

ENGLISH ELECTRIC CANBERRA



English Electric Canberra.



INTRODUCTION

From 1949 to 2006 the English Electric Canberra has served in the frontline of the Royal Air Force around the world. The Canberra became the UK's first jet bomber, although that was not its only role, undertaking other tasks such as, pilot/navigator training, photographic reconnaissance, target-tag and electronic countermeasures duties to name a few. From the day of its first public flight at the Farnborough Air Show back in 1949, this aircraft has held the attention of the aviation world, here was an aircraft that could out fly and fly higher than any fighter aircraft of its time. From that first flight the Canberra amazed other Air Forces around the world, one being the USA, who went on to produced over 400 aircraft under license as the Martin B-57, covering sixteen variants the last being the WB-57F which there are still three flying today in the 21st century. The Australians also went on to build over forty aircraft under license as the B.20, and there were a further thirteen other countries who purchased the aircraft directly from UK manufacturers.



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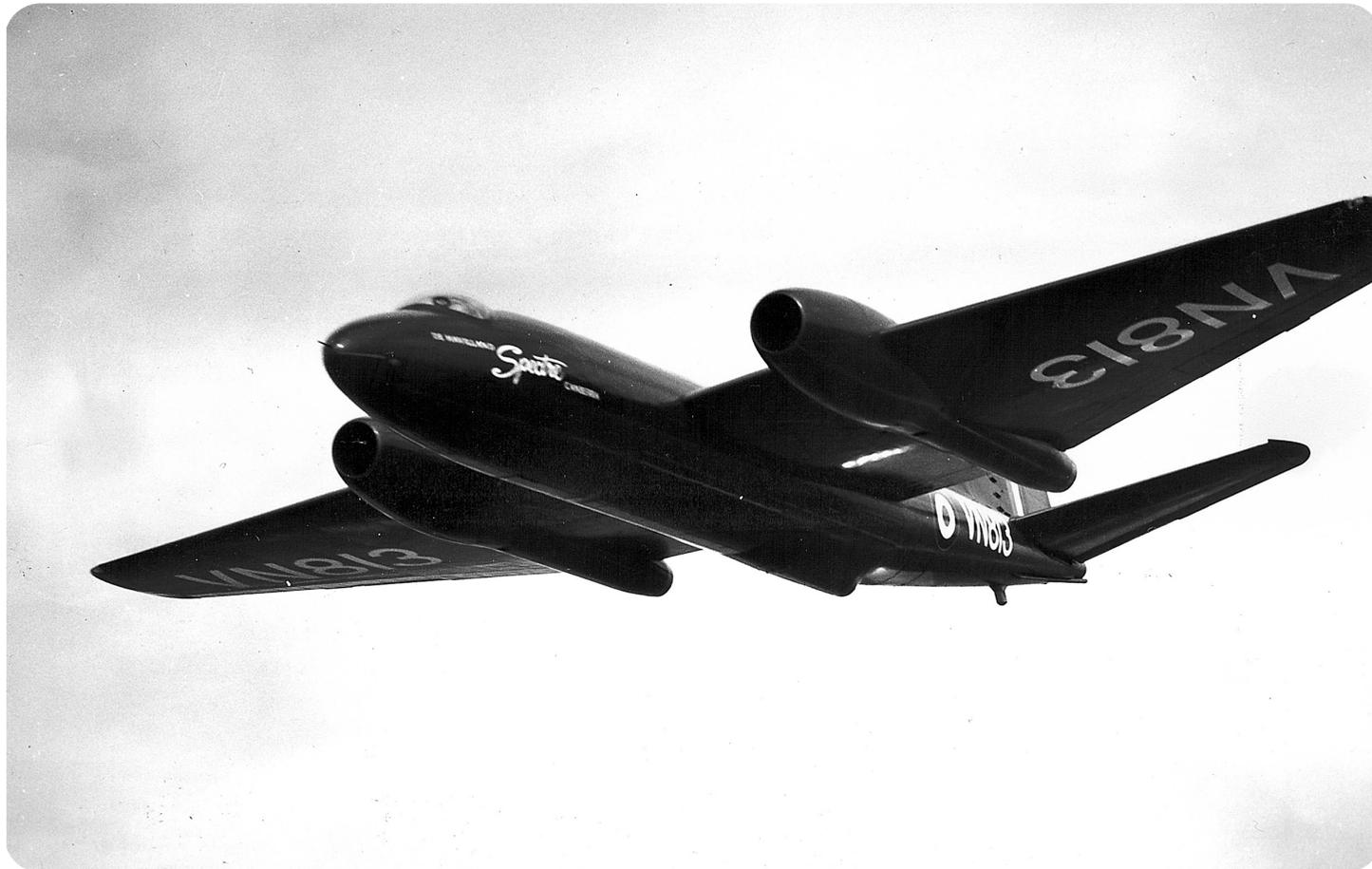
A LEGEND IS BORN.

During the 1930's English Electric Company (EE) produced a wide range of electrical items from its five factories. One of these, Strand Road in Preston, undertook the production of tramcars and tramway electrical equipment. Then in early 1938 EE at Preston was contracted to build bomber aircraft for the Royal Air Force. Over the period 1938 to 1945 the factory produced over 770 Handley Page Hampdens and 2,145 Halifax bombers. It was during this experience that EE decided to remain in aircraft production, with plans to design and producing their own aircraft. They were fully aware that obtaining new contracts would not be straightforward. However; in 1944 the Ministry of Aircraft Production were looking at replacing the Hawker Typhoon and placed a contract with EE to manufacture the new De Havilland Vampire jet fighter. After the completion of the Halifax production, EE started producing the Vampire in 1945, and by 1951, the company had built a total of 1,369.

Back in 1944 EE had set up a small design team to deal with modifications to the Halifax bomber. With the decision to remain in aircraft production, this team had to expand and the company also looked for suitable premises that would have the capability to house mock-up's and prototype construction. In mid 1944 EE took over Barton Motors in Corporation Street, Preston, only a mile from their other factory. During WW2 the building was known as the tradesman's training centre and gained the nickname "TC" and this name was to remain. Mr. W.E.W. (Teddy) Petter joined EE in July 1944 as Chief Engineer of the Aircraft Division and headed the newly expanded design department. He had recently left Westland and brought with him designs for a new twin jet fighter-bomber.

In May 1945 Petter and members of the design team submitted a document outlining their plans for a jet aircraft and in June of that year a study contract, E3/45, was awarded to EE for work on a high-speed, high-altitude jet bomber. This first design submitted was to be fitted with a single centrifugal compressor engine mounted in the centre of the fuselage. The engine would be a larger version of the Rolls-Royce Nene with 12,000lb thrust. Rolls-Royce let it be known that they were considering a more compact engine with only 6,500lb thrust, the AJ65, later to known as the Avon. So in July 1945 a new proposal was submitted to the Ministry for an aircraft that was fitted with a pair of the proposed AJ65's, each to be mounted in the wing root. Following further changes to the configuration in 1945, the engines

The second prototype B.1, VN813 was used by Rolls-Royce for the development of the Nene jet engine and later by de Havilland for testing of the 'Spectre' rocket motor. Image taken at the Farnborough Display in 1956. VN813 had a short career, she was sold for scrap in December 1959. (Steven Beeny Collection)



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were moved away from the wing roots and into nacelles within the wings. Other modifications were also agreed upon. This final design was submitted back to the Ministry, now renamed the Ministry of Supply (MoS); a formal contract being finalized and awarded on 15th January 1946. The contract was for four prototypes, VN799, VN813, VN828 and VN850, the specification number was changed from E3/45 to B3/45 and within in EE these airframes would become known as the "A.1".

The first A.1 wooden and cardboard mock-up was produced at TC during 1946 and 1947. During this time parts for the prototype were being made at the Strand Road factory with assembly at TC and also Strand Road. It was around this time that EE started looking for another central design and flight-testing centre. The site that they selected was the former USAAF maintenance base at Warton, a short distance from their other factories. The design team transferred to Warton in September 1948. The company also obtained another site at Samlesbury airfield. This was to be used for production test flying only, and Warton would be used for flight development.

By early 1949 the first A.1, VN799, was ready for testing. There had been development issues during the ground testing of the new engines and so to avoid any possible delays to flight testing and as insurance, the second prototype, VN813, was redesigned to take Rolls-Royce Nene engines giving 5,000lbs of thrust each, should the Avon engine development had not proved to be successful

MAIN PRODUCTION VARIANTS OF THE CANBERRA

English Electric A.1 / B.1

The title, A.1, was given to the four prototypes built to specification B3/45. Designed as a medium bomber, it was intended that all bomber aiming would be undertaken by a new radar system. The basic design of the Canberra was that of a stressed skin fuselage with a pressurised cabin to house a crew of two, sitting side-by-side, both seated in ejection seats. The aircraft was fitted with three fuel tanks in the upper part of the fuselage. These tanks could hold a total of 1,375 gallons (6,250 litres). The bomb bay was below the fuel tanks and could hold a bomb load of up to 10,000lbs (4,536kg). If required, an extra 300-gallon (1,364 litres)

fuel tank could be fitted in the bomb bay to increase the aircraft's range. Also part of the design was hydraulically operated drive brakes and split-type flaps. The wingspan of the aircraft was 64ft (19.8m), with a length of 65½ft (20m) and it stood 15ft 7ins (4.75m) tall. Though the aircraft was constructed of metal, the forward part of the tail fin was made from wood. From the second prototype, VN828, the Canberra had the capability of installing "wing tip" fuel tanks each carrying 250 gallons (1,137 litres), though when fitted the aircraft's maximum speed was reduced. Power came from a pair of Rolls-Royce RA2 engines; each giving 6,000lbs (2,722kg) of thrust.



First prototype VN799 before the first test flight with rounded tail fin (John Sheeham collection)