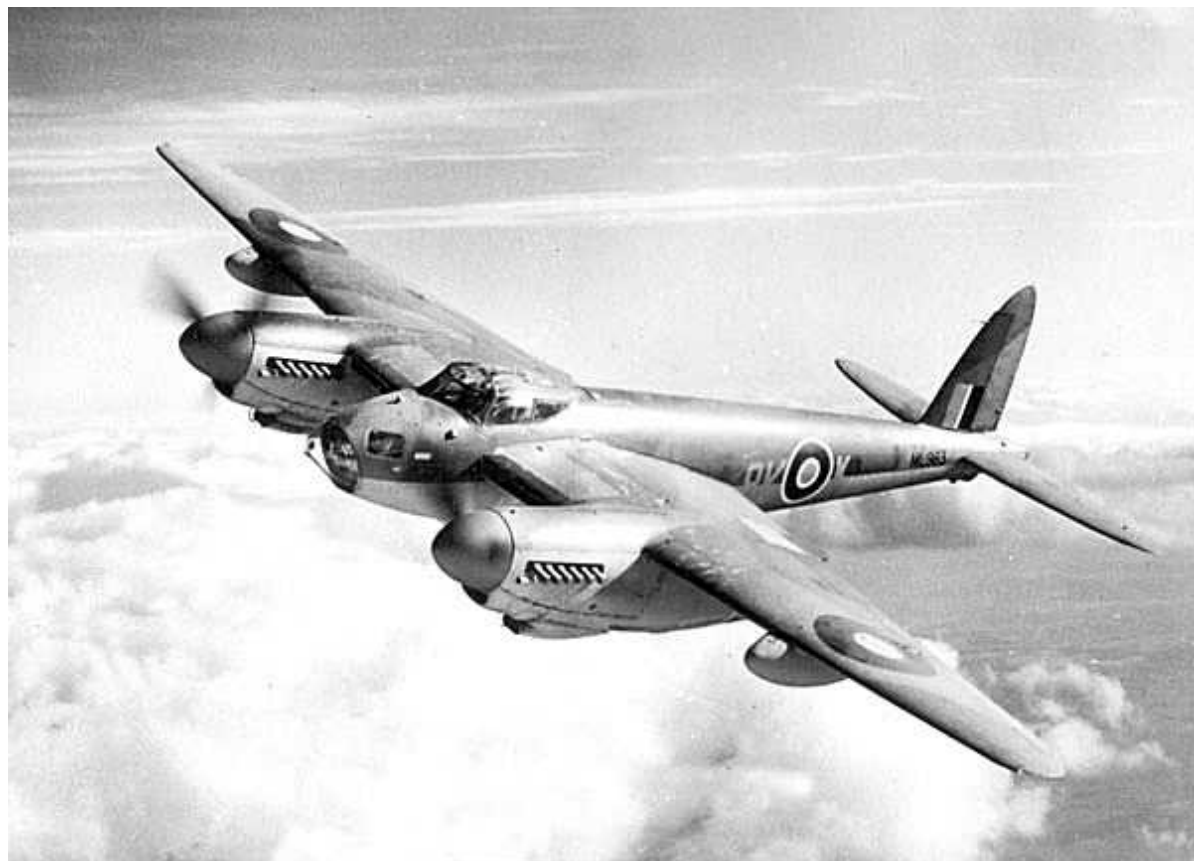


The Pathfinder Museum



Pathfinder Aircraft - De Havilland Mosquito



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The De Havilland Mosquito ("The Wooden Wonder", also known as "The Timber Terror") was a military aircraft that excelled in a number of roles during World War II. It was a twin-engine aircraft with the pilot and navigator sitting side by side. Unorthodox in design, it used a plywood structure of spruce and balsa in a time when wooden construction was considered outdated. It was powered by a pair of Rolls-Royce Merlin engines.

The Mosquito was conceived as a fast day bomber that could outrun fighter defences and hence dispensed with defensive armament; however, owing to its speed, agility and its exceptional durability due to its wooden design, it was also used as a fighter. The fighter versions used a flat windshield to aid sighting. Its various roles included tactical bomber, pathfinder, day or night fighter, fighter-bomber, intruder, maritime strike or photo-reconnaissance aircraft. It served with the RAF, RAAF, RCAF, RNZAF, USAAF and Israeli Air Force, plus the air forces of Belgium, Burma, China, Czechoslovakia, France, Norway, South Africa, the Soviet Union, Sweden, Turkey, Yugoslavia and the Dominican Republic.

During much of the war the Mosquito was one of the fastest aircraft in the sky on either side, and one of the most manoeuvrable - in mock combats it could climb faster and turn more quickly than a Spitfire. The Mosquito inspired admiration from all quarters:

"In 1940 I could at least fly as far as Glasgow in most of my aircraft, but not now! It makes me furious when I see the Mosquito. I turn green and

yellow with envy.

The British, who can afford aluminium better than we can, knock together a beautiful wooden aircraft that every piano factory over there is building, and they give it a speed which they have now increased yet again. What do you make of that?

There is nothing the British do not have. They have the geniuses and we have the nincompoops. After the war is over I'm going to buy a British radio set - then at least I'll own something that has always worked."

Hermann Göring, January 1943



The Mosquito inspired a German imitation, the Focke Wulf Ta 154 Moskito, which, like the original, was constructed of wood.

Construction

The genius of the aircraft's construction lay in the innovative and somewhat unorthodox use of seemingly commonplace materials and techniques. The bulk of the Mosquito was made of plywood. Stronger and lighter than most grades of plywood, this special plywood was produced by a combination of 3/8" sheets of Ecuadorean balsawood sandwiched between sheets of Canadian birch plywood. Like a deck of cards, sheets of wood alternated with sheets of a special casein-based (Later formaldehyde) wood glue.

Forming the fuselage was done in concrete moulds. Left and right sides of the fuselage were fitted with bulkheads and structural members separately while the glue cured. Reinforcing was done with hundreds of small brass wood screws. This arrangement greatly simplified the installation of hydraulic lines and other fittings, as the two halves of the fuselage were open for easy access by workers. The two halves of the fuselage were then glued and bolted together, and covered with doped Madapolam fabric.

The wings were also made of wood. To increase strength, the wings were made as one single assembly, onto which the fuselage, once both halves had been mated, was lowered and attached.

Metal was used sparingly in the construction of structural elements. It was mostly used in engine mounts and fairings, control surfaces, and of course, brass screws.

The glue used was initially casein-based. It was changed to a formaldehyde-based preparation when the Mosquito was introduced to fighting in semi-tropical and tropical climates, after some unexplained crashes led to the suspicion that the glue was unable to withstand the climate. De Havilland also developed a technique to accelerate the glue drying by heating it using radio waves.

The specialized wood veneer used in the construction of the Mosquito was made by Roddis Manufacturing in Marshfield, Wisconsin, United States. Hamilton Roddis had teams of dexterous young women ironing the (Unusually thin) strong wood veneer product before shipping to the UK.

History

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De Havilland conceived the idea of a wooden aircraft to take advantage of the underused resources and skills of the furniture industry at a time of great pressure on the conventional aircraft industry, and shortages of steel and aluminium. The Air Ministry was not interested; de Havilland designed the Mosquito on a speculative basis, only interesting the Ministry when they saw the performance of the prototype.

The original Mosquito design dated from 1938 but it was not until March 1940 that there was sufficient interest in the aircraft for construction to commence. Three prototypes were built, each with a different configuration. The first to fly was the bomber prototype W4050 on November 25, 1940 followed by the night fighter model on May 15, 1941 and the photo-reconnaissance model on June 10, 1941.

The outstanding feature of the Mosquito was its speed, faster than any other aircraft of the time-so much so that defensive armament was not fitted as the Mosquito could outrun any pursuer.

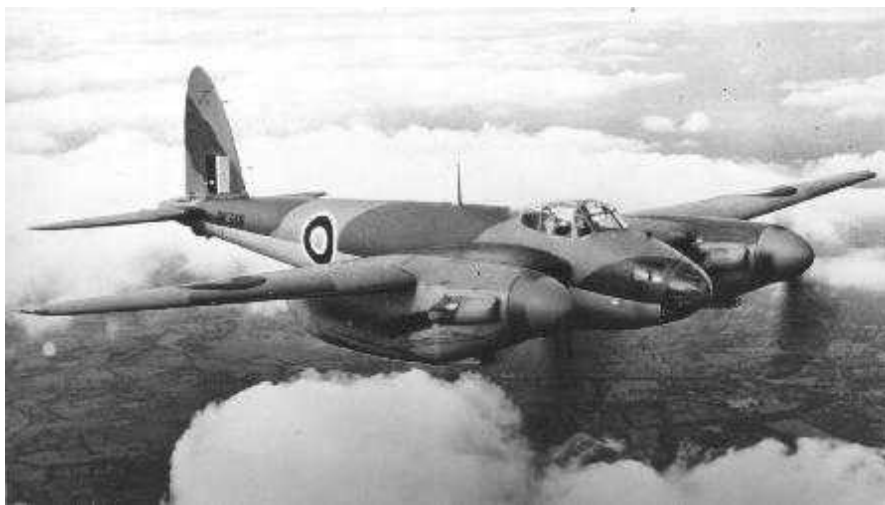
The photo-reconnaissance model became the basis for the PR Mk I Mosquito while the bomber model became the B Mk IV, of which 273 were built. The first operational sortie by a Mosquito was made by a PR Mk I on September 20, 1941. The Mk IV entered service in May 1942 with No.105 Squadron. The B Mk IV could accommodate 4×500 lb. (227 kg) bombs in the bomb bay, and either two drop tanks or two additional 500 lb. bombs on wing hardpoints.

The Mk IX was a high-altitude bomber variant but the most numerous bomber version was the Mk XVI of which about 1,200 were built. The Mosquito bombers could carry a 4,000 lb. (1 816 kg) "blockbuster" bomb in their internal bomb bay. This required a bulged bomb bay which could alternatively accommodate up to 6×500 lb. bombs on an Avro carrier. Mosquitos were widely used by the RAF Path Finder Force which marked targets for night-time strategic bombing. Despite an initially high loss rate the Mosquito ended the war with the lowest loss rate of any aircraft in RAF Bomber Command service. The RAF found that when finally applied to bombing, it had proved 4.5 times cheaper than the Lancaster in terms of useful damage done, and they have never specified a defensive gun on a bomber since. Special Luftwaffe units formed to fight the Mosquito attacks were rather unsuccessful, and the Luftwaffe considered the Mosquito a superior implementation of their own "Schnellbomber" concept.

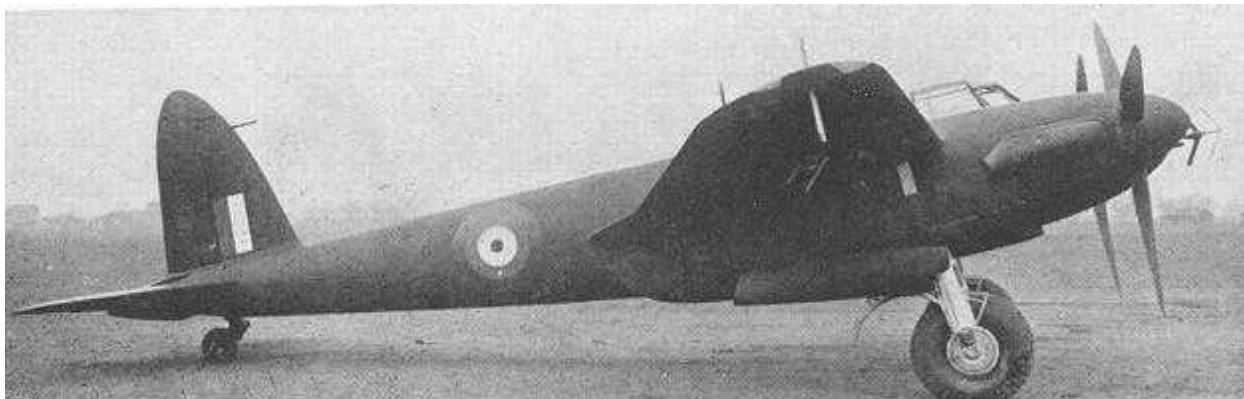
The first production night fighter Mosquitos were designated the NF Mk II and 466 were built with the first entering service with No.157 Squadron in January 1942, replacing the Douglas A-20 Havoc. They were armed with four 20 mm Hispano cannons mounted in the lower front fuselage and four .303 in (7.7 mm) Browning machine guns in the nose as well as an AI Mk IV radar. The success of these night fighters, and the need to conceal the existence of radar, resulted in a degree of notoriety for pilot John "Cat's Eyes" Cunningham; he and other pilots were said untruly to have phenomenally acute night vision due to eating carrots (This was due to a British disinformation campaign arising from the aforesaid need to hide the development of radar from the Germans).

Ninety-seven NF Mk IIs were upgraded with a centrimetric AI Mk VIII radar and these were designated the NF Mk XII. The NF Mk XIII, of which 270 were built, was the production equivalent of the Mk XII conversions. They also dispensed with the machine guns in the nose. The other night fighter variants were the Mk XV, Mk XVII (converted Mk IIs), Mk XIX and Mk 30. The last three marks mounted the US-built AI Mk X radar. After the war, two more night fighter versions were developed, the NF Mk 36, powered by the Merlin 113/114 engine, and the NF Mk 38 using the British-built AI Mk IX radar. To warn German night fighters that they were being tracked by these radars, the Germans introduced Naxos ZR radar detectors.

Mosquito night intruders of No.100 Group RAF, Bomber Command, were also fitted with a device called "Serrate" to allow them to track down German night fighters from their Lichtenstein B/C and SN2 radar emissions, as well as a device named "Perfectos" that tracked German IFF.



A De Havilland Mosquito Mk. B-4 .



The prototype made its first flight on November 25,1940. This was only ten months and twenty-six days after detailed design work had commenced.

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The prototype night fighter with a circular segmented air brake installation.