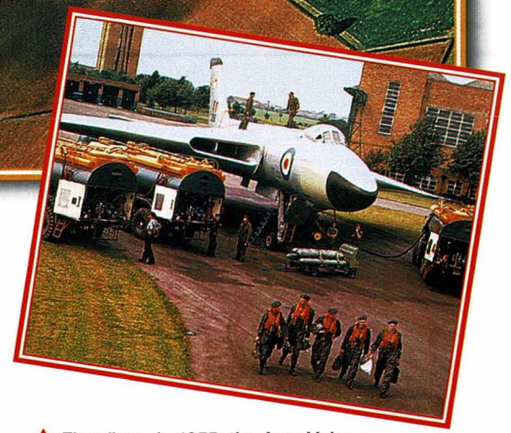
VULCAN

● Strategic missile carrier ● Delta-wing bomber

NUMBER 1 GROUP A
WARPLANES OF THE 1950s, 1960s AND 1970s

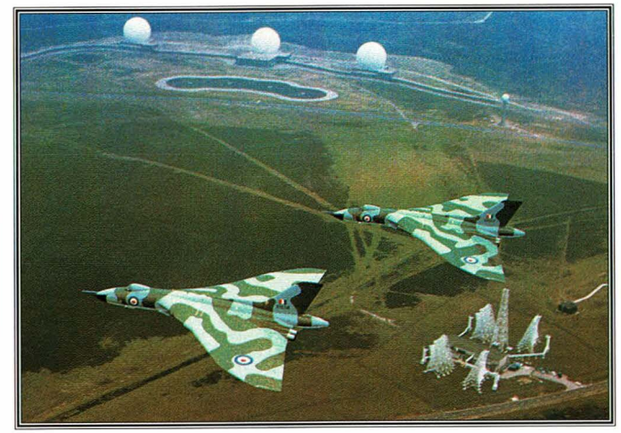


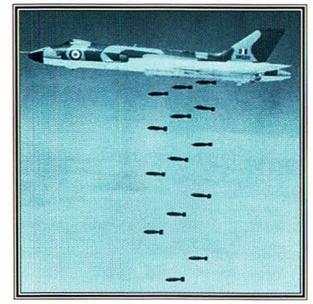
▲ *First flown in 1955, the Avro Vulcan was to spearhead British nuclear and conventional bombing capability for more than a quarter of a century.*

The majestic Avro Vulcan ruled the skies for more than two decades as a major component of the Free World's Cold War nuclear forces. This enormous delta-wing jet was one of the most graceful and beautiful flying machines ever committed to the grim reality of nuclear deterrence. But the Vulcan also excelled as a conventional bomber, tanker and reconnaissance platform.

PHOTO FILE

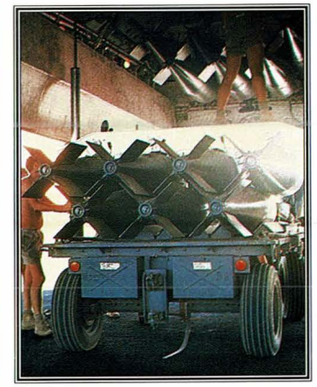
AVRO VULCAN





▲ "Iron" bomber
Although designed for high-level nuclear strike, the Vulcan was a capable conventional bomber. Maximum bomb load of "500-pounders" was over nine tons.

▲ Switch to low level
Development of Soviet air defenses meant that in the 1960s the Vulcan's attack profile was changed to low-level penetration, and the men crewing the big bomber had to learn new skills.



▲ Stand-off strike
The Blue Steel nuclear missile meant that the Vulcan could attack key strategic targets from up to 220 miles away.

◀ Target Falklands
Based on Ascension Island, British armorers load 1,000-pound bombs into the belly of a "Black Buck" Vulcan.

◀ Conventional bomber
With weapons bay doors open, an Avro Vulcan banks away at the end of a bomb run.

FACTS AND FIGURES

- **Early Vulcans were painted a stunning pure white to reflect nuclear "flash."**
- **The four Olympus engines produced as much power as 18 railroad locomotives.**
- **Vulcan pilots had ejection seats, but in an emergency, the other three crewmen had to bail out through hatches.**
- **The Vulcan's pilot sat 16 feet up and used a periscope to steer on the ground.**
- **The Vulcan could outmaneuver F-15s in high-altitude mock dogfights.**
- **Vulcans flew 7,860 miles to bomb the Falklands, at the time the longest straight-line combat missions in history.**

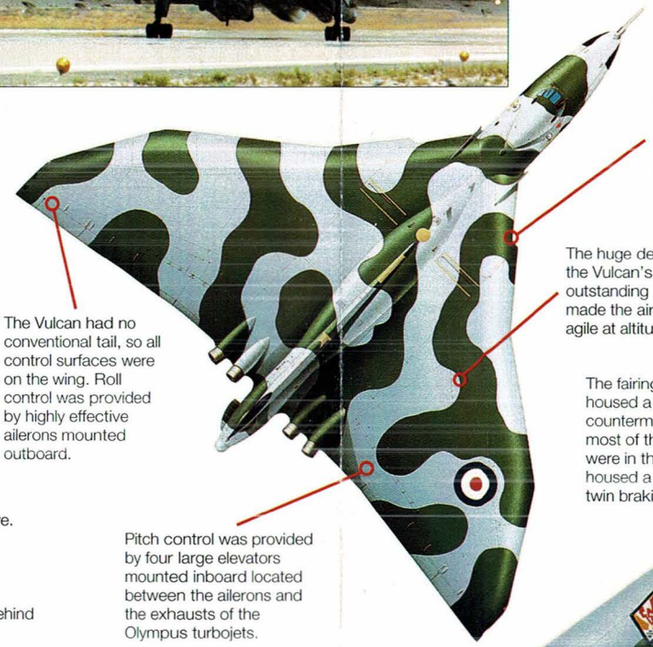
Vulcan to the fore

New frontiers in aerodynamic design were opened up by the Avro 698 Vulcan, the world's first large aircraft with a delta, or triangle-shaped, wing. When the Vulcan joined Britain's bomber force, it marked a quantum leap forward in technology. But in addition to its impressive performance the Vulcan gave the world a new look: it was one of the most exquisite and best-loved aircraft ever to take to the skies.

The Vulcan's assignment was to prepare for the worst in the appalling event of atomic war and retaliate if a nuclear attack came. This serious business was at first carried out with heavy and awkward atomic and hydrogen bombs and later with a far-reaching, nuclear-tipped missile called the Blue Steel.

As a conventional bomber, the five-man Vulcan saw action in the 1982 Falklands War, achieving dramatic success under difficult circumstances. Vulcans also served as strategic radar reconnaissance aircraft before their retirement in the late 1980s.

The Vulcan's unique delta wing made it surprisingly maneuverable for such a large machine.



Prototype Vulcans had straight-wing leading edges. Production wings were kinked, a feature designed to help eliminate buffeting in high-g maneuvering at altitude.

The huge delta wing was the Vulcan's most outstanding feature and made the aircraft highly agile at altitude.

The Vulcan had no conventional tail, so all control surfaces were on the wing. Roll control was provided by highly effective ailerons mounted outboard.

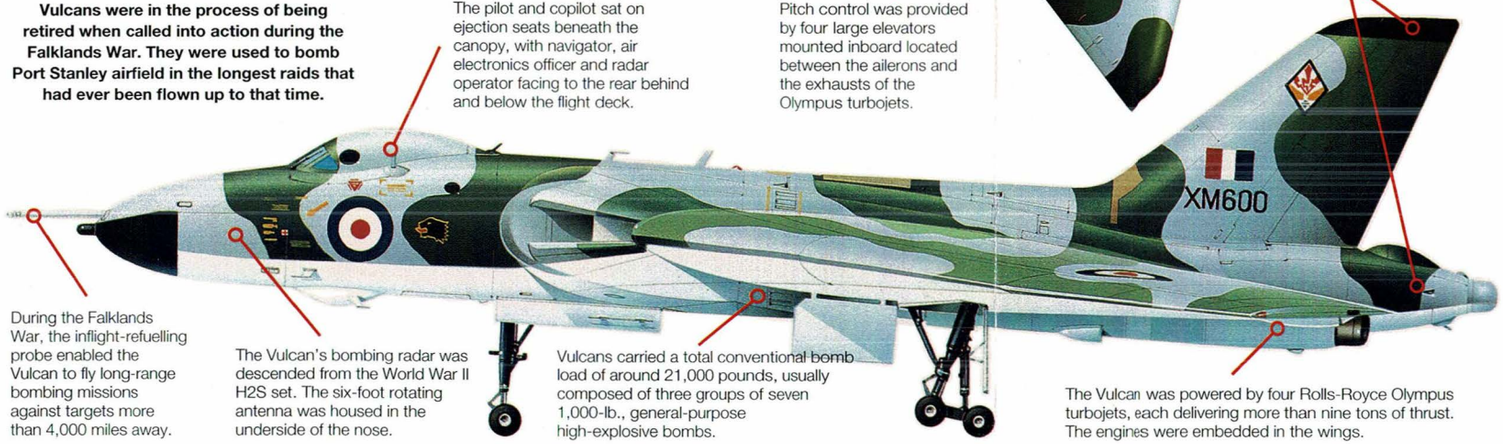
The fairing on the tip of the fin housed a passive countermeasures antenna, but most of the defensive electronics were in the tailcone. This also housed a rear-warning radar and twin braking parachutes.

Pitch control was provided by four large elevators mounted inboard located between the ailerons and the exhausts of the Olympus turbojets.

AVRO VULCAN B.MK 2

Vulcans were in the process of being retired when called into action during the Falklands War. They were used to bomb Port Stanley airfield in the longest raids that had ever been flown up to that time.

Vulcan flew with a crew of five. The pilot and copilot sat on ejection seats beneath the canopy, with navigator, air electronics officer and radar operator facing to the rear behind and below the flight deck.



During the Falklands War, the inflight-refuelling probe enabled the Vulcan to fly long-range bombing missions against targets more than 4,000 miles away.

The Vulcan's bombing radar was descended from the World War II H2S set. The six-foot rotating antenna was housed in the underside of the nose.

Vulcans carried a total conventional bomb load of around 21,000 pounds, usually composed of three groups of seven 1,000-lb., general-purpose high-explosive bombs.

The Vulcan was powered by four Rolls-Royce Olympus turbojets, each delivering more than nine tons of thrust. The engines were embedded in the wings.

SPECIFICATIONS
Vulcan B.Mk 2

Type: Five-seat long-range bomber.

Powerplant: Four 20,000-lb.-thrust Bristol (Rolls-Royce) Olympus turbojet engines.

Max speed: 640 m.p.h. at 20,000 ft.

Range: 3,400 mi. on low-level mission with full bomb load.

Weights: Max takeoff 200,000 lb.

Weapons: Blue Danube hydrogen bomb, Blue Steel nuclear cruise missile or 21,000-lb. of conventional bombs.

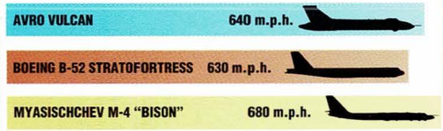
Dimensions:

Span	111 ft.
Length	100 ft.
Height	27 ft. 2 in.
Wing area	3,970 sq. ft.

ACTION DATA

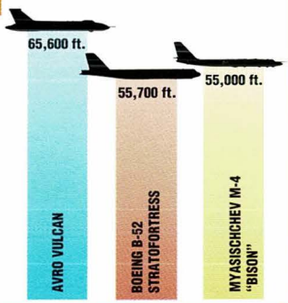
SPEED

The first generation of strategic jet bombers were as fast as the fighters of the period and very hard to catch, particularly when they were flying high-level missions.



SERVICE CEILING

Bombers tend to have big wings, which enables them to operate at high altitude more effectively than fighters. The Vulcan's huge wing gave it a particular advantage. Even at the end of its career, a well-flown Vulcan at 40,000 feet could prove a challenge even for an F-15 Eagle.



Vulcan nuclear strike profile