I.Ae.24 Calquín: The Argentine Mosquito?

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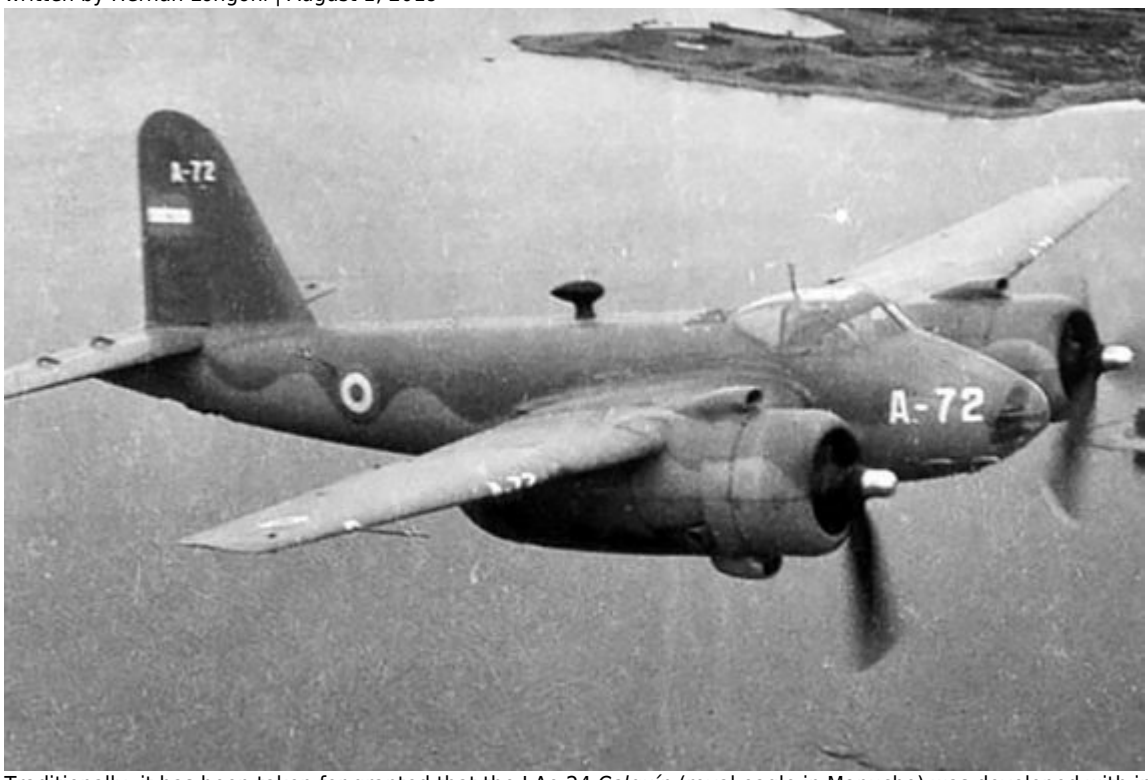

Traditionally, it has been taken for granted that the I.Ae.24 *Calquín* (royal eagle in Mapuche) was developed with inspiration drawn from the famous de Havilland DH.98 *Mosquito*, and also that the Calquín was originally designed to be equipped with the Rolls Royce *Merlin* in-line engines that powered the renowned British fighter-bomber. This affirmation is not without basis, as a matter of fact. In the September-October 1997 issue of National Aeronautical Magazine, researchers Ferretti and Giró published a detailed report on Argentina's *Fábrica Militar de Aviones* -FMA- (Military Aircraft Factory) since its creation, and on that piece they stated that the Calquín was "*…inspired by the De Havilland Mosquito, and should have carried engines similar to the ones it had…*" This article is one of the most complete and better done of all that have been published on the FMA and, without any doubt, its excellence transcends time. Therefore, our intention isn't to create a controversy, nor contradict that study. Reading that piece is enough to corroborate what has been stated above: The oral tradition assumes that the Argentine airplane was a derivative of the Mosquito, and that it was destined to have the same power plants.

However, there are other elements that could help us to conclude that the similarity between both aircraft was due to coincidences arising from the design concepts of the time, the prevailing industrial limitations and, why not? Even due to some appreciation of British airplanes. In any case, before diving into that discussion, we'll attempt to concisely present the technical features of the airplane, its origins and how the type entered service with the *Fuerza Aérea Argentina* -FAA- (Argentine Air Force.)

Cut away drawing of the I.Ae.24 Calquín. (Image: Via the author.)

The I.Ae.24 Calquín was a twin-engine, mid-wig, two-seat airplane designed primarily for ground attack missions. Due to scarcity of raw

materials right after the end of the Second World War, it was decided that the Calquín was to be built using native woods, following the already proven techniques used for producing the renowned I.Ae.22 DL trainer. Its landing gear was retractable and folded backwards into the engine nacelles, becoming completely enclosed by integral wheel covers. It had a retractable rear wheel in the tail section. All three landing gears were equipped with pneumatic-oil shock absorbers.

The Calquín's control surfaces were made of fabric-covered wood, with their leading edges reinforced with plywood. Two adjustable tabs completed the control surfaces. Crew safety was provided by means of an armored shatter-proof-glass windshield and side windows; the nose cone and the remainder of the canopy greenhouse were made of plexiglas. The Pratt & Whitney R-1830-SCG "Twin Wasp" engines were installed one in each wing, on nacelles supported by Cr-Mb steel mounts and covered with traditional cowlings. These power plants were capable of producing 1,050 HP SAE @ 2300 RPM, driving variable pitch, three-bladed Hamilton Standard Hydromatic E-50 propellers. The following is the technical and performance data of the I.Ae.24:

Wingspan: 16.30 mts.
Height: 3.40 mts.
Length: 12.00 mts.
Wing Surface: 38.00 sq. mts.
Empty Weight: 5,340 Kg.
MTOW: 8,164 Kg.

Maximum Speed: 440 km/h.
Cruise Speed: 380 km/h.
Theoretical Ceiling: 10,000 mts.
Range: 1,140 km.

Design work on the airplane, which was intended to replace the FAA's aging Northrop N8A2 attack aircraft, began on August 25, 1944, and by February 25, 1946, the first prototype took to the air, starting a series of thorough flight tests that concluded on June 8 of the same year. The design adopted was so successful that during its development, a more advanced variant was ordered by the FAA. According to an FMA's document titled "*Estudio, proyecto y construcción de un avión de ataque, bombardeo liviano, empleando maderas nacionales*" (Study, project and construction of a light attack airplane, using native wood), published in 1946, this advanced variant was designated as the I.Ae.28 and was to be powered by Rolls Royce Merlin 604 engines driving Rotol propellers, instead of the Hamilton Standard of the I.Ae.24.

The first prototype of the I.Ae.24 photographed at the FMA's plant in Córdoba. Note the absence of machine guns under the nose. (Photo: Via the author.)

Aero-historian Fernando Benedetto, in his excellent article titled "*I.Ae.24 Calquín, a la memoria de un guerrero*" (I.Ae.24, a tribute to a warrior), published in the January-February 1998 issue of ALAS magazine, also mentions the same about the power plants intended for the I.Ae.28. In any case, the fate of this "Super Calquín" -if we could call it so- was sealed by another locally designed airplane, the I.Ae.30 *Ñamcú*, which represented a more evolved concept, as it is stated in another FMA document titled "*Estudio del Avión I.Ae.28*" (Study of the Airplane I.Ae.28), published in 1947.

In contrast, despite the official narrative and the available documentation on the I.Ae.24 and its Merlin-powered derivative, there are some technical aspects that confirm that the Calquín was originally designed to be powered -not by R-1830 engines- but by the British in-line power plants. For example, the take-off weight of the I.Ae.24 was projected considering the Merlin engines, and the installation of the radial R-1830s introduced a series of stability problems in the final design, which complicated its handling characteristics at low speeds. In fact, there are FMA technical drawings that reflect the implications of such major change. In the end, it all indicates that the decision for using the radial engines was made based on budgetary considerations, since acquiring the Merlin engines proved to be very expensive.

Regarding the Calquín, several sub-variants were considered, but these didn't involve any improvements on the general flight performance or characteristics. The only major changes were related to its armament: The attack variant was to be armed with four 12.7 mm (0.50 in.)

locally-designed machine guns, while the light bomber version, as it is explained in the airplane's manual, was to be equipped with the same four locally-designed 12.7 mm machine guns or their Browning equivalents, plus a variety of bombs and rockets of different weights and characteristics.

Excellent study of the nose section and placement of the Browning 12.7 mm machine guns installed in the I.Ae.24 serial A-58. (Photo: Via the author.)

Construction of the first 100 I.Ae.24s began at FMA's hangar 90, at Córdoba, as it was the one with the most available space. Shortly after, the first 10 pre-production aircraft were destined for a special mission, that we will cover in the following paragraphs.

A special testing group, officially called "*Grupo experimental de vuelo*" (Experimental Flight Group), was created in May 1947 at the"Coronel Pringles" airbase in Villa Mercedes, San Luis Province, with the mission of getting the I.Ae.24s ready for transference to the different operational units to which they had been assigned. The first ten Calquíns to be assigned to this group would carry the temporary serials Ex-01 to Ex-10, with the "Ex" prefix meaning *Experimental*. However, only the airplanes serialed Ex-01, 02, 03, 04, 05, 07 and 10 were transferred initially, since the Calquín carrying the serial Ex-06 had a major accident, fortunately without any fatalities, and was written off. Later on, these airplanes were given new serial numbers, this time with the "A" suffix -meaning Attack- followed by a two digit number, and were transferred to the *Regimiento 3 de Ataque* (3rd Attack Regiment.)

The I.Ae.24 assembly line at the FMA plant in Córdoba. (Photo: Via the author.)

It is regularly said, in error, that the I.Ae.24s serialed Ex-08 and Ex-09 were never assigned to this special testing group when, as a matter of fact, they entered in service in 1947 and were later transferred to *Regimiento 3 de Ataque* where they arrived by the end of 1948, that is, one year after having been assigned to the testing group. This is stated in the "*Orden Reservada*" (Confidential Order) dated October 2, 1948, which also mentions that the two airplanes were taken into charge on that date, at El Plumerillo airbase, together with airplanes serials A-12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 24, 25, 26, 27 28, 29 y 32, completing only 19 aircraft and not 30 as it has been always been thought.

When the testing program concluded, all the I.Ae.24s having Ex serials were released to regular Air Force service with the *Regimiento 3 de Ataque*, (after a brief stay with the *Regimiento 1 de Ataque*.) We will also add, that the airplane A-04 (previously Ex-04) was transferred to the *IV Brigada Aérea* (IV Air Brigade) on May 24, 1954, to replace the airplane A-70, which was placed in storage on the same date. Also on May 24, the Calquín serialed A-02 (formerly Ex-02) was placed in "replacement situation" after being written off. All this is documented on the *Day Order No. 43*, of May 24, 1954.

I.Ae.24 serial A-73, equipped with the shorter FMA-built 12.7 mm machine guns and the updated main landing gear. (Photo: Via the author.)

The accident record of the Calquín is well known. However, some times quick conclusions are drawn from cold statistical data. We are not saying that the I.Ae.24 was an "easy to fly" aircraft, nor that it had "noble" flying characteristics and was kind to the rookie pilots. In fact, its handling had been somewhat compromised by the replacement of its engines during the design phase. However, we will say that the great majority of accidents in which the airplane was involved, also involved young pilots or pilots with limited experience. According to Jorge Conan Doyle, an FMA test-pilot who amassed around 3000 hours in the Calquín, to fly the airplane it was necessary "*...to have experience.*

But I took it by the hand, and I never had any problems. It was unstable on its three axis, it crossed its controls, and inverted easily." (Quoted from the article of Ricardo Burzaco published in the November – December 1997 issue of Aeroespacio Magazine.) As it can easily be seen, Conan Doyle did not have any major problems with the airplane, but he acknowledges that flying it required careful handling.

The aftermath of a runway excursion. I.Ae.24 serial A-09. (Photo: Via the author.)

In any case, its reputation as being "a little untrustworthy" played against the Calquín and even the slightest of incidents was considered by the pilots to be enough reason to declare an emergency. In this case, the antithesis to demonstrate against the bad reputation of the aircraft was represented by the then Captain Carlos Bergaglio, who could perform a series of aerobatic maneuvers and land and roll down to a full stop, with both engines stopped, a 'la Bob Hoover.

After serving with several FAA units, and being witness of many incidents, the Calquín's history would reach its end in 1958 when, following a major inspection, the surviving airplanes were struck off charge. One lone example survived a few years and, after having been employed as a teaching aid for mechanics, it was destroyed with axes at the non-commissioned officers school in Córdoba. As an interesting side note, we will say that the last three Northrop N8A2 in service with the FAA, the model that the Calquín intended to replace, remained in active service until 1953, with the *II Brigada Aérea* (II Air Brigade); these aircraft carried the serial numbers O-404, 416 and 430.

Bits and pieces of an I.Ae.24, preserved at some undisclosed basement. (Photo: Via the author.)

Of the many Calquíns built, only a few pieces remain, jealously guarded by lucky collectors. That is all. Not even one complete airplane to remind the new generations about the gallant and sleek figure of the "false mosquito", exists to this day.