

The Mighty Beau

Dene Bebbington details the Bristol Beaufighter, one of World War Two's most heavily armed fighters



During the 1930s, the monoplane had begun to supersede biplanes and the Air Ministry required fighters with more armament. In 1937, a requirement for a fighter with cannons was issued (F11/37). Despite proposed aircraft submissions by the Bristol Aeroplane Company (BAC) none were accepted. Tensions were rising with Germany, but by 1938 Britain still did not have a cannon-equipped fighter or one that could operate at night.

A subsequent design proposed by BAC was based on a conversion of the Bristol Beaufort torpedo bomber (the manufacturer's designation was Type 152).

On December 23, 1938, the proposal –

Main photo: The Beaufighter Mk.I was powered by 1,650hp Hercules VI engines. This aircraft was one of many made at the 'shadow' factory in Weston-super-Mare [Images Key Collection](#) unless stated

which eventually became the Beaufighter (Type 156) – was presented to Air Marshal Sir Wilfrid Freeman in his role as Air Member for Research and Development. Bristol's idea paid off, especially as it claimed that test aircraft could be available within six to eight months of an order being placed. The company aimed to use the same jigs as for the Beaufort to produce most of the Beaufighter's structure: wings, rear fuselage and tail unit.

The following month it was agreed not

to put out to tender this new specification (F17/39) based around a two-seater fighter armed with four 20mm Hispano-Suiza (HS) cannons and powered by two Bristol Hercules VI engines.

The Air Ministry wanted the aircraft to achieve a speed of at least 350mph at 15,000ft. Eschewing the tendering process would enable the RAF's defensive capability to be boosted more quickly.

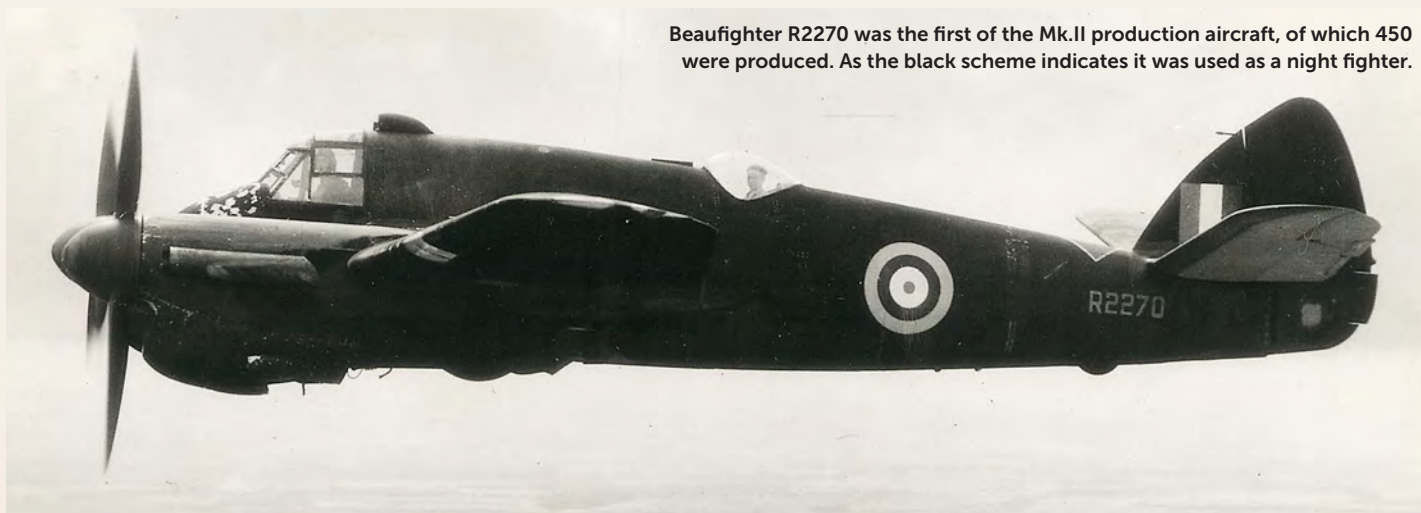
On February 24, 1939, an order was confirmed for 300 aircraft, the first two of which (R2052 and R2053) were prototypes.

However, development of the prototypes hit a major problem as the Beaufort airframe proved to be inadequate for converting to a fighter. Consequently, the



A Beaufighter Mk.X, a total of 2,368 of this strike variant were produced which had better low-level performance than previous versions.

Beaufighter R2270 was the first of the Mk.II production aircraft, of which 450 were produced. As the black scheme indicates it was used as a night fighter.



fuselage had to be redesigned, resulting in 2,100 new drawings which delayed production. Delays to the Hercules VI engine (1,615bhp max take-off power) meant that some Beaufighters (the type later gained the nickname the 'Mighty Beau') would have to be powered by the Hercules III (1,330bhp) as a stop-gap, as well as those already planned to be fitted with the Hercules II.

The engine nacelles were moved from the Beaufort's under-wing to a mid-wing position to allow for larger diameter propellers and, to cope with the Beaufighter's weight, the landing gear changed from oleo legs to Lockheed long-stroke legs.

Prototype R2052 was completed on July 20, 1939 and made its first flight that day. This initial example, powered by Hercules HE1SM engines, uncovered some issues, for instance longitudinal instability when climbing. The climb instability was later addressed by having a dihedral tailplane of 12°. Though the aircraft wasn't manoeuvrable enough to act as a traditional escort fighter, it got up to a respectable 335mph at 16,800ft. Initial production Beaufighters were used in interception and strike roles.

The reduced noise of the Hercules engines compared with the Rolls-Royce Merlin that was fitted in the Spitfire and Hawker Hurricane (and some Beaufighters) was due to it using sleeve rather than poppet valves.

With the war only weeks old in October of that year, the Beaufighter order was increased to 1,300 aircraft. Production was split between the BAC, Fairey and Supermarine companies.

VARIANTS

By June 1940, BAC had been asked if the first two prototypes could be equipped for non-standard operational use, so they were delivered without guns for training flights. Fighter Command started to receive the first production Mk.I Beaufighters on July 27, 1940 – 915 were manufactured. The examples for Fighter Command received the designation Mk.IF and Coastal Command's aircraft were called the Mk.IC. The former replaced most of the Bristol Blenheim 1F fighters which lacked speed for interception duties. The latter's maximum speed was well under 300mph yet had a much lower gross weight (the Blenheim 1F's gross weight was 12,200lb) than the Beaufighter's hefty 21,000lb.

When the Hercules VI engine became available for the Beaufighter its speed still fell short of the required 350mph. In total, six prototypes (R2052-R2057) were manufactured and tested. To be an effective night fighter the aircraft needed an air interception (AI) radar. Aircraft R2055 was the first Beaufighter to be fitted with the Mk.IV radar, and was delivered to the Fighter Interception Unit at RAF Tangmere, West Sussex, on August 12, 1940.

Speed was a trade-off against the weight of radar equipment needed for night fighting, plus the armour plating that increased the survivability of the crew and the aircraft. Other issues dogged the aircraft at first, such as faults with the cannon (problems that also occurred on other aircraft types) and restricted visibility from the cockpit because of thick and small windows.

The first Beaufighter Mk.II had been tested with Hercules XI engines, though for production aircraft of this variant the Rolls-Royce Merlin XX engines (1,280bhp) was chosen. The first example of a production run of 450 Mk.IIs was delivered in 1940. These aircraft were underpowered compared with those using the Hercules III engines, but were necessary so that ▶



Beaufighter R2198 was a Mk.IF flown by the RAF's 252 Sqn of Fighter Command from Chivenor, Devon. A total of 915 Mk.I aircraft were produced

The first unarmed prototype F.11/37 serial R2052 flew on July 17, 1939. An initial batch of 50 production Mk.I models only had four 20mm cannons, while six 0.303in machine guns augmented the firepower of later Mk.I aircraft.



more aircraft could be produced while Hercules development and production problems were resolved.

Refinement of the aircraft eventually included the camouflage; night fighters were initially painted black and daytime operating aircraft had lighter colours. Several alternatives were tested by 68 Sqn, 85 Sqn and the Royal Aircraft Establishment (RAE) at Farnborough, Hampshire. Finally, a disruptive pattern of sea grey and dark green was agreed, which it was decided was the best compromise for night fighting and the daytime by providing effective camouflage on airfields.

The next variant to enter production was the Mk.VI (again the 'F' and 'C' letters were added to the designation depending on the command using them) with Hercules VI engines and a slimmer fuselage of which 1,831 were produced. Various tests

were carried out on Mk.VI, X7542, whose range was found to be about 1,500 miles with standard fuel tanks. In September 1942, a torpedo trial on EL223 exhibited no problematic handling effect with the dihedral tailplane fitted, but some wallowing in level stick-free flight.

When test flying was conducted on the Mk.VI, problems were identified with oil spillage from the engine breathers, necessitating a redesign.

The final variant was the Mk.X first produced in 1943. A trial for Coastal Command was carried out in April of that year with Hercules XVI engines and an 18in torpedo. Another trial using Beaufighter Mk.VI, EL290, had Hercules XVII engines (1,725bhp at take-off) that would be used in the production version of the Mk.X.

To provide the Royal Australian Air Force (RAAF) with the Beaufighters it needed,

production was undertaken in that country with help from a team sent by BAC.

Changes to the RAAF version of the Mk.X, designated Mk.XXI, were made for it to cope with conditions in that part of the world, for example tropical filters over the engines. The RAAF's first Beaufighter of 364 was delivered on March 26, 1942 to 30 Sqn at RAAF Base Richmond in New South Wales.

Though the Beaufighter went on to become more heavily armed, the first 50 aircraft were fitted with four HS 20mm cannons in the fuselage under the nose. Later, this was augmented by six 0.303in Browning machine guns fitted in the wings: two on the port wing and four on the starboard wing. The blister on the top of the fuselage was for the observer, but became a turret fitted with a Vickers K rear firing gun in some Mk.VI and Mk.X variants.



A torpedo-carrying Beaufighter Mk.X of 211 Sqn.



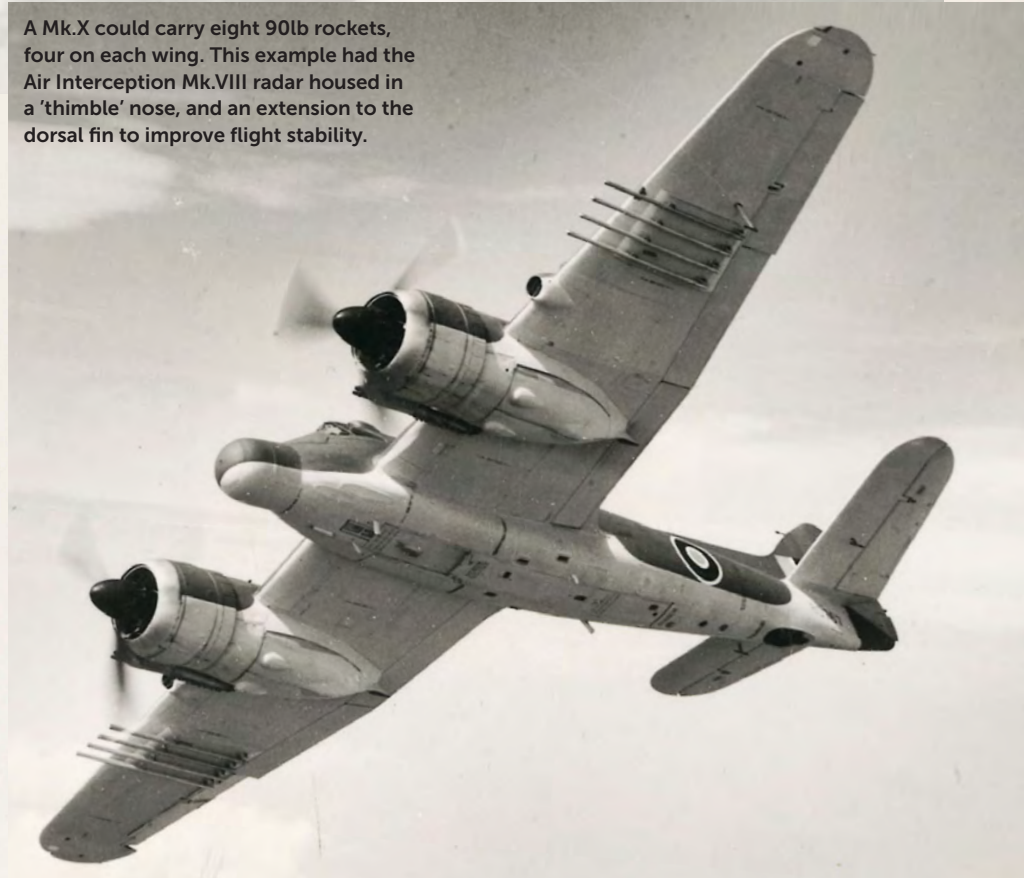
Above: **The Mk.X accounted for about 40% of the Beaufighters produced. Additional armament could include two wing mounted 250lb bombs or eight 90lb rockets.**

The Beaufighter was adapted to become a formidable strike aircraft with the 2,368 of the Mk.X manufactured – nearly 40% of the total produced. Better low-level performance was achieved through the Hercules XVII engine (1,725bhp at take-off) and additional armament could include a torpedo or two 500lb bombs mounted under the fuselage, plus two wing-mounted 250lb bombs or eight 90lb rockets.

A Mk.XII with stronger wings able to carry 1,000lb rather than 250lb bombs, Hercules 27 engines and drop tanks, was proposed but not taken up.

However, the strengthened wing idea was accepted and fitted to some of the later production Mk.X aircraft.

A Mk.X could carry eight 90lb rockets, four on each wing. This example had the Air Interception Mk.VIII radar housed in a 'thimble' nose, and an extension to the dorsal fin to improve flight stability.



OPERATIONAL SERVICE

First to receive the Beaufighter was 25 Sqn at RAF Northolt, Greater London, in July 1940, although its first two aircraft were without guns and so used for training. While the Spitfire and Hurricane still have the limelight for defending Britain against the Luftwaffe, they were only effective in daylight. We have the Beaufighter to thank for night-time enemy interception. Its first radar assisted aerial victory happened on the night of November 19, 1940 by a 604 Sqn aircraft (R2098) piloted by Flt Lt John "Cat's Eyes" Cunningham.

Problems with the Beaufighter, such as aileron control cables fouling and cannon malfunctions, left many aircraft unavailable during the closing months of 1940. Even so, it had some early successes, particularly with the crew of Cunningham and Sgt John Phillipson who also shot down a Junkers Ju 88 on the night of December 22, 1940 and a Heinkel He 111 the following evening. Flight crews had ▶

Beaufighter V8322 was a Mk.IF night fighter which was fitted with a Mk.IV air interception radar.



to learn fast how to use the radar and fix malfunctioning cannons – a difficult task in darkness.

The effectiveness of the Beaufighters improved in 1941 when they began to receive direction from the ground-controlled interception system. Tactics evolved and in 1943 the Serrate rear scanning radar developed from the AI Mk.IV was used in a ploy to trick enemy fighters into engaging the Beaufighter. This was first tried by a 141 Sqn Beaufighter in June 1943. The 'Beau' mimicked a bomber by flying in a bomber stream, and if an enemy fighter came onto its tail then it would detect its radar emissions and swing round to attack it. This decoy method proved effective until the Germans cottoned on and developed new aircraft radar using different frequencies.

The Beaufighter was used in a primarily defensive role until April 1943 when Fighter Command gave permission to conduct Ranger missions attacking Luftwaffe air bases. In RAF service they also had a strike role against ships, and were used against the Japanese in Asian and Pacific theatres.

The RAAF flew the Beaufighter in Europe

and over the Pacific during the war, and it was also operated by the United States Army Air Forces as well as the Royal New Zealand Air Force, Royal Canadian Air Force, South African Air Force and Polish Air Force exiled in Britain. Post-war, they were acquired by the Air Force of the Dominican Republic, Turkish Air Force and Portuguese Navy. Four made it surreptitiously to the Israeli Air Force in 1948 via a fictitious film studio to obviate a British embargo on aircraft sales to the fledgling country.

LAST OF THE MANY

The Beaufighter continued in service after the war. In 1947, the RAF performed tests on a prototype target-tug TT.10 – a converted Mk.X (NT913). The go-ahead was given for 35 TT.10s in November that year. Powered by Hercules 18 engines, this version of the aircraft had additional fuel tanks in place of the wing guns. The last

Below: **Beaufighter Mk.IC, A19-43, flew with the Royal Australian Air Force. Post-war it was restored and put on display at the National Museum of the United States Air Force, Dayton, Ohio** National Museum of the United States Air Force

of these (RD761) flew for the final time on May 16, 1960 in Singapore.

Of the 5,928 Beaufighters built, just a few survive in the UK, US and Australia, though none of which are currently airworthy. However, a Mk.I built at the BAC 'shadow' factory at Old Mixon, Somerset, is being worked on by Australia's Historic Aircraft Restorations, which aims to have X7688 represent an RAAF squadron aircraft and to fly it. Plus, The Fighter Collection is also working on an example telling *Aviation News*: "Whilst not an active project at this immediate point in time The Fighter Collection's Beaufighter A19-144 is nonetheless a restoration to airworthy and ultimately flight status; it being more advanced than any other restoration with 90% of primary structures already restored, refurbished or rebuilt. Cockpit and systems restorations are well advanced and whilst visible progress has been limited, work has carried on behind the scenes in identifying missing components, tracking down a myriad of design and overhaul data and investigating what we believe is a viable 'Bristol' engine solution." Getting these two examples back in the air would be a fitting tribute to the Beaufighter and her crews. **AN**

