MARKED BY MISFORTUNE

The troubled Breda Ba.65 in Fuerza Aérea de Chile service

In 1936 Chile launched a modernisation programme for its still comparatively young air force. Determined to acquire more modern types than their South American neighbours, the Chileans chose Italy's Breda Ba.65 monoplane fighter. **AMARU TINCOPA** chronicles the Ba.65's procurement by Chile and its subsequent disappointing career with the FACh

BREDA'S Ba.65 was an updated development of its Ba.64 ground-attack/light reconnaissance aircraft. Designed by Antonio Parano and Giuseppe Panzeri for the *Società Italiana Ernesto Breda*, to fulfill the *Regia Aeronautica's* requirement for an *aeroplano di combattimento da assalto* (ground-attack aircraft), the Ba.65, like its predecessor, was a single-seat all-metal low-wing cantilever monoplane taildragger with an aft-retracting main undercarriage. The short, broad wings were fitted with Handley Page-type slats.

The type was also heavily armed compared to its Italian contemporaries, carrying four wing-mounted guns — two 12·7mm (0·5in) and two 7·7mm (0·303in) Breda-SAFAT machine-guns — in addition to an internal bomb bay capable of carrying up to 20 x 10kg (44lb) anti-personnel bombs, plus an additional 1,000kg (2,200lb) of bombs on underwing racks. The prototype, which made its first flight in September 1935, and the initial production batch were powered by a 700 h.p. Gnome-Rhône 14K Mistral Major radial piston engine produced under licence by Isotta-Fraschini in Italy as the K.14.

The Ba.65's Italian operational debut and later use in the 1936–39 Spanish Civil War revealed that, even with increased horsepower, the type was underpowered and difficult to handle, even for experienced pilots. Numerous complaints from Regia Aeronautica crews led to the factory taking action, and, starting with the 82nd aircraft, the equally lacklustre 1,000 h.p. Fiat A.80 RC.41 18-cylinder twin-row radial engine replaced the K.14 as the Ba.65's powerplant.

The type underwent another engine change when Breda chose to fit later production machines with the more powerful Piaggio P.XI R.C.40 14-cylinder engine (also a derivative of the Mistral Major), which could deliver 1,000 h.p. at

One of the FACh's three turret-equipped Ba.65Bis **Tipo Ciles** *is rolled off the production line at Milan, with FACh engineer Raul Barros Alamos walking alongside the fuselage. The aircraft's fin /rudder has been painted blue but is yet to receive its white star insignia. White roundels with "BA" are painted on the undersides of the wings.*

5,000m (16,400ft), driving a Piaggio variable-pitch propeller. The P.XI was also some 100kg (220lb) lighter than the Fiat A.80 and K.14, although ultimately, owing to its poor reliability, this increase in power and reduction in weight proved to be an improvement "on paper" only, as the benefits were marginal. At one point the Regia Aeronautica considered re-engining its remaining Ba.65 fleet with P.XIs, but the meagre performance gains did not justify the investment and the project was quickly discarded. Production of the Ba.65 ceased in July 1939 after 218 aircraft had been produced by Breda and Caproni.

THE CHILEAN ORDER

In early 1936 the *Fuerza Aérea de Chile* (FACh — Chilean Air Force), at this time commanded by Gen Diego Aracena, established a modernisation programme. Accordingly, technical commissions were despatched to various countries to evaluate the most modern aircraft available in each. One such commission, headed by Aracena himself, arrived in Italy in the summer of 1937 and visited a number of factories, where it evaluated machines offered to the FACh by the *Consorzio della Esportazioni Aeronautiche* (Italian Aeronautical Export Corporation). The commission evaluated the Caproni AP.1 ground-attack aircraft, Breda Ba.65 and Fiat CR.32 biplane fighter, all of which were marketed as the best aircraft Italy had to offer at the time.

The Ba.65 was demonstrated to the Chileans as a ground-attack aircraft also capable of performing fighter and interceptor duties, thanks to its high maximum speed (in its single-seater version). The type caught the interest and subsequent favour of Gen Aracena, and, shortly after the evaluation tests were concluded, the other contenders were discarded in favour of the Breda design.

On September 1, 1937, an order for 20 aircraft — 17 single-seaters and three two-seaters — was issued to Breda by the Chilean government. Some sources have claimed that the Chilean decision to favour the Breda design was a result of a desire to obtain modern monoplane fighters, the FACh being numerically inferior to the air arms of its neighbours Argentina and Peru, which were mostly equipped with biplanes. Credit must also be given to Breda's representatives, who managed to convince the Chileans that the purchase of the Ba.65 would kill two birds with one stone.

The FACh issued Breda with a series of specifications to be met, including the fitting of the P.XI engine into its examples and the replacement of the Italian-made Breda-SAFAT machine-guns

ALL PHOTOGRAPHS GERMAN LUER VIA SANTIAGO RIVAS

LEFT ***A line-up of single-seat Chilean Ba.65s at the Breda factory in Milan in the summer of 1938. The aircraft were delivered in a natural-metal finish with fabric surfaces painted with a standard aluminium varnish. Each example was identified with a large number, from 1 to 20, in black on the rear fuselage.***

ABOVE ***With a single-seater in the background, one of the FACh's three turret-equipped Ba.65s has its compass swung at the Breda works in Milan before delivery. Some 25 Ba.65s were acquired by the Royal Iraqi Air Force in 1938, the majority being fitted with the same Type M turret, which significantly hampered the type's performance.***

with Danish Madsen machine-guns of 12·7mm and 7·62mm calibre, the standard then in use by the FACh. The three two-seat machines were fitted with a hydraulically-operated Breda Type M turret equipped with a 7·62mm machine-gun. The turret was heavy and its use cumbersome, so all three were soon converted to single-seat configuration. In addition, Chile's Ba.65s could either carry 20 x 10kg anti-personnel bombs or 4 x 50kg general-purpose bombs in the internal bomb bay located behind the pilot's seat.

A base-model aircraft, serial MM.75156, was chosen for conversion to the Chilean variant, and, after all the changes and modifications had been implemented, the aircraft on the assembly line selected to fulfil the Chilean order were designated Ba.65/65Bis *Tipo Cile* (Type Chile).

FROM BAD . . .

Breda had originally offered to deliver the first two machines in late 1937 (another reliable source states June 1, 1938), but constant delays on the production line, caused mostly by the modifications required by the Chilean commission, meant that the first airframes did not start rolling off the assembly line until the summer of 1938. One of the FACh Ba.65s, c/n 64182, was destroyed during a test flight in Italy on June 2 that year, and was replaced with another drawn from a Regia Aeronautica order.

After their inspection and testing at the factory by Chilean officers 1st Lt Enrique Flores Alvarez and engineer 1st Lt Raul Barros Alamos, who had arrived in Italy in September 1937, the first batch of Ba.65s was transported by sea to Chile and reached Valparaiso on December 14, 1938.

Along with the airframes came a cadre of technical staff to supervise assembly of the aircraft, as well as Breda test pilot Nicola "Titino" Magaldi, who was to perform the test flights before the official handover of the aircraft to the Chileans. (Magaldi was killed in combat with Gloster Gladiators of the RAF's No 80 Sqn over Greece on November 27, 1940.) Assembly of the Ba.65s began immediately, the first airframes being handed over to the FACh in March 1939 and assigned to the newly created *Grupo de Instruccion Avanzada y Ataque No 4* (No 4 Advanced Training & Attack Group) based at El Bosque Air Base, on the outskirts of Santiago, the Chilean capital, where an intensive training process began. The aircraft were assigned identification numerals from 1 to 20, according to their delivery order.

Breda serial No 1, c/n 64179, was the first to be withdrawn from service, after being involved in an accident on June 9, 1939. *Capitano* Magaldi took off from El Bosque to perform a test flight and unintentionally left the *Più Cento* system (the

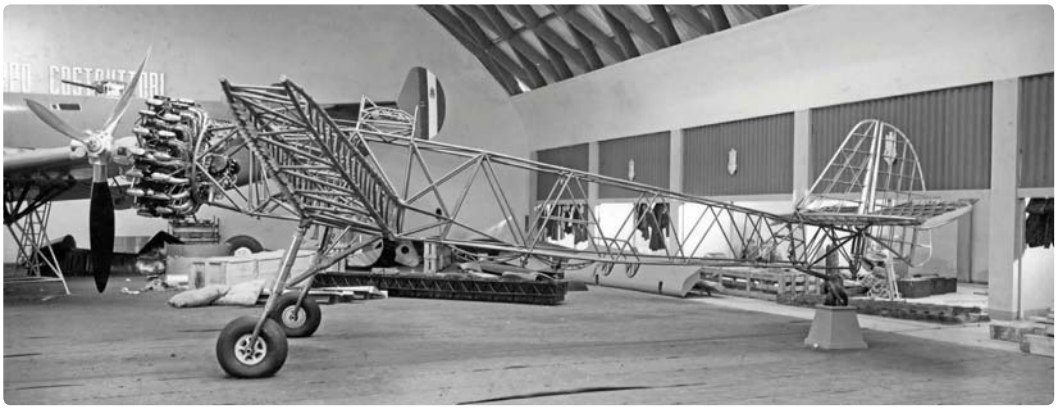
A poor-quality but rare photograph of the Ba.65s at El Bosque Air Base near Santiago during an air force review and parade day held on March 21, 1939, shortly after their entry into service. By this time the aircraft had received white star insignia on their blue-painted rudders, and the FACh's shield insignia on the undersides of the wings.

The Breda Ba.65: Underpowered, overweight – or both?

ITALIAN FIGHTER PILOTS, who tended to judge aircraft in terms of manœuvrability, disliked the Ba.65 for its low power/weight ratio. Changing from the 900 h.p. Gnome-Rhône K.14 to the 1,000 h.p. Fiat A.80 and Piaggio P.XI offered only limited improvement, leading China to specify the 1,200 h.p. Pratt & Whitney R-1830 for local production. But the type also suffered from archaic Breda design philosophy. On both the Ba.65 and Ba.88, the fuselage and wings were welded steel-tube structures, supporting metal frames and ribs covered in sheet aluminium — almost like having one aircraft inside another. As combat in North Africa during 1940–41 demonstrated, this made the type strong but also *very* heavy, further taxing its feeble engine.

The short-term remedy was to remove all unnecessary weight, including the rear turret and gunner. But Breda was aware that the real solution was stressed-skin construction, and in 1938 built a Ba.88 monocoque fuselage, tested to destruction in 1939. By then, the Regia Aeronautica had given up on Breda's own machines and the company opted to build Macchi fighters under licence. **GREGORY ALEGI**

	Ba.65 K.14 (single-seat)	**Ba.65 K.14 (two-seat)**	**Ba.65 A.80 (single-seat)**
Dimensions			
Span	12·1m (39ft 6in)	12·1m (39ft 6in)	11·9m (39ft 0in)
Length	9·53m (31ft 2in)	9·53m (31ft 2in)	9·9m (32ft 4in)
Height	3·2m (10ft 6in)	3·2m (10ft 6in)	3·2m (10ft 6in)
Wing area	23·5m² (253ft²)	23·5m² (253ft²)	—
Weights			
Empty	2,215kg (4,885lb)	2,215kg (4,885lb)	2,500kg (5,510lb)
Loaded	2,765kg (6,096lb)	3,315kg (7,310lb)	3,150kg (6,945lb)
Performance			
Maximum speed at sea level	357km/h (222 m.p.h.)	347km/h (216 m.p.h.)	352km/h (219 m.p.h.)
Normal range	515km (320 miles)	850km (530 miles)	544km (340 miles)



ABOVE ***The aftermath of the accident in which 2nd Lt Traub was killed on September 19, 1939, while participating in a nine-aircraft formation take-off from El Bosque during rehearsals for a parade. The Ba.65 was not an easy type to master, and Traub was insufficiently experienced to cope with the type's idiosyncratic handling characteristics.***

emergency "plus 100 h.p." boost system designed to be used for an absolute maximum period of 10sec) engaged, resulting in catastrophic engine damage. Magaldi made a second error — which could well have cost him his life — when he tried to land the powerless Breda with the undercarriage extended in a nearby field, La Cisterna, north of El Bosque airfield. Coming in too fast, Magaldi made a rough emergency landing and the machine (fitted without a safety "roll-bar" in the cockpit) overturned, the pilot surviving only because the empennage became entangled in telephone wires. After an inspection of the Breda, the FACh accident bureau decreed that the airframe was a total loss. The factory, taking into consideration the circumstances of the accident, offered to send a replacement.

Shortly afterwards, as part of the FACh's preparations for the National Day parade on September 19, 1939, the commander of Grupo No 4 ordered a nine-aircraft formation take-off from El Bosque. At the controls of Ba.65 serial No 17, c/n 64192, was 2nd Lt Traub, the third element of the third formation. The runway was narrow, and during his take-off Traub noticed his port wing getting dangerously close to the adjacent buildings, forcing him to move to starboard. By doing so, he entered the wake left by the leading aircraft. To try and counter the turbulence, Traub applied a bootful of left rudder, putting the Breda into a low-level stall. In a last attempt to regain control, Traub engaged the Più Cento system, which only exacerbated the problem, the Ba.65 crashing beside the doors of the maintenance hangar. The chief culprits in this incident were the pilot's lack of training on type — he had only a few hours on the Ba.65 — and the recklessness of the unit's commander.

. . . TO WORSE

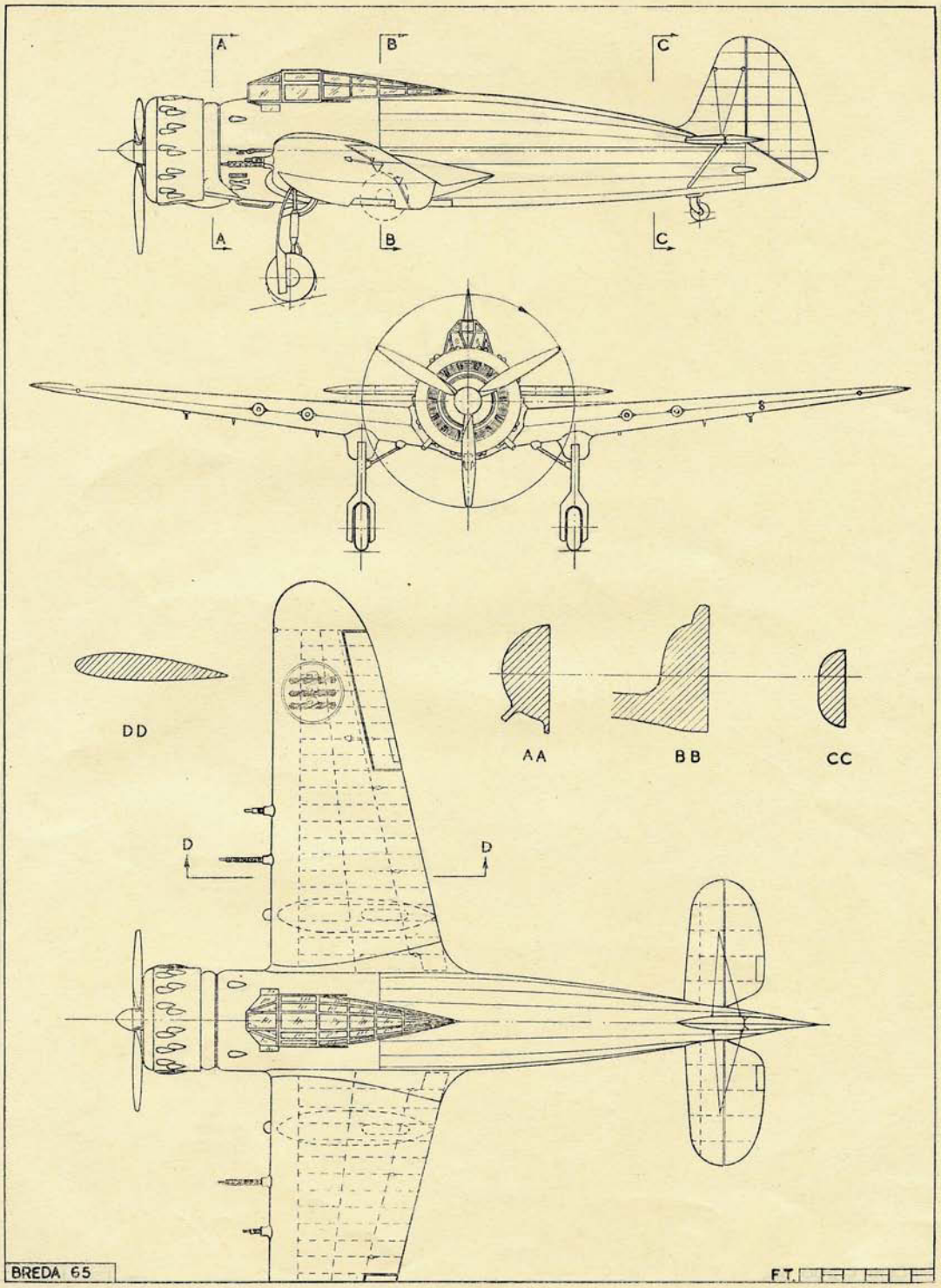
Operations had barely resumed at Grupo No 4 when, on October 31, 1939, during a gunnery practice flight in the vicinity of Maipú, the P.XI engine of Breda No 5 (c/n 64186), flown by Capt Hernán Lopez Angulo, failed. Lopez, a seasoned pilot, kept his cool and performed an emergency landing near a stable near Maipú, and walked away unscathed. The aircraft, however, was written-off after it was burnt out as a result of the engine fire that developed after landing.

The more experienced FACh pilots soon learned the tricks of the Breda, and discovered that, while not pleasant to fly, the Ba.65 was able to perform its duties if given sufficient respect. Aerobatics in the type were restricted, and only the most seasoned pilots were allowed to attempt anything resembling high-energy manœuvres in the heavy Breda. There were numerous flights to the interior of the country, where the type was tested and evaluated under various conditions.

The Ba.65's engine was started with the aid of a small compressor, located in the port wing, which provided pressurised air to the cylinders, pushing the rods which in turn rotated the propeller. Once

The Breda Ba.65

Although similar in layout to the Ba.64, from which it was developed, the Ba.65 had a fuller fuselage, and a sliding canopy replaced the open cockpit. Three of the Chilean examples were fitted with Breda Type M turrets, but the other 17 of the FACh's 20 examples were single-seat versions, as in this* Aeromodeller *three-view.



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ABOVE ***The charred remains of Ba.65 No 5 (c/n 64186), which came to grief after engine failure during a gunnery practice flight on October 31, 1939. Thankfully, the pilot, Capt Hernán Lopez Angulo, was one of the more experienced FACh pilots and managed to execute a skilful forced landing in a field at Maipú, near El Bosque AB. The aircraft was destroyed in the ensuing fire, however.***

LEFT & BELOW ***An all-too-familiar sight by the end of 1939, the wreckage of yet another crashed Ba.65 is surveyed by locals after 2nd Lt Ramón Ortiz was killed in the crash of Ba.65 No 15 on November 3 that year. Ortiz, again an inexperienced pilot, got into trouble after an aborted landing at El Bosque and stalled, the resulting impact with the ground tearing the engine from its mounting.***

ABOVE ***The somewhat cramped cockpit of the Ba.65. The control column, fitted with a spade grip, was equipped with a central lever for the compressed-air system that operated the undercarriage and weapons bay doors, and the smaller levers placed either side of the central lever were the firing buttons for the four wing-mounted guns.***

the engine reached the required revolutions, the battery was engaged and the engine was started. During take-off the Ba.65 experienced a notable torque-generated pull to starboard, which had to be compensated for by the pilot applying full left rudder. Also, during dives the aircraft gained speed very quickly, the pilot having to use all his strength to recover full control. The type's reported maximum speed was 475km/h (295 m.p.h.), at least according to the factory brochure, but it is widely known that not a single FACh pilot ever reached that figure in the aircraft.

Another concern for the FACh's Breda pilots was the type's troublesome (and dangerous) pneumatic brake system, which had no emergency valve to purge the excess air produced by the engine's compressor. As a result, the pilot had constantly to check the manometer on the instrument panel to avoid exceeding the pressure in the tank and blowing the seal, which would result in no pressure for the operation of the armament, or worse, the braking system.

Another accident, this time with fatal consequences, occurred on November 3, 1939, when 2nd Lt Ramón Ortiz, a classmate of 2nd Lt Traub, crashed while landing at El Bosque. At the controls of Breda No 15, Ortiz performed a poor landing approach and overran the runway. Pushing the throttle forward, he started a turn to starboard but, owing to his inexperience (he had only flown the Avro 626 biplane trainer with a fixed undercarriage before being assigned to fly the more demanding Breda), forgot to raise the flaps and retract the undercarriage, which put the aircraft into a stall before it crashed on agricultural land beside the airfield.

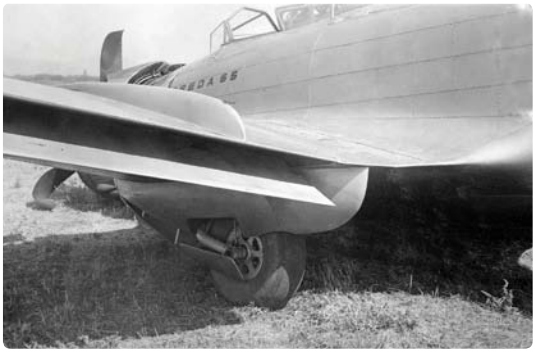
Most of these incidents and accidents were not necessarily directly attributable to the aircraft itself, but rather to the insufficient training provided to its pilots. They were, however, a cause of great indignation among the population, who demanded explanations from the authorities. Despite the facts, the FACh High Command was reluctant to accept that it was a training issue rather than an aircraft problem, and in early 1940 the Ba.65s were grounded pending "a thorough investigation in search of solutions".

In the meantime, the FACh realised that perhaps the Breda was not its best bet, and in the spring of 1940 the Chilean government negotiated with Italy about the possibility of returning the remaining aircraft in exchange for a batch of Fiat CR.32 biplane fighters instead — a proposal that collapsed upon Italy's entrance into the war in Europe, in which the Italians would have little use for the cumbersome Breda.

LOOKING TO AMERICA

A better solution for the Chileans was to establish a United States Military Mission, fostered by the goodwill engendered in the wake of the Rio Conference in January 1942, in which the Pan-American nations agreed on conditions to present a united wartime front. This would allow

Breda Ba.65 No 10 was arguably the unluckiest of the FACh examples, experiencing a number of mishaps during its operational career, including this forced landing after hydraulic failure in November 1941. Although the variable-pitch propeller was destroyed, the airframe suffered only minimal damage.



LEFT ***The collapsed port undercarriage leg of No 10 after its forced landing in November 1941. Fortunately, the pilot was unharmed and the aircraft was repaired and returned to operational status. After Italy's entry into the war in Europe in June 1940 the availability of spares for Chile's Italian aircraft began to dwindle, and it became increasingly difficult to keep the Ba.65s serviceable and operational.***

BELOW ***Four months after its undercarriage mishap, No 10 was hobbled again when its pilot failed to follow the correct procedure to lower the undercarriage during a flight on March 20, 1942. This time the damage was more serious, the starboard wing taking the brunt of the crash; with the wing's spars damaged beyond repair, the aircraft was written off.***

Officers of the FACh give members of the US Military Mission to Chile a review of the types then in service with the air arm at Los Cerrillos, Santiago, including a pair of Ba.65s and one of the six Arado Ar 95B biplanes delivered to Chile before the outbreak of the war in Europe.

for the arrival of modern aircraft from the USA in which to train FACh pilots, who until that time had graduated on the Avro 626. Shortly after the signing of an agreement with the USA, North American T-6 Texans began to arrive in Chile.

One of the US Mission's assigned instructors, Col Omer Niegarth, was introduced to the Breda and, at the request of the FACh authorities, took one aloft in order to determine whether the type could still be useful to the FACh. After a 30min flight Niegarth found the flying characteristics of the aircraft satisfactory, but recommended its use only by pilots previously trained on the T-6.

Italy's entry into the war, which made it impossible to obtain spare parts and essential supplies for the operation of the aircraft, only accelerated the end of the Ba.65's FACh career. One of the first supplies to run out was the Castrol motor oil needed for the Piaggio engines, and for which there was no substitute in Chile. Grupo No 4 mechanics tried, unsuccessfully, to replace it with the synthetic oil used by other FACh aircraft.

Another Breda was lost during this period and on March 20, 1942, Ba.65 No 10 was damaged beyond repair when its pilot failed to extend the undercarriage fully before landing, causing damage to the undercarriage and wing spars.

One by one the remaining Bredas were grounded, No 13 being the last of the type to fly in Chile, with Lt Gaston Carrere at the controls, in the spring of 1942, thus ending the blighted history of the Ba.65 with the FACh. Shortly afterwards the Chileans replaced the little-loved Italian aircraft with more modern types acquired through Lend-Lease arrangements under the auspices of the Military Assistance Program signed with the USA.

AMARU TINCOPA

ABOVE ***The only surviving relic of Chile's somewhat unsatisfactory relationship with the Ba.65 is this original Breda Type M turret and machine-gun, as briefly fitted to the FACh's three examples of the Ba.65Bis. It is kept on display at the*** **Museo Nacional Aeronáutico y del Espacio** ***(National Aeronautical & Space Museum) in the capital, Santiago de Chile.***

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