The Vigilant' provides the army with great flexibility in anti-tank operations. Here a helicopter with rack mounted missiles provides a very effective method of rapidly meeting and defeating suddenly developed and widely separated tank threats. Alternatively troop carrying helicopters can be used to rapidly transport Vigilant armed soldiers to otherwise inaccessible, favourable terrain, for defence against attacking armour.

Vigilant missiles set up in a prepared position can also be used in conjunction with the helicopter. The firing and control of the ground launched missiles being carried out from the helicopter. This Jack-in-the-box technique can be used with advantage when the terrain is such that some feature, for instance, a copse or low hill obscures the direct view of the enemy armour.

In the case of the infantry prepared defensive position accessible to light road transport 'The Vigilant' is most conveniently used in its combination carry box launcher because of its greater environmental protection. In such a defensive position one infantry man can conveniently operate a battery of up to six missiles the change from one missile to another being effected by plugging site controller into the appropriate missile cable. Alternatively a portable switch conjunction box can be provided.

A more recent application of Vigilant arising from its small size and weight has been its ready adaptation for fitting to light reconnaissance and other fighting vehicles.

Not to be released before 3 p.m. Thursday 25th August, 1960.

'The Vigilant'

In the tactical application of this weapon, we see its place in a battalion as complementary to the gun giving defence in depth with flexibility in deployment. Here is a typical forward defence locality with four guns sited in prepared positions. The tank threat appears well out of range of the guns. The fire of which has to be withheld to maintain concealment. Vigilants can achieve surprise from concealed positions and reach further out in range. The defence of the battalion against saturation by waves of tanks, in our opinion, is best achieved by a combination of guns and missiles.

'Actual Firings'

First Shot (real time)

This shot was on the line of fire. A hit on the gun barrel.

Followed by same shot in slow motion.

Second Shot (real time)

Angle-off shot  $9^{\circ}$  right of line of fire. A hit on the top of the turret.

Followed by same shot in slow motion.

Third Shot (real time)

$7^{\circ}$  left of line of fire. A hit on the base of the turret.

Followed by same shot in slow motion.