The cluster bomb

Britain's new weapon against tactical targets

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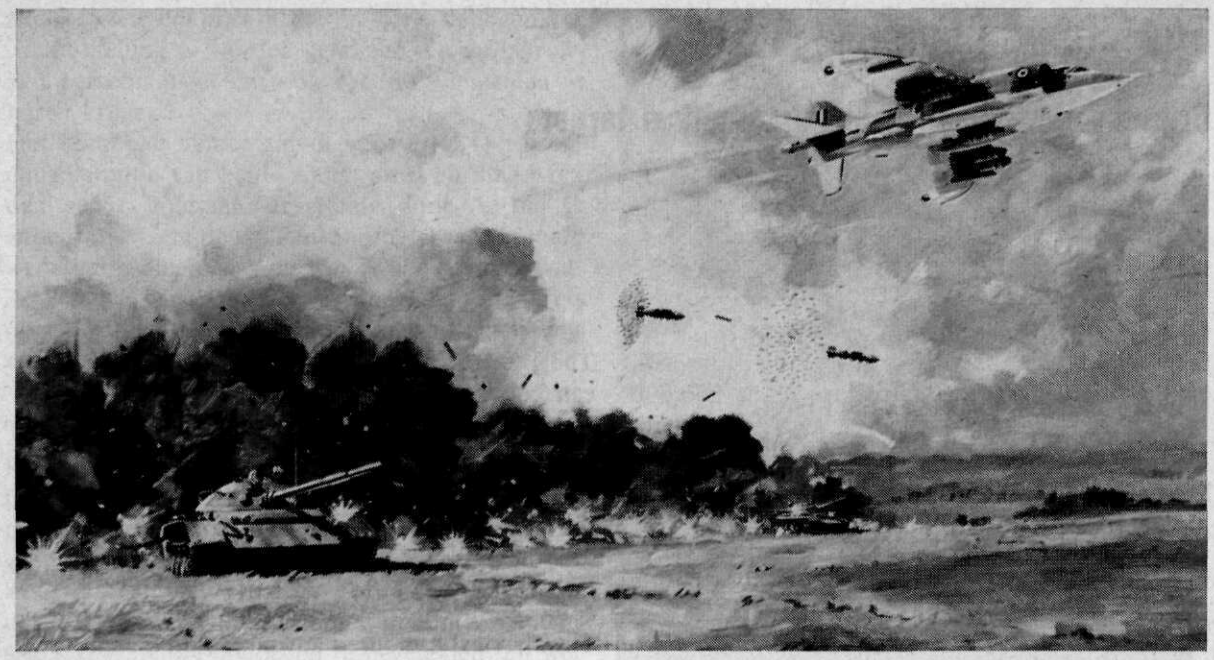
There are at least sixty Warsaw Pact divisions with supporting troops, amounting to about 850,000 men and 14,000 tanks facing the NATO forces in Europe; and these forces can be reinforced rapidly by another 30 divisions and 6,500 tanks from Western Russia. These forces far outnumber the NATO troops. In order to have any hope of holding an attack or deterring a possible aggression the Allies must be superior in quality and develop weapons which have a very high kill ratio.
The cluster bomb, developed by the Royal Air Force, has such a capability and is an extremely effective weapon in such a conventional war environment. To stop a large scale armoured attack air forces must place emphasis on air-to-ground attacks both in close support of ground forces and in strike operations.

The modern ground to air defences are today so effective that aircraft must fly low and fast, with single pass accuracy, if they are to escape from missiles and anti-aircraft gunfire. No longer can an aircraft circle for a second and third attack. Conventional high explosive bombs with retarded action are still effective against depots, gun sites etc., but a near miss of a 1,000 lb bomb will not damage a heavy tank. The British therefore have designed and brought into operation the BL 755 cluster bomb which meets the requirement of being capable of delivery at very low level, of covering a large area and of having the high kill ratio.

The cluster bomb concept is based on the 'shot gun' principle of compensating for aiming errors by covering the target area with a suitable pattern of evenly distributed sub-projectiles. The bomb was developed by the Ministry of Defence (PE) and Hunting Engineering Ltd, and emphasis was placed on its ability to be carried either internally or externally on standard NATO weapons pylons as fitted to existing aircraft and those coming into service. It can be carried on the Buccaneer, Phantom, Jaguar, Harrier, Mirage, F-5, G-91, F-104G, and, in the future, the MRCA.

The BL 755 cluster bomb weighs only 600 lbs; it can be used with simple or sophisticated sighting systems and is immune to electronic counter-measres. A great advantage of the area effect of the cluster bomb over a conventional bomb is the ability to hit several targets with just one weapon. Tank formations, vehicle convoys, troop concentrations and parked aircraft are all targets which could be hit hard by the cluster bomb.
The classical armoured advance, with a concentration of tanks moving forward, accompanied by ground troops or motorized infantry, would be hard pressed to continue its movement in the face of a sustained attack by cluster bomb equipped ground attack aircraft. The armour could be penetrated, knocking out the vehicle mechanism and crew, and accompanying motor columns would suffer heavy casualties.
The modest weight of the BL 755 weapon enables the average light strike-fighter to carry almost twice as many weapons as would be possible carrying conventional 1,000 lb bombs. The adoption of multiple weapons pylons and twin-carriers in the RAF and other NATO air forces gives an ordnance capability much in advance over that possible a few years ago. A Buccaneer, for example, can carry four cluster bombs internally plus up to eight beneath its wings. Just one squadron of these aircraft in one attack could therefore deliver well over 100 cluster bombs, each one capable of taking out several parked aircraft or armoured vehicles.

The weapon system itself is basically a free-fall container of conventional bomb configuration, which contains and ejects over 100 bomblets to cover a ground pattern uniformly.
The bomb is of conventional appearance and is installed on aircraft without any special modifications. The tail section is of standard design with 'flip-out' fins; the bomblets are contained in the centre section, while the nose section contains the arming equipment. Before take-off, a time delay is selected for bomblet ejection after weapon release from the aircraft to ensure that there is



Artist's impression of the BL 755 cluster bomb in action; the bomblets can be seen scattering from the bomb casing after release from a Harrier, the immediate area can be seen 'saturated' by the bomblets

a safe separation distance between aircraft and weapon before bomblet ejection. Following release and after the set delay, skin-lifting jacks force the leading edge of the centre section into the air-stream, so that aerodynamic forces can lift the covers clear of the weapon and allow the bomblets to be ejected in a sequence.

After ejection the nose and tail sections of each bomblet extend. The nose section carries an impact sensor connected to the arming unit and the tail section extends to form a stabilizing coronet. The centre section containes the shaped charge, the explosive jet of which will effectively penetrate vehicle armour over a very wide range of impact angle.

Any enclosed section of armoured vehicle when penetrated by the shaped charge jet will suffer rapid temperature and pressure rise and fragmentation, causing a high level of damage to internal equipment and disabling personnel inside. Unenclosed sections of vehicle, such as the engine compartment or the tracks, are also susceptible to heavy damage from the bomblets. In addition to the anti-armour capability the bomblet casing explodes into thousands of fragments which can penetrate soft-skinned vehicles. These fragments, equally effective against personnel, could help neutralize anti-aircraft and anti-tank guns and missile batteries whether 'dug in' or mounted on vehicles. Crews manning 'open' vehicles and installations would have to seek prepared cover to escape from a strike by BL 755 carrying aircraft.

The cluster bomb can be loaded with standard equipment and suspended from NATO lug systems. It is designed to be maintenance free with a storage life of many years. Like the weapon system, the transportation and storage package have been developed for use in world wide conditions, from the Arctic to the hottest deserts.