



ADF-Serials Telegraph



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Articles for those interested in Australian Military Aircraft History and Serials

Our Editorial and contributing Members in this issue are:

John Bennett, Gordon Birkett and Garry Shepherdson (Acting Editor)

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Special Thanks:

Ian Madden, 31 Squadron Beaufighter Association.

Special Message:

31st March, 2021, marks the Centenary of the founding of the Australian Air Force. On that day 100 years ago, the new, independent air arm, held 151 aircraft on strength, mostly gifted from the United Kingdom. The primary training type was the Avro 504, Sopwith Pup's provided the rough equivalent of what today would be called a "Lead-In Fighter" training capability and the operational types were DH9's, DH9A's and SE5A's. However, very little flying took place initially and the main flying unit was 1FTS.

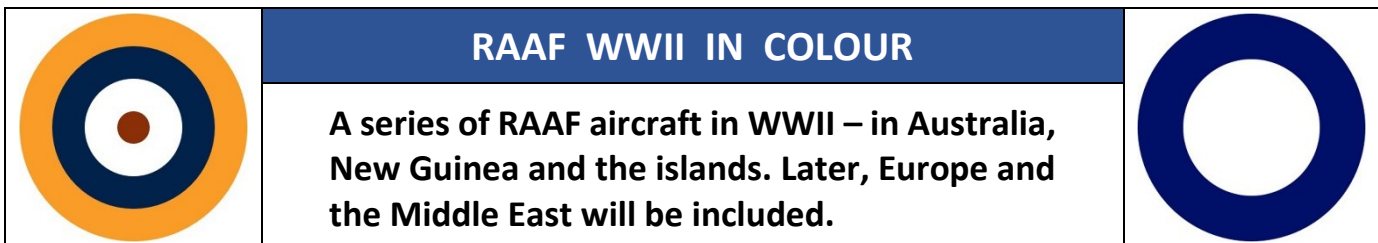
Not too many people could deny that, over the last 100 years, the RAAF has gained a reputation for "punching above its weight", whether it be in peace-time international exercises, whilst providing humanitarian support to those in need or whilst on, or directly supporting, operations.

Compare today's fleet with its initial inventory. Its primary training type now is the PC21, Hawk127's provide "Lead-In Fighter" training for types such as FA-18F, EA-18G and F-35 and now many other types provide vitally important capabilities which weren't dreamt of in 1921 ranging from C-27, C-130 and C-17 transports, P-8 ASW aircraft, E-7 AEW aircraft and KC-30 tanker/transports. Many thousands of hours a year are being flown by a range of units and a large number of personnel, of all musteringings, exist so as those flying hours can be generated.

Every current and former member has contributed, to a greater or lesser degree, to the functioning and therefore to the continued evolution of the RAAF.

My contribution was minuscule and insignificant but, I am still proud of the fact that I contributed, in an infinitesimally small way, to the first 100 years of the RAAF's history and, I believe, so should everyone who has served in the RAAF at one time or another. For, without its membership and their individual contribution, the RAAF wouldn't be what it is.

Message Traffic: Please address any questions to: question@adf-serials.com.au



No.9 – RAAF Battles

by John Bennett

The Fairey Battle was another of the obsolescent British types adopted at the outbreak of War as a trainer aircraft in UK, Canada and Australia for the Empire Air Training Scheme (EATS). Tragically outclassed as an RAF light bomber in France in 1940, the Battle did provide a suitable multi-crewmember platform for the EATS training of air observers, bomb aimers and gunners. The RAAF received 365 Battles over 1940-1943, all retaining RAF serials, with the first four arriving in APR 1940.¹ Main sources for this article are Brendan Cowan's RAAF Fairey Battle pages in the *adf-serials* database, and Ian Huntley's Aviation Guide *Fairey Battle*. From 1940, Australia's Battles were delivered initially to No.1 Aircraft Park (1AP) at North Shore, Geelong, for assembly at the International Harvester plant, and by the end of 1943 all the RAAF Battles had been delivered for service for training and as target-tugs.²

Total Battle production can be a point of conjecture. Some sources provide the total aircraft that were *ordered* as the number that were *delivered* – clearly not the case as orders were cancelled as priorities changed. A total of 2,419 Fairey Battles were ordered by the RAF (including the prototype), but 234 were cancelled – with total RAF production of 2,185, comprising 1,156 from Fairey and 1,029 built by Austin Motors.³ This RAF total of 2,185 included 266 Austin factory-produced target-towing TT.Is, together with 200 dual-cockpit trainer Battle(T)s. Several aircraft built as bombers were subsequently converted to target-tugs or dual-control trainers.



[colourised from RAAF image]

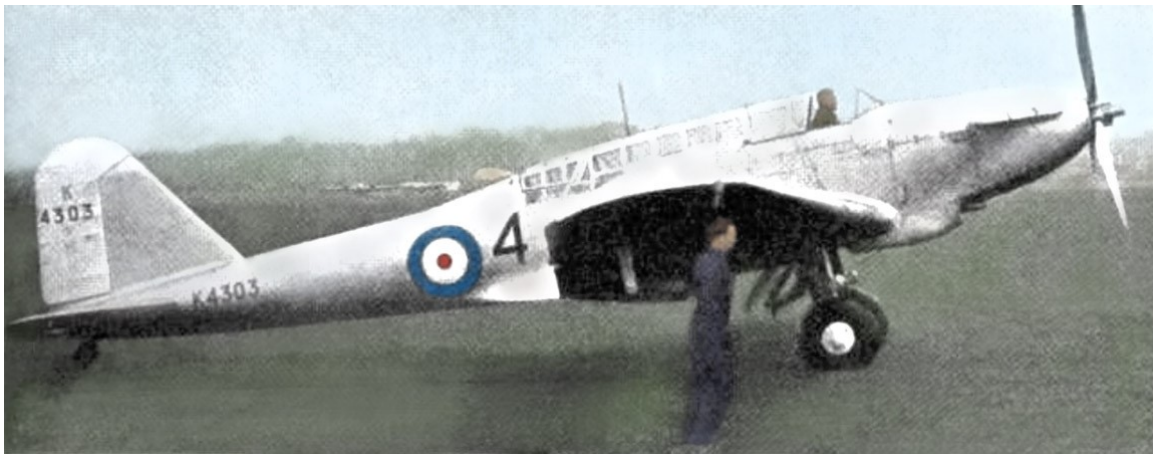
RAAF Battle R3949 with Yellow trainer stripes of 1BAGS, taking-off from Amberley in JAN 1942

The British Air Ministry drew up Specification P.27/32 in APR 1933 for a single-engined monoplane light bomber, in parallel with Spec B.9/32 for a twin-engined medium bomber (which led to the Hampden and Wellington).⁴ Fairey had many concerns with the P.27/32 specification objecting that current available powerplants were unsuitable for a single-engined bomber, but ultimately submitted an option for a design powered by the Rolls-Royce PV-12, which would become the Merlin. The first flight of the prototype K4303 (c/n F.2121) was on 10 MAR 1936, delayed by problems with the Merlin, and on 2 APR 1936 the design was named the Battle.⁵ This was not necessarily named after the Kent town of that name, but perhaps was the result of Fairey's battles with the Air Ministry with regard the demands of the specification. The first production Battle, K7758 (c/n F.2316), flew on 14 APR 1937.

RAAF Battle Serial Summary

1. From 1940, all of the RAAF's 365 Fairey Battles were delivered on Overseas Indent O.I.992, initially in the basic "bomber" configuration, but this total also included 105 target-towing TT.I.s, and from 1941 eleven dual-cockpit Battle(T) trainers.
2. **Target-Tugs.** Target-towing Battles were delivered with either the *Type B Mk II* winch, or the simpler *Type D* winch, while some were modified in Australia with winches and modified rear fuselages for this role.
3. **Trainers.** The dedicated dual control Battle designated Battle(T) had separate tandem cockpits – not to be confused with the bomber configuration variant, when some were modified with dual controls fitted under the single canopy.

Type	RAAF Receipts	RAF Production Contract ⁶	RAAF Delivery Details
Battle I bomber [249]	15	First batch of 155 Battle I (K7558 to K7712) from Fairey, Stockport, contract 321541/35.	From MAY 1941: K7575, K7600, K7607, K7613, K7619, K7622, K7638, K7643, K7649, K7659, K7672, K7676, K7687, K7705, K7710.
	34	Second production batch of 311 Battle I (K9176 to K9486) built by Fairey, Stockport, under contract 768880/38.	From DEC 1940: K9177, K9206, K9219, K9277, K9228, K9232, K9262, K9282, K9290, K9291, K9297, K9322, K9324, K9346, K9362, K9368, K9371, K9375, K9380, K9388, K9393, K9411, K9422, K9426, K9429, K9435, K9442-9444, K9447, K9464, K9468, K9478, K9486.
	101	From a batch of 863 Battle I (L4935 to L5597) built by Austin, Longbridge, under contract B2580/39. Total included 200 completed as Battle TT.I target towers (L5598 to L5797).	From MAY 1940: L4941, L4954, L4958, L4970, L4974, L4975, L4982, L4985, L4998, L4999, L5005, L5006, L5012, L5013, L5015, L5017, L5018, L5022, L5023, L5028, L5029, L5031, L5038, L5044, L5046, L5049, L5050, L5052, L5061, L5069, L5070, L5082, L5087, L5094, L5096, L5105, L5108, L5117, L5122, L5124, L5128, L5129, L5134, L5142, L5143, L5151, L5152, L5156, L5158, L5163, L5170, L5173, L5202, L5212, L5215, L5217, L5221, L5223, L5244, L5251, L5257, L5258, L5262, L5267, L5274, L5278, L5291, L5302, L5305, L5311, L5313, L5320, L5322, L5326, L5354, L5357, L5358, L5382, L5385, L5387, L5390, L5403, L5407, L5409, L5417, L5425, L5434, L5435, L5444, L5452, L5471, L5478, L5488, L5522, L5527, L5529, L5533, L5551, L5594, L5595, L5596.
	37	A batch of 189 Battle I (N2020 to N2258) built by Fairey, Stockport, under contract 768880/38.	From JUN 1940: N2027, N2038, N2039, N2045, N2053, N2054, N2063-2066, N2089-2092, N2096, N2107, N2124, N2163, N2166, N2170, N2176, N2179, N2182, N2188, N2223, N2225, N2228, N2229, N2233, N2236, N2240, N2244, N2247, N2250, N2251, N2255, N2256.
	39	150 Battle I (P2155 to P2369) Fairey, Stockport; 50 Battle I (P5228 to P5294); 100 Battle I (P6480 to P6615) contract 768880/38. Plus 100 (P6616 to P6769) built as Battle(T).	From APR 1940: P2157, P2166-2169, P2245, P2263, P2264, P2276, P2300, P2305, P2317, P2322, P2354, P2363-2365, P5234, P5239, P5240, P5242, P5243, P5247, P5249, P5273, P5275, P5281, P5289, P6481, P6483, P6484, P6489, P6493, P6499, P6503, P6509, P6531, P6536, P6602.
	23	100 Battle I (R3922 to R4054) built by Austin, Longbridge, contract B2580/39.	From NOV 1940: R3924, R3925, R3927-3929, R3931, R3934, R3936, R3939, R3944, R3948, R3949, R3951, R3954, R3956, R3957, R4002, R4006, R4008, R4009, R4012, R4019, R4049.
Battle TT.I Target-tower [105]	82	200 Battle TT.I (L5598 to L5797) built by Austin, Longbridge, under contract B2580/39.	From JUL 1940: L5599, L5600, L5602-5604, L5609, L5610, L5617, L5626, L5629, L5633, L5636, L5639, L5640, L5644, L5650-5660, L5665, L5670, L5675-5679, L5683, L5684, L5687, L5689, L5692-5695, L5697, L5700-5704, L5709, L5710, L5721, L5723, L5725, L5727, L5728, L5734-5736, L5738, L5741, L5751, L5754, L5756-5760, L5763-5765, L5770, L5772, L5774, L5778, L5779, L5781, L5785, L5789-5792, L5794, L5797.
	23	66 Battle TT.I (V1201 to V1280) Austin, Longbridge, contract B2580/39.	From DEC 1940: V1201-1203, V1206-1210, V1219, V1221, V1227, V1232, V1233, V1235, V1237, V1238, V1241-1243, V1250, V1270, V1271, V1277.
Battle(T) dual cockpit [11]	8	100 Battle(T) trainers built by Fairey, Stockport, (P6616 to P6769) under contract 768880/38.	From DEC 1941: P6622, P6631, P6642, P6664, P6677, P6720, P6729, P6762.
	3	100 Battle(T) trainers from Fairey, Stockport, (R7356 to R7480) contract 15447/39.	From SEP 1941: R7377, R7380, R7385.
Total 365			



[coloured from Profile 34, p.4]

Battle prototype K4303 (c/n F.2121) at the 1936 RAF Air Display at Hendon

In the early stages of the EATS, it was initially planned to initially allocate some 900 aircraft to Australia for training purposes including 500 Avro Ansons and 400 Fairey Battles. In the end, the Scheme was expanded with Oxfords and Tiger Moths too – and the RAAF was allocated 367 Fairey Battles from RAF stocks of which 365 were received and taken on charge. In RAAF service, all Battles retained their RAF serials despite being allocated the RAAF prefix 'A22'. While the arrival of the early Battle consignments in 1940 were announced to the Australian public as having a secondary combat capability, the reality was these aircraft were overwhelmingly used for bombing, gunnery, observer and pilot training duties and target towing, as well as some use as communications and trials aircraft.⁷

The main RAAF users for training with the Battle were the Bombing and Gunnery Schools, abbreviated by the acronym 'BAGS' (but sometimes also abbreviated in sources as 'BGS' or 'B&GS', but BAGS appears to be the most common standard). Also, the Air Observer Schools (AOS) and Operational Training Units (OTU) operated the Battle, and to a lesser extent some Squadrons and Communications Flights/Communications Units (CF/CU). The first four Battles (P2167, P2169, P5239, P5247) were delivered to 1AP at Geelong on 30 APR 1940, with FLTLT John Lerew testing the first assembled aircraft (P5239), on 29 JUN 1940. Battle deliveries continued until the last (V1202) was received by 2AP Bankstown on 7 DEC 1943.

Production

Battle production started at the Fairey plant at Hayes, Middlesex, but after the first aircraft this was swapped to the Fairey plant at Stockport, Manchester.⁸ In addition, production was subcontracted to Austin Motors, setting up a new aircraft production facility at Longbridge, Birmingham. The Merlin was a 12-cylinder, glycol-cooled engine with a de Havilland three-bladed variable pitch propeller. The first 136 aircraft (K7558 to K7693) were powered by the Merlin I, and then the Merlin II.⁹ Production aircraft from L4994 were powered by the Merlin III,¹⁰ and a few RAAF E/E.88 cards are also annotated with aircraft delivered with the Merlin V, which operated at higher boost pressures and produced increased power at altitude. A further change by the RAF under this production Specification P.23/35 was the provision for a third crewmember in production Battles, with a radio operator/air gunner added to the pilot and bombaimer originally specified. The bombaimer lay prone in a ventral position below the pilot's seat, sighting through a large screen aperture that was covered by a sliding panel when not in use. The gunner at the rear of the long cockpit had a hinged canopy to lift and deploy a single .303 gas-operated Vickers K gun on a swivelling mount.

RAAF Battles were received from most of the RAF production batches, some aircraft being having been flown in the 1940 Battle of France, but most from dedicated training orders to sustain the substantial Commonwealth EATS aircrew training effort. The [adf-serials - Fairey Battle \(adf-serials.com.au\)](http://adf-serials.com.au) database provides details of RAAF deliveries.

The initial production contract 321541/35 for Specification P.23/35 for 155 Battles was placed with Fairey in 1935. The first production Battle I (K7558), built at Hayes, flew in JUN 1937, while a new Fairey factory was being built at Heaton Chapel, Stockport. It is significant that Fairey's order for 200 Merlin engines for the Battle was the first received by Rolls-Royce, and it was this order that put the Merlin I into production.¹¹ By the end of 1937, 85 Battles had been completed and several RAF squadrons had re-equipped. The next Battle order was for 311 Battle Is produced at the new Stockport factory. The RAAF received 49 of the **K-serialled** Battles from the first and second Fairey production batches, comprising:

- 15 aircraft from the first production batch of 155 Battle Is, serialled K7558 to K7712 (c/n F.2316-F.2470), delivered from Fairey (Stockport) to the RAF between MAY 1937-MAY 1938, under contract 321541/35.

- 34 aircraft from the second production batch of 311 Battle Is, serialised K9176 to K9486 (c/n F.2471-F.2515, F.2809-F.3074),¹² delivered from Fairey (Stockport) between MAY 1938-FEB 1939, under contract 768880/38. Most of these had seen extensive service with the RAF prior to being prepared for shipment to Australia, with the majority being dispatched via 47 Maintenance Unit based at RAF Sealand in Flintshire, Wales.



[du Plessis WWII Colour Collection]

An early production RAF Battle K7581, c1938-1939, from the first Fairey production batch

The **L-serialled** Battles were the most numerous in RAAF service with 183 delivered comprising both Mk.I and TT.I airframes. They all came from a batch of 863 Battles subcontracted to the shadow factory of Austin Motors, Longbridge (Birmingham), to Specifications P.14/36 and P.32/36.¹³ The first Austin-built Battle (L4935) flew in late JUL 1938, and by the end of the year, 29 aircraft had been completed.¹⁴ But already by this stage, the Battle was obsolescent. With war imminent, it was necessary to keep factory workforces in place, and difficulties in getting other types into production at Heaton Chapel and Longbridge to take its place, the Battle was kept in production. Battles from L4935 to L4993 were fitted with the Merlin II, and subsequent aircraft with the Merlin III.¹⁵ These Austin aircraft were delivered between OCT 1938 and AUG 1940 – RAF serials L4935 to L5597 were completed as Mk Is, while the 200 aircraft L5598 to L5797 were completed as Battle TT.I target-tugs.



[colourised from AWM AC0014]

Austin-built trainer L5471 in overall Yellow overhead the International Harvester plant used by 1AP, North Shore, 6 SEP 1940

In this image are two dozen Battles that have been assembled in the Geelong 1AP factory, at least six of which are in Target Towing stripes – these would be in the first batch of TT aircraft received by the RAAF in the third quarter of 1940, serialised between L5599 and L5617, fitted with flag target boxes under the rear fuselage and Type B towing winches on the port fuselage side. The other aircraft were standard Austin-built L-serialled and Fairey-built P-serialled Battle I trainers.



[colourised from RAAF image 000-148-669]

L5156 1BAGS Battle I off Evans Head in allover Yellow, over its A.D.1160 'B'-scheme camouflage, 1940-1942

This RAAF image had been colourised by PTF (as in the *adf-serials* database) in a haphazard camouflage, but the original monochrome image shows one overall light colour (Yellow) painted over the 'B'-scheme camouflage showing through. L5156 was built by Austin/Longbridge and delivered to the RAF in JUN 1939, transferred for RAAF EATS use in MAY 1940, and received at 1AP in JUN 1940. L5156 was one of the first transferred to 1BAGS in SEP 1940 (serving until 1944) and like many of these early arrivals, had training Yellow applied over camouflage before shipping from UK. The type-A fuselage roundels, and type-B roundels on the upper mainplanes, indicate that this image is before SEP 1942 when Red was removed from RAAF National Markings.

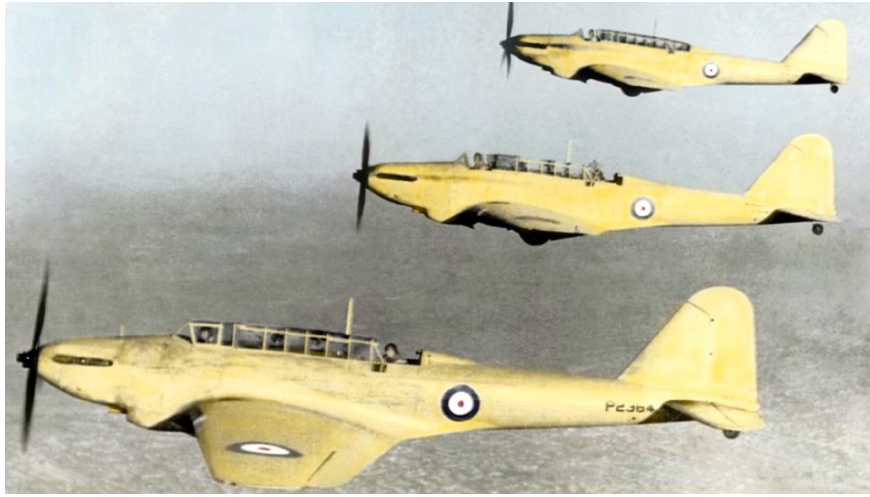


[colourised from *adf-serials*]

Counting the hits! – L5251 was in RAF service at a BAGS, prior to being shipped to Australia in 1942

L5251 probably at RAF 9BAGS over 1940-41, having the drogue target flag being checked for bullet hits. L5251 in RAF trainer colours of the period, with Yellow extending halfway up the fuselage. (Note the RAF training number '4' on a band on the background aircraft, and its 1940-41 Yellow diamond-shaped gas detection patch on its upper fuselage, the latter not being RAAF practice.) L5251 was received at 2AD in JAN 1943, serving with 1BAGS over JUN-DEC 1943 until merged into 1AOS. First stored with 1CRD at Werribee from APR 1944, L5251 received a short reprieve when sent to 3AOS store at Port Pirie in AUG 1944, but then to 5CRD in NOV 1944 for the inevitable scrapping by the Commonwealth Disposal Commission (CDC) during 1945.

The RAAF received 37 **N-serialled** Battles mainly over 1942-1943, coming from a batch of 189 built for the RAF serialled N2020 to N2258 (c/n F.3075-F.3257, F.3452-F.3457) by Fairey at Stockport. These had been delivered to the RAF between FEB-JUN 1939, under contract 768880/38. From the deliveries of this RAF batch of 189 Battles, 99 were delivered for EATS for the RAAF, RCAF and SAAF.



[colourised from adf-serials]

Battle P2364, with possibly P2166 and one unidentified – 1BAGS 1940-1941 in overall Yellow

Both these aircraft were received by 1AP in mid-1940, delivered via CFS (probably for instructor familiarisation) on transit to 1BAGS in SEP 1940, serving at Evans Head 1940-1942. Type-A roundels should have been standard in all positions on RAAF Yellow trainers, but many were received with type-B roundels on upper surfaces (such as the second aircraft here), and most without fin flashes.

The 47 RAAF **P-serialled** airframes included the first four Battles delivered to Australia (P2167, P2169, P5239, P5247) on 30 APR 1940 and comprised 39 Battle Is and eight Battle(T) dual-cockpit trainers. These P-numbered Battles were all Fairey-built, sourced from the following production batches under contract 768880/38 delivered to the RAF:

- 150 Battle Is, serialled between P2155 and P2369 (c/n F.4068-F.4217), delivered from Stockport to the RAF between JUN-OCT 1939.
- 50 Battle Is, serialled between P5228 and P5294 (c/n F.4418-F.4467), delivered from Stockport to the RAF between OCT-NOV 1939, with most to EATS direct from production.
- 200 Battle Is, serialled between P6480 and P6769 (c/n F.3968-F.4067, F4470-F.4569), received by the RAF from Stockport between OCT-NOV 1939, with the first 100 airframes of this batch built as Battle Is, and the final 100 (P6616 to P6769) being built as dual-cockpit Battle(T) trainers – eight of which came to the RAAF.

The RAAF received 26 **R-serialled** Battles shipped to the RAAF were from the following batches built for the RAF and then allocated for the EATS. The first 23 were all Battle Is fitted out as dual control training aircraft (under the single 'glasshouse' canopy) and the final three in this serial range were Battle(T) dual-cockpits trainers:

- 23 aircraft from the batch of 100 Battle Is built from OCT 1939-MAY 1940 by Austin Motors, Longbridge, contract B2580/39 with RAF serials R3922 to R4054 – all of which delivered under EATS to RAAF, RCAF and SAAF.
- 3 aircraft from the batch of 100 Battle(T) trainers (c/n F.4820-F.4919) built from MAY-NOV 1940 by Fairey at Stockport under contract 15447/39 with RAF serials between R7356 and R7480.¹⁶

These 23 **V-serialled** RAAF Battles were from a batch of 66 Battle TT.Is, from an original 300, built by Austin Motors at Longbridge from AUG-OCT 1940 under contract B2580/39 with RAF serials between V1201 and V1280.



[colourised from RAAF image]

Battle TT.I in 1944 markings of V1201 ('01' nose code) with Air Gunnery School West Sale, after forming from 3BAGS

No TT stripes – after a recent repaint in the 'B'-cam scheme as the colours of *Foliage Green/Earth Brown* were quite dark, *Sky Blue* undersides, and prior to the MAY 1944 AGI for overall *Foliage Green*. '01' code on nose in *Medium Sea Grey*, with serial in *Yellow*.¹⁷ The port Type-B winch raised in the stowed position (with its propeller facing up), and ventral flag target box has been removed.

BATTLE VARIANTS

While over 2000 Battles were produced in UK, it is unusual that this did not develop into a Mk.II version. However, there were variants on the original Battle Mk.I bomber for its successful second career as a crew trainer for the EATS, and this led to target-towing for the requirement to train air gunners. Some RAAF Battles were delivered with dual control (installed behind the front cockpit under the glasshouse canopy) to train pilots, and eleven were received as the dedicated pilot trainer with a separate cockpit and canopy, designated the Battle(T). In addition, large numbers were delivered from the UK Austin production line as specialised TT.I target-towers, often fitted on the line with the Type B Mk.II or Type D target winch and the ventral flag target box, and also striped in *Yellow/Black* TT scheme. The specialised Bristol gun turret Battle I(T) trainer for air gunners was not operated in Australia.

Target-Tower – Battle TT.I

Many remember the Battle in Australia as a target-tug, and indeed 105 were received from UK as Austin-built dedicated Battle TT.I target-towers, with 'L-' and 'V-' serials. Additionally, some RAAF Mk.I aircraft were retrofitted with target-towing winches at 1AD Laverton. The Battle in this role was superseded in the RAAF in 1944 by the Vengeance with the Type B winch, and by the Wirraway with the simpler Type D winch. Postwar, primarily the Beaufighter 21, fitted with Type B winch, assumed the target-towing role, supplemented by some Mustangs.

Trainer – Battle(T)

The dedicated dual-control Battle(T) trainer – easily identified by its second single-pilot cockpit – was modified from the Battle I bomber. Eleven were received by the RAAF, with 'P-' and 'R-' serials. (Some Battle Is were fitted with a set of dual controls – the instructor sat at the back of the long canopy with an extremely poor view!¹⁸)



RAF Battle(T) Trainer P6683 was one of 100 built by Fairey [colourised from Huntley p.57]

Battle Turret Trainer – Battle I(T)

This variant was not operated by the RAAF, but had been offered by the RAF in APR 1942. Battle 'Modification 259' installed a Bristol Blenheim Type 1 Mk.III gun turret aft of a single pilot cockpit.¹⁹ Operated by the RAF and RCAF, the Battle's B1 upper gun turret was the first in a series of Bristol designed turrets that were fitted on Blenheims and Beauforts. A unique feature of the turret was that, when not in use, the cupola could be partially retracted to reduce drag. Initially a single Lewis gun was used, but was later replaced by twin Browning .303s.²⁰ 1AD did convert **K7676** over APR-AUG 1943 with the Bristol turret,²¹ but the configuration is uncertain – an I(T) style, or a turret at the aft end of the glasshouse? In OCT 1943, K7676 was issued briefly to 1BAGS, before withdrawal for scrapping in MAR 1944.²²



RAF Battle I(T) Turret Gunnery Trainer K9382 in 1941 [colourised from airhistory.net]

BATTLE(T) DUAL TRAINER

When Battle(T) R7380 was received at 1AP on 9 SEP 1941, a report was prepared on the differences between the standard Battle I bomber variant, and this new dual-cockpit trainer.²³ This was the first of three dual-cockpit aircraft received from 1941 (R7377, R7380, R7385) after the earlier delivery of "dual control" (DC) Battle Is that had flying control fitted in the rear cockpit – this basic fitting of "DC Conversion Sets" had been undertaken by 1AP Geelong in AUG 1940 with P2169 and P2364.²⁴ Later a further eight Battle(T) trainers from final production batch 100 of (P6616 to P6769) were received, all being built as Battle(T)s: P6622, P6631, P6642, P6664, P6677, P6720, P6729 and P6762.

BATTLE "T" (DUAL) R.7380.

The following information was obtained on receipt of the ³⁸ above aircraft, at No. 1. Aircraft Park, on 9/9/41.

AIRFRAME: Total No. of hours flown:- 233 hours 10 minutes.
Major overhaul carried out by contractors at:-
231 hours 40 minutes.

ENGINE: Merlin III 1, Ser. No. 23461/166888.
Total No. of hours run:- 50 hours 50 minutes.
Major overhaul carried out by contractors at:-
49.00 hours.

AIRSCREW: V.P. type 5/16. Ser. No. D.H. 510359.

FUSELAGE:

Front Cockpit:- The layout and equipment of the front cockpit is the same as the standard Battle I, with the following exceptions:-

- (1) Selector Lever in Hydraulic System for undercarriage, Retraction Gear can be positively locked in the Neutral Position.
- (2) Fire Extinguisher on Starboard side of Cockpit, and to the rear of Pilots Seat.

REAR COCKPIT:

The Rear Cockpit is fitted by Contractors ^{with a} Dual Control, the Pilots Seat being situated between Frames Nos. 8 & 10.
The Rear Cockpit is the same in layout and Equipment as the Front Cockpit in the standard Battle I, with the following exceptions.
(The following items are not fitted.)

- (1) OIL TEMP. GAUGE.
- (2) FUEL CONTENTS GAUGE.
- (3) FUEL PRESSURE GAUGE.
- (4) AIR PRESSURE GAUGE, (BRAKE SYSTEM)
- (5) STARTING MAGNETO SWITCH.
- (6) MIXTURE CONTROL.
- (7) SWITCH FOR UNDERCARRIAGE WARNING LIGHT.
- (8) KLAXON HORN, WARNING DEVICE, (U/C RETRACTION GEAR).
- (9) UNDERCARRIAGE EMERGENCY LOWERING GEAR, CONTROL.
- (10) RADIATOR SHUTTER CONTROL.

A standard type Windscreen is provided for the Rear Cockpit, the forward field of vision being improved to a limited extent, by a window let into the Fairing behind the front Cockpit.

A sliding Hood is fitted to the Rear Cockpit, similar to the Pilots Sliding Hood on the Battle I.
The 45 gallon Fuel Tank is not fitted in the Cabin as in the standard Battle I, and a Light Bulkhead is provided with two Detachable Panels immediately behind seat in Front Cockpit.

TAIL UNIT: As for standard Battle I.

UNDERCARRIAGE: As for standard Battle I.

MAIN PLANES: As for standard Battle I.

ARMAMENT:

The Front Cockpit is fitted as for Battle I, the only Armament Equipment fitted to Rear Cockpit is an Outboard Ring and Head Sight.
The Main Planes are fitted with L.S. Flare Carriers, but no Retractable Universal Carriers.
No Adjustable Bomb-Sight Brackets or Bomb Distributors fitted.

[NAA A705 9/27/104 (3B)]

Differences with Battle(T) Dual Cockpit Trainer R7380, on 9 SEP 1941 at 1AP

RAAF BATTLE(T) DUAL TRAINER – P6729 '72'

The RAAF received eleven Fairey-built Battle(T) dual-cockpit trainers: the first from the R7377, R7380 and R7385 batch from SEP 1941; then from DEC 1941, in the P6622, P6631, P6642, P6664, P6677, P6720, P6729 and P6762 batch. Each BAGS unit had duals on strength: **1BAGS/1AOS** R7385, P6622, P6664; **2BAGS/3AOS** R7377, R7380; and **3BAGS/AGS** P6631, P6642, P6677, P6720, P6729, P6762. **CFS** also operated P6762 for several months over 1942-43.



[colourised from Lever p.179]

P6729 was the last Battle dual on RAAF strength. Received at 1AD in MAR 1942, it served at 3BAGS which transformed into AGS at West Sale in DEC 1943. In OCT 1945 it was approved for disposal – as all Battles were being converted to components from 1944 – and was briefly saved to storage until 1946. P6729 was destroyed by fire with five other Battles at a disposal bonfire at **Point Cook on 4 APR 1946**.



[AWM P00448.107]

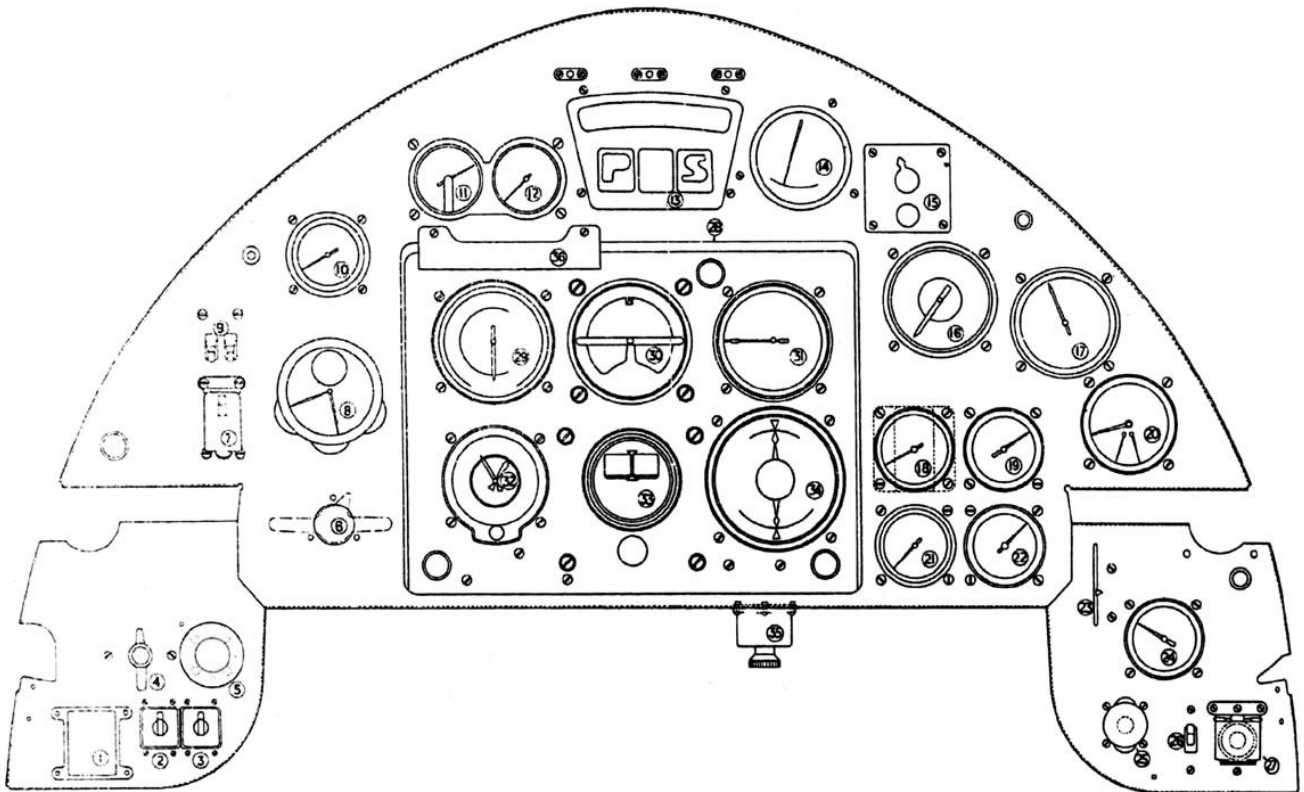
Disposal by fire of six Battles on 4 APR 1946 at Point Cook – Battle(T) P6729/72, and L5594, L5595, V1209, V1241, V1250

BATTLE COCKPIT



[RAAF 000-147-827]

RAAF Fairey Battle instrument panel, with a Flight Manual diagram below



[Huntley, p.19]

BATTLE COLOUR SCHEMES AND MARKINGS

On arrival in Australia from JUN 1940, Battle assembly and acceptance testing was undertaken by 1AP at Geelong, at the recently taken over *International Harvester* factory on North Shore. Aircraft were then flown to 1AD at Laverton for repairs, modification, painting (if required) and ferrying to the user units, which was initially 1BAGS at Evans Head. Many Battles also arrived from prior RAF service in UK and France, suffering from significant corrosion or damage prior to receipt by the RAAF. While considerable effort was expended in trying to rectify problems, several of these were written off or relegated to instructional airframes – **L5142** and **K7705** being the first two for instructional use in 1941 with No.1 Engineering School at Ascot Vale.

Any painting done on arrival prior to issue to the user units was carried out at 1AD by Aircraft Repair Section, which soon with the expansion of 1AD, became *Aircraft Repair Squadron* (ARS). Also from 1940, some Battles were fitted with TR9D wireless equipment at 1AD before ferry to their user unit, and in JUN 1941 the first 1AD modifications were made to Battles for target-towing equipment.²⁵ In JAN 1942 the 1AP North Shore facility was handed over to the USAAF, and Battle assembly was transferred to 1AD at Laverton. But as new combat aircraft flooded in during 1942 (Bostons, Beaufighters and Spitfires), some Battle assembly soon reverted to Geelong and was undertaken by the USAAF, with the aircraft then stored with 1AD Erection and Test SQN at Woolloomanata, at Lara, near Avalon. Once received at Laverton, these aircraft required extensive inspections, adjustments, cleaning and painting.²⁶

The image below shows how some preliminary repainting had been undertaken in UK prior to shipping to Australia. **P2167** had been one of the first aircraft received in APR 1940, and is seen below in the 1AP parking area outside the previous *International Harvester* factory. These Battles are in overall training *Yellow* overpainted on the original B-scheme *green/brown* disruptive camouflage pattern, which is still discernible. This image is probably in AUG 1940, as in early SEP 1940 P2167 departed for 1AD Laverton and was then issued to 1BAGS at Evans Head. It is unlikely any further painting occurred prior to its next scheduled servicing cycle.



[colourised from RAAF image 000-147-828]

Battle P2167 at 1AP Geelong cAUG 1940, with RAF B-scheme camouflage showing through its Yellow top coat

P2167 had been re-painted *Yellow* in UK – no painting was undertaken at 1AP, so this had probably been done by 24 Maintenance Unit at RAF Sealand, Wales. In mid-1940 most Battles had ‘**Type-B**’ (RAF standard) roundels on the upper wings (seen here), but some had ‘**Type-A**’. **P2167** had arrived from UK on 30 APR 1940²⁷; from 1AD it was issued in SEP 1940 to CFS, then to 1BAGS.

Re-painting in UK accords with AHCB’s assessment of Battle **L5387**: “It appears L5387’s quick coat of dull Yellow was applied as part of its preparation for shipping overseas and Australian photos of unassembled Battles already overall *Yellow* appears to confirm this. Further confirmation could be lack of underwing serials.”²⁸ The target towing *Yellow/Black* Battles continued to be received with underwing RAF serials, as these were applied during production, where Battles were fitted with either Type B or D winches and with ventral flag target boxes. A further inconsistency, in addition to fin striping, was that most Battles had *red-blue* **Type-B** (standard RAF) upperwing roundels, while a few were marked with *red-white-blue* **Type-A** (standard RAAF) – perhaps some roundel marking changes did occur at 1AP.

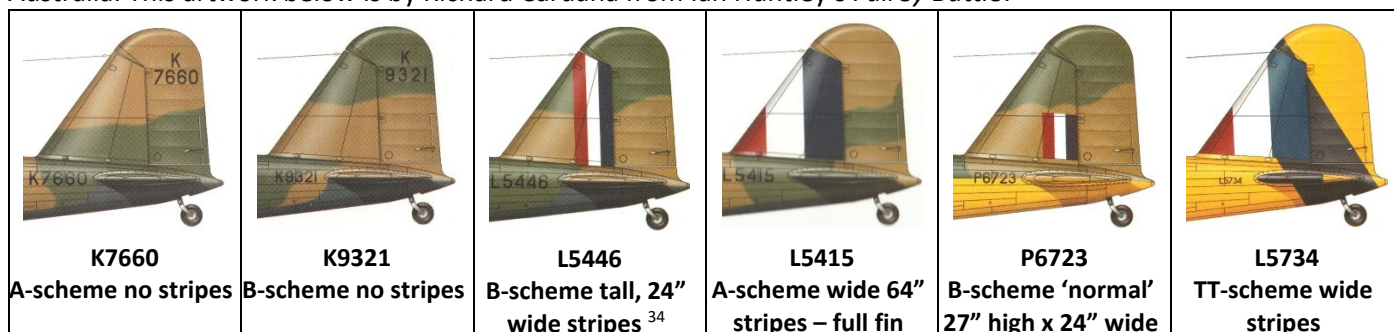
RAF Camouflage

The RAF aircraft delivered under the EATS did not arrive in one standard scheme, but could vary vastly for one aircraft type. For the Battle, some were all over *Yellow* (particularly useful for an RAAF training aircraft), some were still camouflaged, some with camouflaged uppersides and *Yellow* below, and some all over *Yellow/Black* target-tug striping (which again was useful for that role, being generally compliant to RAAF policy). Aircraft were supposed to be brought into conformity with the current RAAF policy at an early inspection and when supplies of the necessary finishes became available – but interim schemes were introduced, and the Battle could appear in as many as these *four* different colour schemes.²⁹ An amendment to Aircraft General Instruction (AGI) No.1 in JAN 1940 had specified that interim markings were to be adopted at the next 40-hourly airframe inspection.³⁰ But a general RAAF shortage of *Yellow* dope was responsible for many delays in the repainting of aircraft.³¹

RAF Battle camouflage was typically Temperate Land Scheme (TLS) disruptive *Dark Earth* and *Dark Green* over *Dull Yellow*. The mid-fuselage demarcation varied, sometimes with a *Yellow* ring around the fuselage roundel and sometimes not. By 1941 the demarcation had moved down from mid-fuselage to the mainplane. Often a fin flash was carried, and sometimes not. The size of the serial number varied from standard size to half size, and often the serial was omitted from the rudder. So Battle trainers came in all sorts of combinations and demarcations, and other markings were applied depending on when, where and who was doing the painting!³² This diversity in Battle markings had been anticipated by the RAAF, when just before arrival of the first Battles, DCAS (Bostock) advised the CAS (Burnett) that: “Ansons and Battles received from Air Ministry for the EATS may be either silver finished or camouflaged”.³³ In the event, no *Aluminium*-finished Battles were received, but many overall *Yellow* trainers were.

Battle Fin Stripe Marking Variations

Over 1938-1940, RAF marking policy was constantly changing, from the Munich Crisis, through the ‘phony war’, to the ‘Battle of Britain’. The examples of Battle fin stripes on camouflaged and TT aircraft became only further diversified when aircraft for the RAAF were subsequently re-marked – in UK before shipping, or after arrival in Australia. This artwork below is by Richard Caruana from Ian Huntley’s *Fairey Battle*.



[adapted from ‘Fairey Battle’, pp.25-28]

RAAF Changes

Those Battles with disruptive pattern camouflage would often retain this scheme until changed by new RAAF policy in 1944. For camouflage in general, the following background may be useful:

- The RAF A.D. drawings appear more to be a guide than for exact adherence, the first sets of camouflage Diagrams were prepared in **JUN 1936**;³⁵
- the RAF then introduced “mirror” disruptive camouflage patterns from **FEB 1937** – the A.P.970 specified two schemes known as ‘A’ and ‘B’, the latter being a mirror image of ‘A’;³⁶
- the term “mirror image” does not mean a reversal of the *colours*, but is a reversal of the coloured *pattern* – to determine a mirror image of a scheme, a mirror held against an ‘A’ scheme will show the ‘B’ scheme, it is not just a matter of using one pattern and transposing the *green* with *brown*;³⁷
- ‘odds’ and ‘evens’ – to ensure a flow of mixed patterns, individual manufacturers would start a production batch with one scheme, swapping the scheme with the next aircraft on line (e.g. Spitfire); but often it was more rigid with an odd serial number in ‘A’ scheme (e.g. Hurricane), or it could be an even number in ‘A’ scheme (Defiant);
- the RAF cancelled the requirement for “mirror” schemes in **JAN 1941**, and manufacturers then selected only one pattern as standard; but with field-repaints the original basic patterns were still generally adhered to;³⁸

- in **JUL 1941**, RAF markings schemes were further simplified by discontinuing the multitude of A.D. diagrams – of which the RAAF had reference of 19³⁹ – with AMO A.513/41 replacing them with a series of five patterns;⁴⁰
- also as RAAF markings were added: e.g Type-A roundels (RAAF ‘M.2’) upperwing; or after repair, touch-ups in RAAF camouflage were made, which would be with RAAF *Foliage Green over Dark Green*, or RAAF *Earth Brown over the Dark Earth* – later by 1943 when aircraft were fully repainted, the RAAF colours were noticeably darker.

The Battle’s dedicated A.D.1160 camouflage in the ‘B’ pattern appears to have become more prevalent in the RAF soon after the RAF JAN 1941 instruction cancelling “mirror” schemes (remembering that Battle factory production had ceased in late 1940). Battle follow-on deliveries continued to reach the RAAF up to the end of 1943, and these were in a mixture of finishes. Initially most were allover *Yellow*, followed by some in RAF *Dark Green/Dark Brown* camouflage (mainly, but not exclusively, the A.D.1160 ‘B’ scheme). The target-towers were initially allover *Yellow/Black* striped, but later with camouflaged upper surfaces and *Yellow/Black* undersides – this latter scheme was the factory delivered scheme from Austin Longbridge plant for the last target-towers of the final L-series batch.

The initial overall *Yellow* aircraft could show camouflage demarcation under the *Yellow* coat, suggesting a hasty repaint, probably applied by a RAF Maintenance Unit in UK prior to shipping. Repainting may have occurred on some aircraft soon after receipt by 1AD at Laverton (as evidently 1AP Geelong did not have a paint shop). The only dedicated target-towing striped aircraft came from the Austin Longbridge production batch between L5598 to L5797, of which the RAAF received 82. These aircraft too were fitted in the factory with towing winches and the ventral flag target box, which enabled consecutive targets to be successively deployed along the towed cable.



[colourised from State Library VIC, via adf-serials]

Differing Battle schemes at 1 Aircraft Park (International Harvester) North Shore, Geelong – probably SEP 1940

This image is probably taken at the same time as L5471 flying overhead International Harvester on 6 SEP 1940 (AWM AC0014), as these 24 Battles are all parked in the same formation, shown by the position of the six target-towers.

This is a true mix of markings in their arrival colours: ten *Yellow* trainers with Type-A upper roundels, and eight with Type-B upperwing roundels; six *Yellow/Black* striped Battle TT.I target tugs all with Type-B upper roundels; and none of these 24 with fin flashes. The details of repainting newly arrived Battles at 1AD Laverton (and to a lesser extent at 1AP North Shore) is not known for certain – but these aircraft had been painted in UK with *Yellow* over camouflage before shipping to their new EATS customers. 1AP had no repainting facility, but possibly hand painting of roundels could have occurred. 1AD at Laverton did have the facility for hangar spray-painting by Aircraft Repair Squadron – the 1AD Unit History A.50 makes several references to aircraft “cleaning and painting”. It is possible that some later *camouflaged* Battle arrivals were repainted in allover *Yellow* at 1AD, but generally the huge influx of aircraft deliveries from UK and US, and also Australian factories, meant that this was not a high priority over 1941-1942.

RAF AIR DIAGRAM CAMOUFLAGE SCHEMES

Aircraft Design Memorandum No.332 (Issue 3) of 15 NOV 1940 (referenced as CD44/41⁴¹), listed the Air Diagram Numbers for camouflage schemes for the different types of aircraft. The design of camouflage or other external colours scheme must be IAW the appropriate Air Diagram.

The RAAF examples are added from RAAFHQ messages **SAS.9984 / DTS 368/41 in DEC 1941**: D.C.2 (A.D.1157), Anson (A.D.1159), with Wirraway and **Battle** (A.D.1160). Subsequently SAS.7396 / DTS 280/42 in JUN 1942 added Hudson and B-17.⁴² This final list was consolidated for all types by AGI C.11 (Issue 4) in AUG 1942.⁴³ However, still with a shortage of the drawings in Australia, the AGI directed that some aircraft should use the closest drawing available.⁴⁴

Air Diagram No.	Types of Aircraft	RAAF Examples
A.D.1157	Twin-engined monoplanes – bombers, general reconnaissance, transports (span 75' and over)	Douglas D.C.2, D.C.3
A.D.1158	Single-engined monoplanes – medium bombers (May 1936) <i>Cancelled c1939, and merged into A.D.1160</i>	n/a
A.D.1159	Twin-engined monoplanes – bombers, general reconnaissance, transports, army co-op aircraft (span less than 75')	Anson, Hudson, Beaufort, Beaufighter
A.D.1160	Single-engined monoplanes – army co-op aircraft, fighters (also incorporated A.D.1158 aircraft types)	Wirraway, Battle, Hurricane ⁴⁵



['RAF in Colour in WW2' website]

Battle L5343 – in 1940 A.D.1160 'B' scheme which had replaced the original A.D.1158

Painting of Battle VO-S/98SQN RAF, Advanced Air Striking Force, France 1940 – RAF Museum Battle is displayed in these markings

A.D.1161	Four-engined monoplanes – bombers, general reconnaissance, transports	B-17 Fortress
A.D.1162	Single-engined biplanes – army co-op aircraft, fighters	Demon
A.D.1163	Four-engined monoplanes – general reconnaissance (flying boats)	
A.D.1164	Twin-engined monoplanes – general reconnaissance (flying boats)	Catalina
A.D.1165	Twin-engined biplanes – general reconnaissance (flying boats)	Seagull V
A.D.1166	Twin-engined biplanes (sesquiplane) – general reconnaissance (flying boat)	
A.D.1167	Single-engined monoplanes – communications aeroplanes, trainers	Wackett
A.D.1168	Twin-engined monoplanes – communications aeroplanes, trainers	Oxford
A.D.1169	Single-engined biplanes – communications aeroplanes, trainers	Tiger Moth
A.D.1170	Single-engined monoplanes – target towing	
A.D.1171	Single-engined biplanes – target, pilotless aeroplanes	
A.D.1172	Single-engined biplanes – Fleet Air Arm	
A.D.1173	Single-engined monoplanes – Fleet Air Arm	
A.D.1174	Single-engined biplanes – general reconnaissance, FAA	
A.D.1175	Twin-engined biplanes – communications aeroplanes, trainers	
A.D.1176	Cancelled, and included in A.D.1159	
A.D.1291	Four-engined biplanes – communications aeroplanes	D.H.86

“Mirror” Images. Where the Air Diagram shows two variations of the scheme, being mirror images of one another, the variations must be allocated to aircraft as directed in the contract instructions.

AIR DIAGRAM A.D.1160 MIRROR SCHEMES

(B) 38295.SHT.1

SPARES STONES REF NP TO DRAWING LIMITS

DIMENSIONS AND DATA, AND ADDITIONAL CAMOUFLAGE ABREVIATION, BATTLE, ETC. MARKS, ALSO DRAWING VARIANTS ETC. AND LATER SCHEMES — SEE OTHER SHEETS

THE FAIREY AVIATION CO LTD

ISSUE NO
DATE
A.M. MOD. OR AMEND. NO
A/C NO. OR PART NO. ASSY NO. A/C NO. OR PART NO. ASSY NO.
BATTLE A 38295 BATTLE A 38290

THE FAIREY AVIATION CO LTD

REP.	DESCRIPTION	PART NO.	ISSUE	REMARKS
1	K 7558			
2	ISOLATED DISK FOR AIRCRAFT LANDING — 27" x 18" x 3/16" THICK			
3	WHERE VERTICAL DIMENSION LISTS — 18" x 11" x 3/16" THICK			
4	A.S.F. FOR 170000 3" x 1/2" WITH ENDS 10" LONG (SEE APP. 1)			
5	3" x 1/2" (SEE APP. 1)			
6	PROPELLER "MOT" TYPE 40" DIAMETER			
7	MATERIALS (SEE APPENDIX 1)			
8	BATTLE CAMOUFLAGE			

AIRCRAFT: **BATTLE**

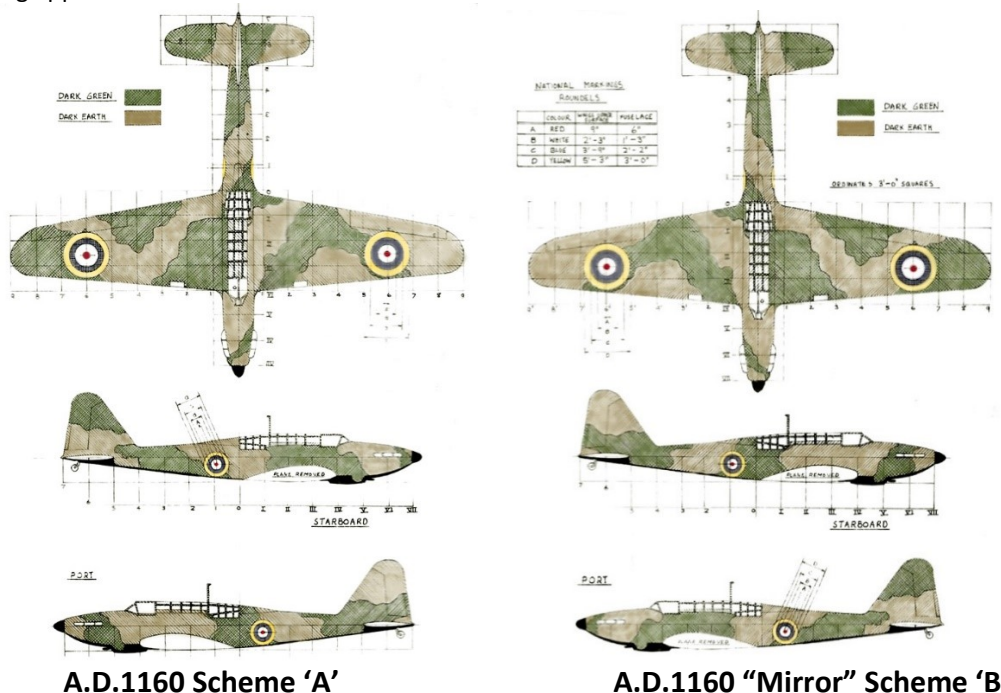
TITLE: **AIRCRAFT CAMOUFLAGE SCHEME (1937)**

(B) 38295.SHT.1

Fairey drawing No. (B) 38295 of 'B' scheme A.D.1160

A.D.1160 Air Ministry Diagram for Single-engined Monoplanes – Army Co-op Aircraft, Fighters ⁴⁶

Fairey (B)38295 was a version of A.D.1158, dated 3 AUG 1937, Scheme 'B' the "mirror" image of Scheme 'A'. The original drawings were traced by markings historian Ian Huntley in 1949, with additions made in 1972. The A.D.1158 (dated c MAY 1936) was for 'Single-engined monoplanes – medium bombers', the 'A' pattern being for even serials, and 'B' for odd serials, however this often ran out of sequence.⁴⁷ The A.D.1158 scheme was later cancelled c1939, and merged into the A.D.1160 drawings. **A.D.1160 mirror patterns are shown below** for comparison. (Roundel sizes here are given as **35" fuselage, 63" upperwing, 48" underwing**, centre 72" in from wingtip.) From JAN 1941 mirrors were cancelled, and although Battle production had ceased in SEP 1940, from images any major repainting appears to have standardised on the 'B' scheme.⁴⁸



AIR DIAGRAM A.D.1160 / A5192 SCHEMES

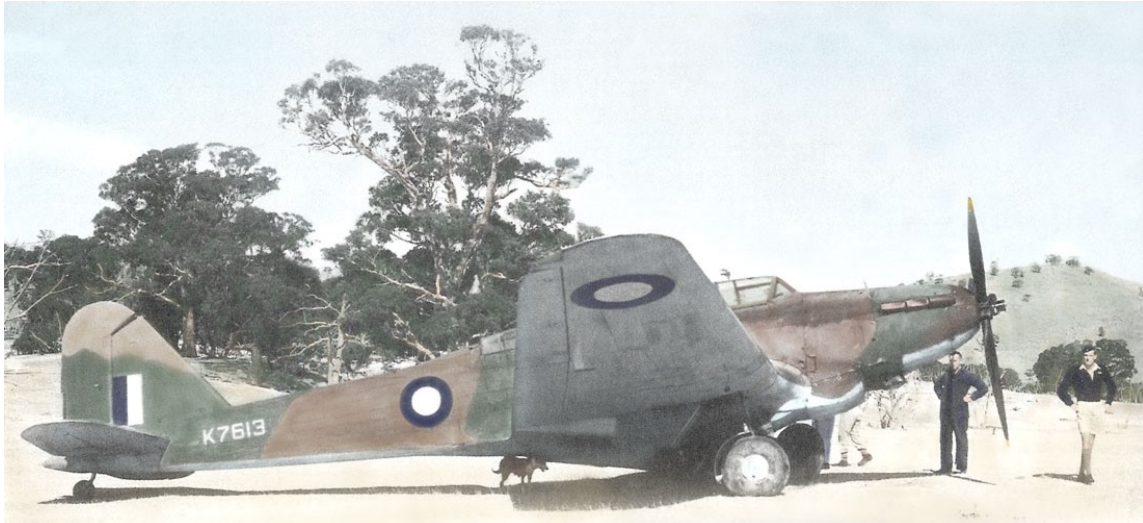
Although “mirror” schemes were discontinued by the RAF in 1941, Battles in the A.D.1160 ‘B’ scheme appears more prevalent – ‘B’ may have been applied if repainting was required, but ‘A’ schemes could remain if touched-up until aircraft were retired from service. While many Battles were received at 1AP in all over *Yellow* covering earlier camouflage, in the rush to ship aircraft for the demanding EATS requirements many were also delivered in disruptive *green/brown* finish. These aircraft were trainers and not used for towing targets, as there were ample *Yellow/Black striped* tugs at each BAGS unit. The image below shows both A.D.1160 schemes in service at 2BAGS/3AOS over 1943-1944. As seen on lead aircraft ‘25’, on the starboard side the ‘A’ fuselage camouflage colours sloped forward (when looking from the top); ‘B’ scheme sloped aft as seen on the other two aircraft ‘09’ and ‘970’. In RAAF service, RAF *Dark Green* would typically be touched up or over-painted with *Foliage Green*, and RAF *Dark Earth* would be replaced by the RAAF more ‘chocolatey’ shade *Earth Brown*. A.D.1160 was re-designated by the RAAF as **Drawing A5192**.⁴⁹



[colourised from Lever p.85]

Battles N2225 ‘25’, P6509 ‘09’ and L4970 ‘970’ at 2BAGS/3AOS Port Pirie over 1943-1944

The retention of **A.D.1160 ‘A’ scheme** is of interest as N2225 was a relatively late delivery arriving in Australia in AUG 1942, whereas the ‘B’ scheme aircraft, P6509 and L4970, had been earlier deliveries in MAY 1941. All three brought into line with RAAF policy **AGI C.11 Issue 4** (of 31 AUG 1942) with *Sky Blue* undersides, and *Sky Blue* ‘codes’, and camouflage appearing to be the darker/richer RAAF colours. In SEP 1942, *Red* was deleted from National Markings, so these aircraft carry ‘Pacific’ *blue/white* roundels – the front two 3:5, the rear 1:2. This shows how far forward large upperwing roundels (probably 63”) were near to the leading edge, to always clear the ailerons. In DEC 1943, 2BAGS transformed into 3AOS, remaining at Port Pirie. Note that there is no application of *Yellow* trainer bands, probably as both 2BAGS then 3AOS had Reserve Squadron commitments.



[colourised from Pentland Vol.2 p.114]

K7613 in A.D.1160 ‘B’ scheme of 3AOS, forced landed with an engine failure, FEB 1944


K7613, transiting on 28 FEB 1944 from 3AOS Port Pirie to 1CRD (Werribee VIC) for conversion to components, forced landed near Landsborough VIC. Over 1943, the ratios of ‘Pacific’ roundels varied, here is the 1943 1:2 proportioned roundel with the *White* half the diameter of *Blue*. K7613 has RAAF specific sized markings – not just adapted from the previous RAF markings – 24” roundel, fin flash 24” high x 16” wide, probably underwing 48” roundel. Top of the tail was lighter, a faded *RAF Dark Earth*.

RAAF CAMOUFLAGE AND MARKINGS

National Markings. The designation of RAF roundels we know as ‘A’, ‘B’, ‘C’, etc was developed in the 1950s, purely for simplicity. These British ‘non-official’ designators are attributed to author Bruce Robertson, used from his early benchmark *Harleyford Aircraft Camouflage and Markings 1907-1954*. The official terminology was both cumbersome and ambiguous – the same term could apply to different roundels at different times,⁵⁰ so Robertson’s invention simplified this. As the RAAF followed markings policy of the RAF, major changes were about to occur from 1939. The Munich crisis of SEP 1938 saw the RAF adopt camouflage finishes for most of its front-line aircraft, and also the *Red* and *Blue* roundel on wings and fuselage as the wartime National Marking.⁵¹ The RAF formalised this on **27 APR 1939** as **AMO A.154/39 – Identification Markings on Aircraft of Operational Units**. In A.154/1939’s revision of all *British National Markings* was introduction of a *Yellow* surround for roundels on camouflaged aircraft and introduced *Red/White/Blue* stripes on the fin.⁵² *National Markings* of RAAF aircraft were then similarly changed soon after declaration of war with Germany. On 12 SEP 1939, Directorate of Technical Services in RAAFHQ advised that for top surfaces and fuselage the roundel would be *Red/Blue* (i.e. what would become the “Marking M.1”), and roundels on undersides would be *Red/White/Blue* (“M.2”).⁵³ While this was formalised by the policy **Aircraft General Instruction (AGI) No.C.11 of 22 SEP 1939**, these ‘M-series designators’ were not mentioned until the **AGI C.11 of OCT 1940**.

Battle Deliveries. During 1941, the RAAF “M” designators appear to have been dropped, and the RAAF accepted the Battles in whatever RAF delivery scheme they came in (*Yellow* or camouflage): typically with ‘Type-A’ roundels underwing, ‘Type-A’ or ‘Type-B’ upperwing, ‘A’ or ‘A1’ on fuselages, and with and without red-white-blue fin flashes. *Yellow* was deleted from RAAF roundels in JUN 1942 (i.e. the ‘Type-A1’ was discontinued in favour of the ‘A’), and the ‘Type-A’ was applied directly to camouflage finishes. In SEP 1942 the *Red* was deleted also, making the RAAF Pacific roundel in 3:5 proportions, with the fin flash then being applied in two-colour *Blue/White*, of equal widths.

In past articles in this series, individual aircraft camouflage and marking details for the RAAF from the late 1930s have been covered, often resulting from the origin of the aircraft, with the changes up to 1945. Below is a chronology of RAAF policy as it related to the Battle, the first aircraft arriving from mid-1940 (while terminology of M1, M2 and M3 roundels was being introduced, and then soon abandoned by 1942 so we can discuss in the terms of the easier RAF ‘Type-A’, ‘A1’ and ‘B’ descriptors), through to final Battle service use over 1944-1945.

Year	Change	Policy and References
1940	<p>RAAF camouflage colours were <i>Camouflage Green</i> and <i>Camouflage Brown</i>, RAAF copies of RAF <i>Dark Green</i> and <i>Dark Earth</i> colours. This was one scheme delivered from the RAF over 1940-1943; others were overall trainer <i>Yellow</i> and <i>Yellow/Black</i> striped target tugs.</p> <p>JAN 1940. Introduction of allover <i>Yellow</i> for Elementary Trainers, and this would apply to most Battles.</p> <p>OCT 1940. Policy AGI No. C.11 <i>Issue 3</i> specified trainer schemes E.1 (overall <i>Yellow</i>) E.2 (36” <i>Yellow</i> bands), and detailed National Markings: <i>Marking M.1</i> – <i>Blue</i> ring surrounding a <i>Red</i> centre, <i>Red</i> to be 2/5 of the <i>Blue</i> circle, on upper wings, ‘Type-B’ roundel. <i>Marking M.2</i> – <i>Blue</i> ring surrounding a <i>White</i> ring around a <i>Red</i> circle, proportions 1:3:5, ‘Type-A’ roundel. <i>Marking M.3</i> – three colour circle (i.e. <i>M.2</i>) surrounded by a <i>Yellow</i> ring, proportions as for <i>M.2</i>, i.e. 1:3:5:7 proportions, ‘Type-A1’ roundel. <i>Marking M.4</i> – three-colour stripes on fin (Seagull only). <i>The significance is that Battles were being received with upperwing (‘A’ RAAF trainer standard) or ‘B’ (RAF std).</i></p> <p>NOV 1940. The RAF’s Aircraft Design Memorandum (ADM) No.332 specified Air Diagrams for camouflage schemes for different types of service aircraft. The RAF Temperate Land Scheme (TLS) mandated by RAF AMO A.926 in DEC 1940 – was upper surfaces in Ministry of Aircraft Production (MAP) <i>Dark Green</i> and <i>Dark Earth</i>.</p>	<p>AGI No. C.11 A/L.5 of 26 JAN 1940, 150/4/658.</p> <p>RAAFHQ Aircraft General Instruction No. C.11, Issue 3, of 3 OCT 1940, AFHQ file 1/501/329. Para2(i) stipulated grey serial number and code letters on camouflaged aircraft.</p> <div style="text-align: center;">  </div> <p>RAF ADM 332 (Issue 3) of 15 NOV 1940, External Colour Schemes of Aircraft, RAAFHQ file 150/4/852 AGI C.11, Standard Finishes and Markings. AMO A.926/40 of 12 DEC 1940 replaced A.154/39.⁵⁴</p>

<p>1941</p>	<p>JAN 1941. The RAF cancelled “mirror” camouflage schemes in JAN 1941 and manufacturers selected only one pattern as standard. The Battle was out of production by this stage, but camouflage repaints appeared to standardise on the A.D. ‘B’ scheme.</p> <p>RAAF adopted 1941 RAF Directorate of Technical Services policy in DTS 368/41 and standardising for the first time a RAAF camouflage scheme – <i>Foliage Green</i> (K3/177, to replace RAF <i>Dark Green</i>), <i>Earth Brown</i> (K3/178 replacing <i>Dark Earth</i>) and <i>Sky Blue</i> (K3/195 instead of RAF <i>Sky</i>). Only Battles and Wirraways were to carry underwing roundels. Historian Peter Malone notes that K3/177 Foliage Green was from four different paint manufacturers, not always meeting the RAAF spec for sheen and hue, so there was some variation in the colour that was applied in service.⁵⁵</p> <p>DEC 1941. Directive to 51(Reserve)SQN of <i>no</i> requirement for <i>Yellow</i> bands, and applied to all Reserve squadrons.</p>	<p>In 1938, the scheme specified for the Battle was the A.D.1158, but this was soon abandoned and merged in with the A.D.1160 scheme. Also the mirror ‘A’ and ‘B’ schemes were discontinued from 15 JAN 1941.⁵⁶</p> <p>RAAFHQ DTS directive 368/41, file 150/4/852(53A) of 23 DEC 1941, letter S.A.S.9984, paras.2 and 4.</p> <p>RAF ADM 332 (Issue 3) of 15 NOV 1940, External Colour Schemes of Aircraft.</p> <p>RAAFHQ Letter 36/501/244 to CO 51(R)SQN, cDEC 1941, files as 1/501/329(56A).</p>
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[colourised from AWM 136850]

1942 – L5305 ‘10’ bomber/gunner trainer 3BAGS on 23 SEP 1942. One of few with standard RAF 27”x24” fin flash, very unusual *Red* fuselage 36” band with *White* training number, underwing repair with no roundel. *Conversely*, the band could possibly be *Black* with *White* number. *Yellow* had been removed from markings to make the type-A fuselage roundel – and a little tardy, as on **19 SEP 1942 RAAFHQ had directed for Red to be removed from all markings.**

<p>1942</p>	<p>JUN 1942. Deletion of <i>Yellow</i> from RAAF roundels.</p> <p>JUL 1942. Changes from Type-A1 roundel to Type-C1 National Markings – no Battles were received with C or C1.</p> <p>AUG 1942. <i>AGI No.C.11 Issue 4:</i> operational aircraft <i>Red/White/Blue</i> National Markings, delete <i>Yellow</i> outer ring.</p> <ul style="list-style-type: none"> ○ Upper surfaces – <i>Red</i> was dropped, so the roundel was specified as <i>Matt White</i> and <i>Matt Dull Blue</i>, with the <i>White</i> diameter to be 2/5 of the <i>Blue</i>, Type-B ratio – the first ‘Pacific’ Roundel. ○ Fuselage sides – <i>Dull Red</i>, <i>White</i>, and <i>Dull Blue</i> roundels in the 1:3:5 proportions. ○ Undersurfaces – the same <i>Dull Red</i>, <i>White</i>, and <i>Dull Blue</i> roundels but only for day fighters and trainers, not for bombers or seaplanes. ○ Fin markings – all aircraft marked with <i>Dull Red</i>, <i>White</i> and <i>Blue</i> stripes of same width <i>Red</i> leading. <p>This <i>Issue 4</i> of the <i>AGI</i> reiterated 36” <i>Yellow</i> trainer bands.</p> <p>SEP 1942. On 19 SEP 1942 <i>Red</i> deleted from National Markings – <i>Blue</i> and <i>White</i> roundel with <i>White</i> diameter 3/5 (3:5) of the <i>Blue</i>. Roundels, with <i>Blue/White</i> fin stripes – <i>Matt White</i> K3/170 and <i>Matt Dull Blue</i> K3/197.</p>	<p>RAAFHQ DTS 280/42 of 18 JUN 1942, filed on 1/501/329(63A); 1TG signal T.670 19 JUN 1942; Signal School Point Cook A.50, 29 JUN 1942.</p> <p>RAF AMO A.664/42 of 2 JUL 1942, para.5.⁵⁷</p> <p>RAAFHQ Technical Order AGI No.C.11 (issue 4) of 31 AUG 1942.</p> <p>Colours were specified as <i>Matt Dull Red</i> K3/214 or K3/199, <i>Matt Dull Blue</i> K3/196 or K3/197.</p> <p>RAAFHQ message T520, file 0947/19 (30A), of 19 SEP 1942.</p>
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<p>1943</p>	<p>JAN 1943. RAAF squadron code letters – three letter codes introduced in <i>Sky Blue</i> K3/195, two letters signifying the squadron/unit, the third as an individual aircraft identifier.</p> <p>JUL/AUG 1943. Cease re-camouflaging US aircraft arriving in OD/NG – the standard RAAF camouflage colours up to 1943 were uppersurfaces <i>Earth Brown</i> and <i>Foliage Green</i>, undersides <i>Sky Blue</i>; in DEC 1943 in line with 1940 US colours Spec 24114 (Air Corps Bulletin 41, 22 OCT 1940) this was changed to uppersurfaces <i>Green</i>, undersides <i>Grey</i>. ('Green' in this context refers to <i>Foliage Green</i> for Australian refurbishment, <i>Olive Drab</i> from US factories.)</p> <p>JUL 1943. Already some roundels were 1:2 ratio, from converting Type-C1 roundels on RAF deliveries. RAAFHQ AMEM specified that the roundel <i>White</i> circle was to be smaller, 2/5 the size of the <i>Blue</i>, the 2:5 roundel.</p> <div data-bbox="304 645 807 869" data-label="Image"> </div> <p style="text-align: center;">Ratio of the <i>White</i> to the <i>Blue</i>, 3:5 and 2:5</p>	<p>Air Force Confidential Order (AFCO) A.3/43, Code Letters for Operational and Reserve Squadrons, of 4 JAN 1943, 62/1/271.</p> <p>Request from HQ 5MG 300/3/1 of 20 JUL 1943, 1/501/329 (89A), to cease re-camouflage.</p> <p>RAAFHQ DTS Special Instr Gen/8 (SIG/8) 26 AUG 1943: Aircraft finished in American camouflage scheme are to be accepted and not to be re-camouflaged in RAAF scheme during erection. Aircraft will be finished in RAAF camouflage when repainting required or during major overhaul.</p> <p>RAAFHQ AMEM DTS 1/501/329 SAS 13552, 8 JUL 1943, adopted from RAF AMO A.664/42, of 2 JUL 1942. Further, in NOV 1943 SEAC specified the size of its new roundel (based on that of the RAAF) for 'medium' aircraft as approx. 2:5 32" (and fin flash 24" high x 22" wide) – Air Force Order (India) No.357. RAAF DTS specified 32" Blue roundel, 12" White, i.e. 3:8 (approx 2:5) and fin flash 24"x16".⁵⁸</p>
<p>1944</p>	<p>MAY 1944. Revision of AGI "Camouflage Schemes and Identification Markings" – <i>for the Battle</i>, two schemes were specified by this AGI: Appendix E overall <i>Yellow</i> for "TT Training", and Appendix C <i>Foliage Green</i> for "TT Operational".</p> <p>Appendix E – overall Yellow: Identification numbers (serials and training numbers) were to be in <i>Black</i> on the fuselage, with serials also on undersurfaces of mainplanes.</p> <p>Appendix C – Foliage Green: Identification markings in <i>Medium Sea Grey</i>; roundels and fin markings were to be applied. There appear to have been few overall <i>Foliage Green</i> Battles – illustrated here is V1219 of AGS.</p> <p>TT aircraft were camouflaged, when on OTUs and in operational areas, and code letter colours were changed by this AGI from <i>Sky Blue</i> to <i>Medium Sea Grey</i>.</p> <p>OCT 1944. RAF camouflage Scheme and Marking changes.</p>	<p>RAAFHQ T.O. AGI Pt 3(c), Instruction 1, file 150/4/5056 (1A), of 26 MAY 1944.</p> <p>Also issued as DTS Special Instr Gen/34, 1 MAY 44. Accompanied by RAAF Diagram A-5524 (4 sheets) of MAY 1944.</p> <p>RAF Air Publication A.P.2656A of OCT 1944.⁵⁹</p>
<div data-bbox="118 1509 1485 1883" data-label="Image"> </div> <p style="text-align: right;">[Green markings reference used for this artwork: Lever, p.122]</p> <p>1944 – V1219 with AGS at West Sale over MAR-AUG 1944, was painted IAW 'Appendix C' of the MAY 1944 AGI</p> <p>The reason why Battle V1219 (note the small serial number) was considered as "Operational" and painted all-over <i>Foliage Green</i> while at AGS is uncertain, perhaps it was being prepared to be sent north to a CU but there is no record of this appearing on the E/E.88. In any event, V1219 fatally crashed on 18 AUG 1944 near Seaspray VIC, and was converted to components.</p>		

RAAF CAMOUFLAGE 1940-1944

For the Battle in RAAF service, colours turned ‘full circle’. However, the varying iterations of the National Markings helps to differentiate these schemes.

- The first Battle arrivals in 1940 were generally in overall RAF trainer *Yellow*, applied over camouflage in UK before shipping to Australia. This *Yellow* had been applied hurriedly, and often the camouflages surface below showed through.
- Some target towing aircraft were received in *Yellow/Night* striping, often having been produced in this scheme during production, and done in a professional and glossy style.
- But the RAF AMO changed this TT scheme in 1941 to re-introduce camouflage on the upper surfaces.
- In the haste of delivering EATS orders, it appears there was no time to apply overall *Yellow* to all the camouflaged Battle trainers, and some arrived in their RAF green/brown shades, and sometimes RAAF trainer bands were then added.
- Later some Battles were affected by the RAAF AGI in 1944, which introduced bespoke colours – RAAF *Foliage Green* and some very dark colours at AGS West Sale, and a completely stripped *natural metal* Battle at 1AOS. But this same AGI re-introduced overall trainer *Yellow* for aircraft in the training units, and some Battles received this latest scheme – thereby **reverting to overall Yellow**.

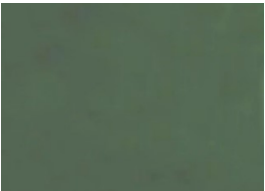
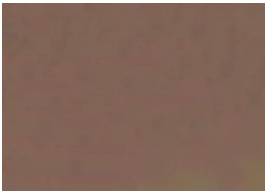



[colourised from RAAF image 000-147-840]

Training number ‘38’ probably was K7638 of 3BAGS, cAUG-SEP 1942

The *Yellow* surround of the 35” Type-A1 roundel has been overpainted making a 25” Type-A fuselage roundel; the upper 63” roundel has *Red* overpainted by *White* to be **one of the first examples of the ‘Pacific’ roundel**; training number ‘38’ was 30” high. Upperwing roundels tended to be larger than underwing roundels, as they were further inboard and extended from the leading edge to the aileron. ‘38’ has the early production rear gun mount, and the later carburettor intake – image is **cAUG-SEP 1942** as: JUN 1942 *Yellow* removed from roundels, AUG 1942 *Red* removed from upper wings, SEP 1942 *Red* removed from all markings.

Across the RAAF, **by JUL 1940** camouflage had been applied and was being confirmed by the units to RAAFHQ. The overland camouflage for some **Battles** received from UK from 1940 was *Dark Green* (DG)/*Dark Earth* (DE), however the RAAF departed from British schemes by introducing *Sky Blue* (K3/195) for undersurfaces.⁶⁰ For their EATS training role, many early Battles were received in allover *Yellow* applied over the RAF camouflage, however others had RAF Temperate Land Scheme (TLS) camouflage with *Yellow* trainer bands and *Yellow* training numbers.

 <p>K3/216 RAF Dark Green 33B/201</p>	 <p>K3/209 RAF Dark Earth 33B/198</p>	 <p>K3/195 RAAF Sky Blue</p>
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1940 RAAF camouflage colours for RAF Temperate Land Scheme (TLS)

RAF colours were identified by the name, but for inventory had stock numbers which varied with the amount that was ordered.⁶¹

RAAF TRAINER BANDS, TRAINING NUMBERS... AND OVERALL YELLOW

Training numbers in the RAAF started in the mid-1930 with 1FTS at Point Cook, and applied to the aircraft then on strength – Avro Cadets, D.H.60 Moths, and Wapitis. With War, in 1940 1FTS became 1SFTS as the first advanced “Service” Flying Training School within the RAAF’s EATS contribution. Below is a summary in the use of *Yellow*.

JAN 1940. Amendment List No.5 to AGI C.11 introduced overall *Yellow* for **elementary trainers**, with *Yellow* trainer bands on the fuselage and mainplanes in the interim.⁶²

MAR 1940. Reference is made from RAAFHQ Director of Technical Services (DTS) to AMOE regarding “*Yellow* bands” to be used by AGI C.11 (as introduced by A/L.5), which were to be painted on training aircraft around the fuselage and wings. It was noted that this had not been done to date as supplies of yellow paint had not been obtained. Also reference was made that Tiger Moths being delivered from DH at Bankstown were finished in overall *Yellow*.⁶³

OCT 1940. Release of **AGI C.11 Issue No.3** stipulated two training schemes. **Scheme E.1** was to be the permanent scheme for training aircraft, with the entire airframe to be finished in *Yellow*. **Scheme E.2** was an interim finish comprising “a *Yellow* band three feet in width” around the fuselage and around the mainplanes.⁶⁴ These 36” E.2 trainer bands appear to have been used by few Battles.



[colourised from RAAF image]

1942 – R3949 of 1BAGS transiting Amberley in JAN 1942, with 36” training bands, camouflaged in A.D.1160 ‘A’ scheme

R3949, a bomber trainer, received by 1BAGS in SEP 1941, served its war at Evans Head until converted to components in 1944. This scheme of 36” *Yellow* training bands on wings and fuselage was applied to few Battles. Camouflage is A.D.1160 ‘A’ scheme, the Battle behind is in ‘B’ scheme, and another has the wider fin flash. Dated JAN 1942, as the USAAF P-40Es were departing north.

OCT 1940. Training Numbers. AGI C.1 *Issue 3* also stipulated “training aircraft are to have the **last two numbers** of their identification numbers painted on both sides of the fuselage forward of the national markings”. There were some caveats: one digit could be used if serial number was under 10; if more than one aircraft in the unit had the same ‘last two’, then three numbers could be used; numbers were to conform to the size of squadron code letters, i.e. under 48” in height.⁶⁵ However, there was probably confusion over the *colour* of the training numbers:

- Both the Anson and Battle were listed as ‘Training Aircraft’ as ‘*Scheme E.1*’ with a permanent scheme of overall *Yellow*, or ‘*Scheme E.2*’ as an interim finish with *Yellow* trainer bands. The “training numbers” were to be Black on E.1 *Yellow* or *Aluminium* finishes, and **Yellow** on camouflage.
- The next issue of this AGI in AUG 1942 referred to ‘Second Line Operational Aircraft’ and ‘Training and Communication Aircraft’, but camouflage and *Yellow* trainer bands were specified for both categories – the difference being for second line aircraft the undersurfaces were *Sky Blue* (K3/195), for trainers undersurfaces were to be *Yellow* (K3/185). Also this revised AGI specified that “training numbers” were to be marked in *Medium Sea Grey*, again it is likely that changing the colours of numbers from *Yellow* did not occur.

DEC 1941. RAAFHQ AMOE Letter S.A.S.9984 to all flying training units detailed colour schemes and camouflage of second line aircraft. This replaced the RAF camouflage colours with RAAF *Earth Brown* (K3/178) and *Foliage Green* (K3/177); and that undersides were to be *Sky Blue* (K3/195), noting *Yellow* finishes were no longer to be used.⁶⁶

DEC 1941. Reserve Squadrons. After a query from 51(R)SQN, the unit was advised that there was no requirement to have *Yellow* trainer bands.⁶⁷ This evidently applied to **all the Reserve squadrons** that were then starting to form.

JAN 1942. RAAFHQ noted that *Yellow* painting was “gradually being implemented”, with recommendation from DTS to DCAS “to adopt the English scheme for training aircraft” of *Yellow* undersides with camouflage on the upper surfaces.⁶⁸ *Yellow* undersides were implemented for elementary trainers – Wacketts and Tiger Moths – but not for SFTS trainer aircraft with Reserve squadron commitments.

JUN 1942. DTS noted the removal of the *Yellow* ring from the fuselage roundel, “IAW instructions issued by the Allied Air Command”⁶⁹ – this deleted the RAAF M.3 roundel (i.e. the Type-A1), reverting to the M.2 (Type-A).

AUG 1942. Release of **AGI C.11 Issue No.4** formalised some of the earlier decisions that had been discussed, inter alia *Foliage Green/Earth Brown* upper surfaces and *Sky Blue* lower surfaces; the 36” *Yellow* band around the fuselage and wings; and a 9” wide *Yellow* band longitudinally around the nose and on wing leading edges out to the engines.⁷⁰ The last instruction is seen mainly on Oxfords (to a lesser extent on Ansons), and within the nose *Yellow* band was the ‘last three’ as a training number. But other aspects of this order were apparently not necessarily implemented:

- as stated above, the “**training number**” was to be in *Medium Sea Grey*, but up to this stage training numbers were *Yellow* (and it is sometimes difficult to distinguish *Yellow* and *Grey* from black-and-white imagery), so it is possible that some training numbers may have been *Yellow*, others *Grey*;
- also policy stated that for Trainer and Communication Aircraft “the **undersurfaces** are to be camouflaged *Yellow* (K3/185)” – this did not apply to the Anson or Battle at this stage due to Reserve squadron commitments, but there were anomalies as this should have applied to SFTS Oxfords; and
- at OTUs the RAAF followed the RAF policy of using **operational colours** and markings.

MAY 1944. The next major revision of RAAF camouflage and markings was **Aircraft General Instruction (AGI) Part 3, Section (c), Instruction No.1**. The different roles of aircraft were detailed in the appendices: Appendix “C” stipulated ***Foliage Green*** to be applied to attack aircraft, and *inter alia*, Communication aircraft – the Battle with Communications Units (CUs); and Appendix “E” ***Yellow*** for all training aircraft, with training numbers (or letters) in *Black* to be conspicuous and placed forward of the roundel⁷¹ – however, because of the positioning of the fuselage roundel, *aft* of the roundel was more conspicuous. By this late in the War, the Battle generally had standardised with a 24” diameter 1:2 fuselage roundel, fin flash 18” x 16” (8” wide per colour); here the adjacent training number was 20” high, 13” wide and in a 3” stroke; serial number was the standard 8”x5”.⁷² (Pentland observes that at AGS, training numbers would be *Medium Sea Grey* and serial numbers in *Yellow* – “the usual practice in this unit because of its **dark-coloured** aircraft”,⁷³ probably a reference to the darker RAAF *Foliage Green* and *Earth Brown* colours.) The MAY 1944 AGI Appendix “E” specified *Yellow-Black* striping for target-towers (more specifically than the previous AGI C.11 Issue No.4) by stipulating that the centreline of one stripe should intersect the centre of the port roundel.



[colourised from Lever p.171]

1945 – AGS L5772/'60' *Yellow* (with apparently non-standard TT wing striping) forced landed near Lakes Entrance, APR 1945

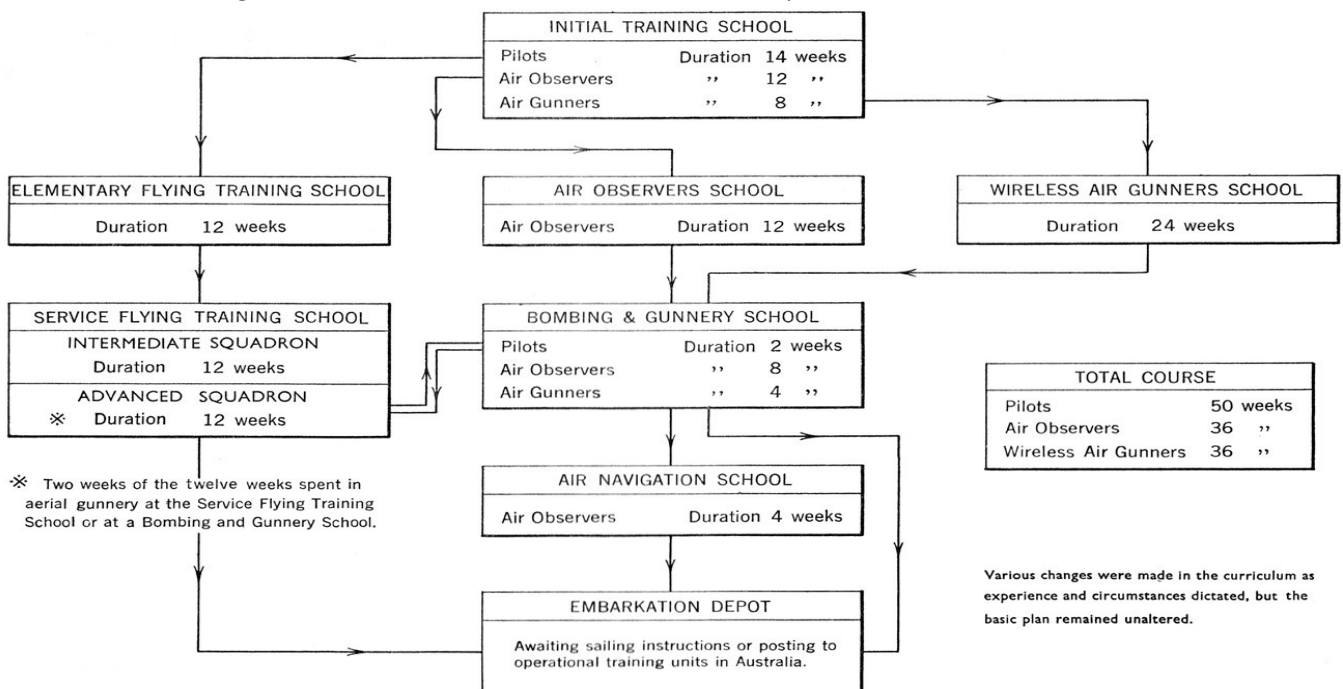
RAAF EATS TRAINING

As related in our article on the Anson,⁷⁴ under the EATS the Commonwealth countries undertook aircrew training to predominantly supply trained aviators to the RAF. Accordingly, a variety of Schools were established around Australia for pilot, navigator/observer, air gunner and wireless operator/air gunner training, along the lines of the RAF syllabi. To organise the EATS (which Canada was known as the British Commonwealth Air Training Plan, BCATP or 'The Plan'), the conference in London in NOV 1939 agreed all the various dominion training responsibilities – Australia, Canada and New Zealand – with Australia to provide 40 percent of the output from the dominions.

Training Establishment	Number of Units
Initial Training School (ITS)	5
Elementary Flying Training School (EFTS)	12
Service Flying Training School (SFTS)	8
Air Navigation School (ANS) ⁷⁵	3
Air Observer School (AOS)	2
Bombing and Gunnery School (BAGS)	3
Wireless Operator-Air Gunner School (WAGS)	3

The original finishing date of the EATS had been MAR 1943, but the MAY 1942 Ottawa conference extended this to MAR 1945.⁷⁶ For the Australian training commitment to the scheme, a variety of RAF training aircraft were being imported for EATS training – Ansons, Oxfords, Battles and Tiger Moths,⁷⁷ all of which retained their RAF serial numbers and generally delivered camouflaged. There was a brief British embargo in 1940 on the export of aircraft, but the flow soon resumed.⁷⁸ The throughput planned for the RAAF contribution to EATS was to provide 1120 crewmen every four weeks – 336 pilot trainees for the EFTS, and 280 pilot trainees for the SFTS.⁷⁹ 184 observers and 320 WAG trainees were also under training to then converge their training at a BAGS.⁸⁰ In addition to the original three dominions, Southern Rhodesia also joined the scheme to establish four EFTS, four SFTS and a combined AOS/WAGS unit.⁸¹ RAAF pilots could complete their pilot training at an SFTS in Australia, Canada or Southern Rhodesia.

Gunners. After trainee gunners had successfully passed 8 weeks recruit training, 'groundschool' and flight grading at Initial Training School (ITS), then 24 weeks at WAGS, training was completed with 4 weeks at BAGS. **Observers.** Observer training comprised 12 weeks at ITS, 12 weeks at Air Observer School (AOS), 8 weeks at BAGS, and then 4 weeks at Air Navigation School (ANS). Both gunners and observers would graduate to the pass to an Embarkation Depot. The RAAF Official History traces the progression of aircrew trainees through the Australian EATS model, from ITS through the various Schools, to the Embarkation Depot, and is shown below.



[RAAF 1939-1942 by Gillison, p.108]

Aircrew trainees undertook ITS training, for grading and streaming into their best assessed mustering. EATS crewmember training schools specialised on the relevant aircrew syllabi, flying typically Battles, Ansons, Oxfords, and some with Wacketts, DC-2s and Dragons. SFTS units/Reserve squadrons were covered in detail in the Anson article, the 'other aircrew' Schools that were established are shown below, with known [Reserve squadron numbers in blue](#).

School	Function	Unit and Reserve SQN	Course Details ⁸²
AOS	Air Observer School	1AOS - Cootamundra - 73(R) 2AOS - Mt Gambier SA - 72(R) 3AOS - Port Pirie SA - 55(R)	12-week (O) Course, every 4 weeks, for training in basic navigation, aerial photography. To gunnery training at BAGS for 8 weeks.
WAGS	Wireless Air Gunnery School	1WAGS - Ballarat VIC 2WAGS - Parkes NSW 3WAGS - Maryborough QLD	24-week (WAG) Course for wireless/radio operation and air gunnery training, graduates to BAGS for 4 weeks.
BAGS	Bombing and Gunnery School	1BAGS - Evans Head NSW - 52(R) 2BAGS - Port Pirie SA - 54(R) 3BAGS - West Sale VIC - 53(R)	Pilots (2 weeks if required), Observers (8 weeks) and WAGs (4 weeks) for bomb-aimer and air gunnery training;
ANS	Air Navigation School	1ANS - Parkes NSW 2ANS - Mt Gambier, Nhill SA - 97(R)	Observers for 4 weeks advanced nav training, primarily in astro-navigation.

In the RAAF, the Battle was operated primarily by 1BAGS/1AOS (Evans Head), 2BAGS/3AOS (Port Pirie), 3BAGS/AGS (West Sale) and 1OTU, and to a lesser extent, by 2OTU, CFS, 1CF/1CU, 3CF, 6CU, 7CU, 4SFTS and several squadrons. A further bombing and gunnery unit, **4BAGS at Mildura**, had been proposed in MAY 1940, with serious planning conducted over JUL 1941-APR 1942, for its formation in MAY 1942.⁸³ The unit was to have its air-to-ground weapons range at Lake Gol Gol. Ultimately, this plan did not proceed, and Mildura became home for 2OTU.



[coloured from Malone & Byk p.32]

Camouflaged and striped target-tower L5790 of 22SQN Richmond 1941-1942

L5790 was received at 1AP in MAR 1941, fitted with a Type B winch. Issued to 22SQN in JUL 1941, passing to 2AD in JUL 1942, and was allotted to 1BAGS Evans Head on 21 SEP 1942 – this date being significant as on 19 SEP 1942 *Red* had been deleted from RAAF National Markings, and being serviced at an AD an important issue like this would not have been overlooked (hence dating this image as 1941-1942). Factory-applied TT markings: 35" Type-A1 fuselage roundel and 48" Type-A underwings, Type-B probably on upper surfaces, and quite common was the lack of fin flash. Undersides show the complex 48"x30" serial number application, and *Black* horizontal tailplane and *Yellow* elevator. L5790 stayed at 1BAGS until the merge into 1AOS in DEC 1943, and then was consolidated with most Battles at AGS West Sale in FEB 1944. Selected for postwar storage, L5790 was a Special Reserve at AGS, then to 1CRD Werribee in JUN 1945 for Category E storage during 1946-1947 until passed by CDC to DAP for disposal to scrap.

BATTLE WEAPONS

Bombs

As a bomber trainer with the RAAF – either for level bombing for bomb aimer training, or dive bombing for pilot release – normally Battles only carried practice bombs, but evidently 1BAGS/52(R)SQN did briefly carry 250lb bombs in 1942.



[du Plessis WWII Colour Collection]

RCAF Battle trainer with underwing practice bombs (outboard of the wing bomb bays), in overall training Yellow c1941

As a bomber trainer, the Battle could level bomb with the bomb aimer prone in the belly and calling turns to the pilot, or it could dive bomb for pilot sight release. The bomb bays were doored cells outboard of the mainwheels, capable of carrying up to four 250-lb bombs.⁸⁴ The bombs were lowered below the wing surfaces, from the bays on hydraulic jacks, when dive bombing.⁸⁵

Self Defence

The rear facing self-defence for the Battle was the single .303 Vickers K (basically a Lewis) gas-operated (GO) machine gun. This was later replaced by the .303 Browning.



[www.worldwarphotos.info]



[GRB collection]



[axis-and-allies-paintworks.com]

Pintle-mounted .303 Vickers K-type, 1940 Swapping magazines on Vickers K The newer .303 Browning machinegun, 1941



[du Plessis Colour Collection]



[Canadian Aviation Historical Society]

Making a movie – US actor James Cagney starred in a movie filmed in Canada in 1941 with Battle trainers as the backdrop

BATTLE TARGET TOWING

With the Battle's 'Type B' winch, the target drogue when released, which pulled out the cable which was de-clutched from the windmill by a cam when the mill was at the lowest angle of attack, i.e. horizontal. The cable run-out was controlled by the angle of the windmill to the airstream via the clutch and a drum brake so the cable could be brought to a controlled stop (either way). After the shooting detail, the target drogue was drawn in by rotating the windmill from the horizontal to the vertical (fully into the slipstream). The angle of the windmill blades to the slipstream controlled the speed in which the cable was drawn in by varying the axis angle of the windmill by the combined clutch and speed control. The clutch was operated by a cam on the windmill pivot so that the speed of the cable return was variable up to a point when the clutch ceased to drive the cable drum



[du Plessis WWII Colour Collection]

RCAF Fairey Battle – like the RAAF, widely used for target towing

The RAF A.P.2656A specified that target towing aircraft 60° stripes 3-ft (0.91m) wide, 9-ft (2.74m) between stripe centrelines.⁸⁶

The Type B winch was the most commonly used for towing a target drogue in the RAAF, installed in the Battle and Vengeance, and postwar the Beaufighter and Mustang. On the Battle, the winch arm was mounted on the port fuselage – the winch mechanism was an arm-mounted ram air windmill, which provided power to a winch drum in the floor of the rear cockpit to wind in a deployed drogue target. The later TT Battles on the Austin Longbridge production line had a “flag target box” attached to the rear ventral fuselage.



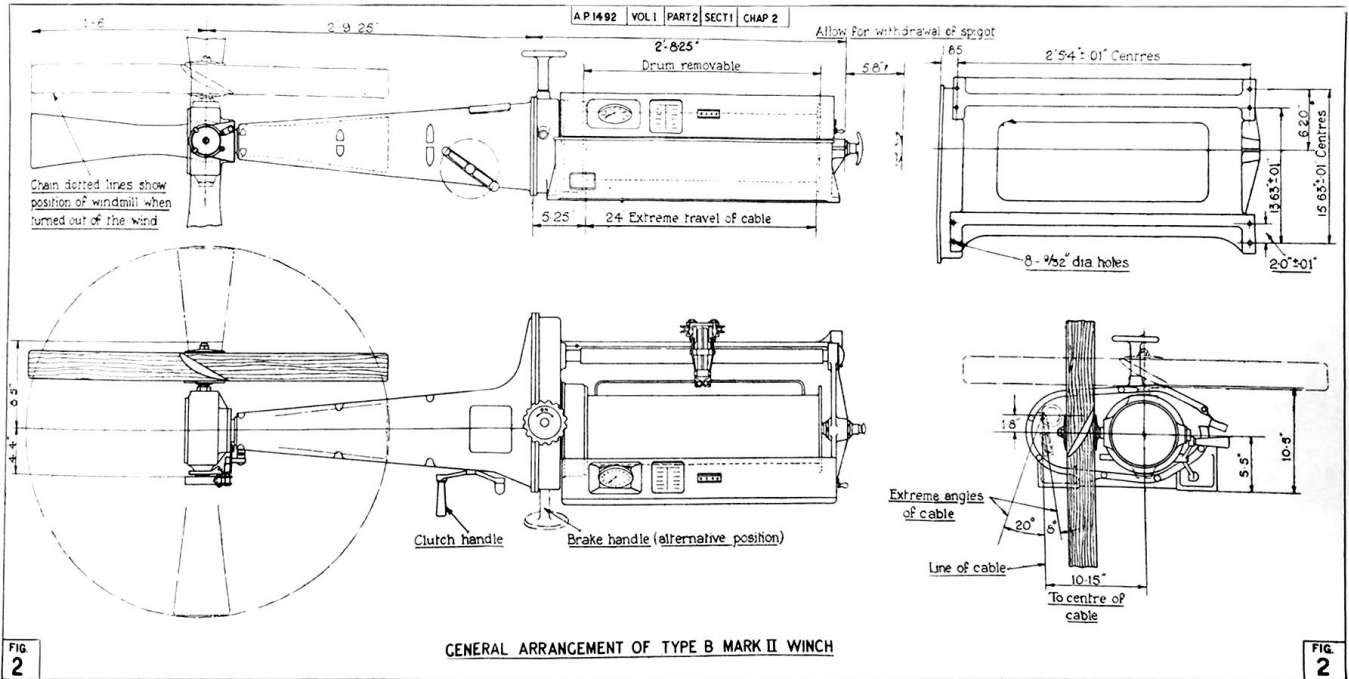
[du Plessis WWII Colour Collection]

Typical Battle tug pulling a sleeve target for air-to-air gunnery

The 1AD A.50 mentions modification work on Battle target-tower **V1235** in OCT 1943. This was to fit the Battle with an attachment for glider towing – for DHA gliders A57-1001 and A57-1002 undergoing trials at Laverton in 1943.

TARGET-TOWING 'TYPE B Mk.II' WINCH

The powered 'Type B Mk.II' winch was the most common wartime winch, with the Battle fitted with a port-mounted towing winch mechanism. Normally cables between 800 and 1200 meters in length were used. The arm-mounted, ram air wooden windmill provided power to a winch drum in the floor of the rear cockpit to deploy and then recover the streamed drogue target. These winches were later transferred to the Vengeance (with the arm mounted on the starboard side), and postwar were used on the Beaufighter and Mustang.



[RAF A.P.1492 Vol.1 Pt.2 Sect.1 Ch.2 Fig.2]

Type B Mk.II Winch



[colourised from spitfirespars.co.uk]

Type B winch operator position: RPM gauge, placard, counter



[colourised from Britmodeller website]

Battle Type B ram air 'windmill' in vertical position

The winch operator had a rev counter dial (a Mk.XVI RPM gauge), and he could monitor the cable length with a calculated placard and a counter. The target sleeve was thrown out of the belly hatch, and drag pulled the cable out. The windmill (propeller) is shown left, in the stowed (horizontal) position, and was used for slowing the cable down as it was pulled out. The cable run-out was controlled by the angle of the windmill to the airstream via a clutch and a drum brake so the cable could be brought to a controlled stop (either way). When the shooting was completed, the windmill provided power for reeling the cable back in, and the drogue was pulled in by rotating the windmill from the horizontal to the vertical (fully into the slipstream). The angle of the windmill blades to the slipstream controlled the speed in which the cable was drawn in by varying the axis angle of the windmill by the combined clutch and speed control – taking about a minute to reel back in 800 meters of cable. (The clutch was operated by a cam on the windmill pivot so that the speed of the cable return was variable up to a point when the clutch ceased to drive the cable drum.) Before landing, the target sleeve was jettisoned by a mechanical "guillotine" of the cable.⁸⁷

TARGET-TOWING 'TYPE D' WINCH

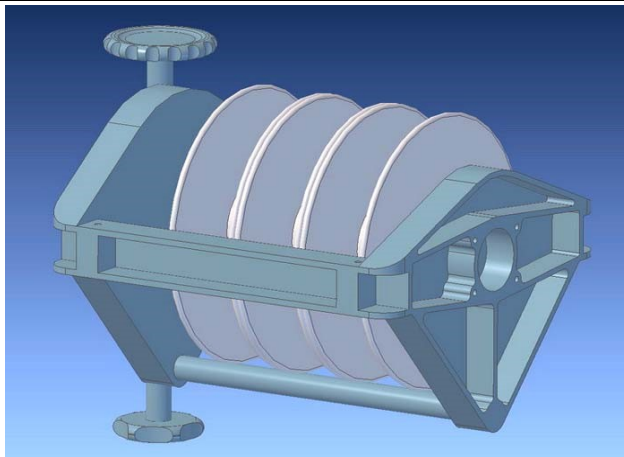
Many of the Battles that were delivered to the RAAF configured for target towing were fitted with the more basic unpowered 'Type D' triple drum winch (designated E9A/3062) to pull drogue targets, and this was adapted for the Wirraway.⁸⁸ 1AD at Laverton had installed a Type D target towing winch on Wirraway A20-283 in 1941 (protruding from under the rear seat), but by APR 1943 only five winches had been received from overseas. In summary, before a comprehensive Wirraway TT program got underway in 1944, earlier towing activity had included: A20-183, the first Wirraway fitted with TT gear (US Grumman type), at 1AD in 1941, which served with No. 1 Armament Training Station (1ATS) at Cressy over 1941-42; A20-283, the first Wirraway fitted with a Battle 'Type D' drogue winch in 1941 for 1AD trials, served with 1ATS until 1943; and over 1943-44 modified TT Wirraways were operated by AA&GS, 5SFTS, with the 'Type D' winch.⁸⁹ These aircraft were stored in 1946, to be scrapped over 1956-57.

In late 1944, more extensive trials were conducted by 1 Aircraft Performance Unit (1APU) at Laverton, with Wirraway **A20-449 with the Type D winch and A-5 sleeve target**, and also A-7 and APU-9 drogue targets,⁹⁰ resulted in the RAAF deciding in JAN 1945 to replace the Battle in the target towing role by the Wirraway (with the Type D winch) and the Vengeance (with Type B winch). This impacted the gunnery training establishments, the Air Gunnery School (AGS), Central Gunnery School (CGS), and Air Armament and Gas School (AA&GS),⁹¹ and ultimately the OTUs. The centre-mounted Type D winch on Wirraways and Battles was below the rear cockpit. For the TT production program, 70 Wirraways were to be modified (new production aircraft A20-660 to A20-729 stored at 7AD),⁹² but by MAY 1945 this requirement had been reduced to 45 Wirraways (A20-660 to A20-704).⁹³



A20-449 at 1 Aircraft Performance Unit (1APU) Laverton, 1944 Type D winch trial [colourised from RAAF]

Derek Buckmaster's *Design Bureau website* provides details of the operation of the Type D winch, issued as Wirraway Technical Instruction No.44 ("*Target towing operation of Type D triple drum gear using automatic target exchange attachment*") about DEC 1942.⁹⁴ For the production program, Wirraway Technical Order No.101 ("*Towing Gear - Fitting of 'D Type' Winch*"), issued 16 DEC 1944, provided more details. Derek Buckmaster's *Design Bureau website* provides this diagram (below) of the 3-drum winch.⁹⁵



Details of modifications required for target towing were issued as Wirraway Technical Order No.101 "*Towing Gear - Fitting of 'D Type' Winch*", 16 DEC 1944, covering the installation of all the equipment needed: Jockey pulley and bracket; Installation of 'Type D' winch; Empennage guarding system; Operator's seat; Installation of Aldis lamp, tool bag and sliding trap door. The 'Type D' winch was not powered and was simply a set of 3 removable drums mounted on a shaft together with a brake to control the unwinding of each cable one at a time. In operation, one cable was unwound and trailed behind the aircraft.

[http://dbdesignbureau.buckmasterfamily.id.au/tech_info_cac_wirraway_tt.htm]

The Type D winch showing the support frame and 3 drums mounted on a common shaft

RAAF TARGET-TOWERS

VENGEANCE – Towed sleeves or flags ('banners') provided aerial targets to allow air-to-air practice for the RAAF, and for AA gunnery practice for the Army. The Type B winch target towing gear was installed by Vengeance Order No.74 over 1943-44 and Target Towing Order No.12.⁹⁶ Vengeances allotted for target-towing retained their camouflage and received *Yellow/Black* striping on the undersides, like many Battles. TT units were the CUs or the OTUs, as shown on Vengeance Mk.1s here. The RAAF Vengeance Type B winch installation had the arm and windmill on the starboard side.



[both colourised from RAAF images]

A27-9 NOV 1944 with starboard-mounted 'Type B' winch arm **5CU KF-Q (probably A27-407)** JUL 1944 pulling a sleeve target



[both colourised from adf-serials images]

A27-13 and A27-14, original Northrop-built Mk.1s delivered in 1942 with type-A markings. In early 1944, converted to TT for CUs, then in mid-1944 to 7OTU. Working-up on Liberators, for aerial gunner training 7OTU had a dedicated Towing Flight.⁹⁷

BEAUFIGHTER – 1CU flew **A8-265** in JUL 1946 to Richmond for acceptance by Target Towing and Special Duties FLT, which became 30(TT) SQN in MAR 1948.⁹⁸ A winch modification was incorporated into a further 16 TT Beaufighters. In JAN 1956, the final four aircraft were ferried from 2AD to 1AD Det 'B' at Tocumwal for scrapping; 30(TT)SQN disbanded in MAR 1956. The Beaufighter TT aircraft of Air Trials Unit at Woomera were withdrawn from service in 1957, with their last flights to Edinburgh.



Below, A8-357 target-towing Beaufighter Mk.21 at Air Trials Unit in Woomera in 1956 with fuselage kangaroo roundels



[adf-serials]

OPERATIONAL UNITS WITH BATTLES

Squadrons

Several RAAF squadrons briefly operated Battles, often to assist conversion to single cockpit operation. The Battle was a robust airframe and evidently “just too easy” to fly, even for someone with only one hour’s solo in any single-engined type of similar size and complexity.⁹⁹ The pilot was seated in a roomy, comfortable cockpit and forward visibility was reasonable good, but rear vision was poor. While the RAF did operate the Battle in the conversion role from older open biplanes for familiarisation to enclosed fighter-style cockpits, it appears RAAF squadron Battle use was only for target towing – all the known Squadron aircraft listed below were TT Battles.

12SQN. 12SQN flew **L5791**, a target-tower, for training over JUL 1941 to MAR 1943 for gunnery training while operating Wirraways and then Vengeances from Darwin and Batchelor.

22SQN. **L5790** was flown over JUN 1941 to SEP 1942, and **L5764** over FEB 1942 to JUL 1942 while operating Wirraways and converting to Bostons at Richmond.

24SQN. Battle **V1232** was operated by 24SQN at Laverton and Townsville from JUL 1942 to NOV 1942.

Western Australian Units. Three TT Battles served over 1941-1944 with 4SFTS at Geraldton, then 35SQN at Maylands/Perth and finally with 7CU at Pearce: **L5774**, **L5778** and **L5779**.

USAAF. Several Battles were loaned to the USAAF in Australia. **L5693** was a target-tower operated by the 49th Pursuit Group over 1942-1943. Other aircraft on loan included **L5694**, **L5735** and **L5785**.

Reserve Squadrons – the ‘50-series’ SQNS

In past instalments discussing EATS training, Reserve units of Wirraways and Ansons have been listed. These included 51(R)SQN (GRS at Point Cook), **53(R)SQN (3BAGS at West Sale)** and **54(R)SQN (2BAGS Port Pirie)**. In addition, in DEC 1941 **1BAGS Evans Head formed 52(R)SQN** with 12 Battles until JUL 1942. Single Battles would fly anti-sub patrols armed with 250-lb bombs; no submarines were ever attacked but there were the inevitable false sightings.¹⁰⁰

Comms Flights / Units

Only two **Comms Flights** (1CF and 3CF) had Battles on strength – for instance, 1CF at Laverton used a Battle for the use of transporting the RAAFHQ Inspector of Air Accidents. Later, when the Comms Flights became **Comms Units** in OCT 1943, two of the more distant units, 6CU at Batchelor and 7CU at Pearce, received Battles. It is doubtful whether any Battles – either in CUs or in Reserve squadrons – ever wore unit Code letters.

RAAF Communications Units using Battles

Unit	Code	Formation	Details	Disbandment	Known Battles
1CF	EV	1 NOV 1939 Laverton	Moved to Essendon 1943, one role became Dragon conversions for RAAF units, back to Laverton 1946	30 JUL 1948	Battles JUN-AUG41 K9322, K9468, P6481
3CF	DB	20 JUN 1942 Mascot	Replaced 2CF as the Sydney-based unit, detachments at Camden and Nowra in 1944	28 FEB 1946	Battles APR43-MAR44 L5757
6CU	XJ	8 DEC 1942 Manbulloo	Anson, Dragon, Walrus for remote bases, FEB 1943 to Batchelor; Darwin OCT 1945	30 DEC 1945	Battles JAN44-APR45 L5390
7CU	YB	10 NOV 1943 Pearce	Dragon, Anson, Vengeance; to Guildford NOV 1944	31 MAY 1946	Battles (ex 35SQN) NOV43-OCT44 L5774, L5778, L5779

Operational Training

Both 1 Operational Training Unit (1OTU) and 2OTU operated the Battle. 1OTU operated the Battle in large numbers from 1942 until 1944, primarily as a target tower to consolidate the training of their air gunners in the Hudson and Beaufort. 2OTU, when forming at Nhill in mid-1942 used the Battle for target towing to train its prospective fighter pilot trainees in aerial gunnery. The few known 2OTU Battle target tugs were **L5603**, **L5610**, **L5617**, **L5703**, **L5704**, **L5725**, **L5736** and **V1201**.

1OTU – 1941-1945

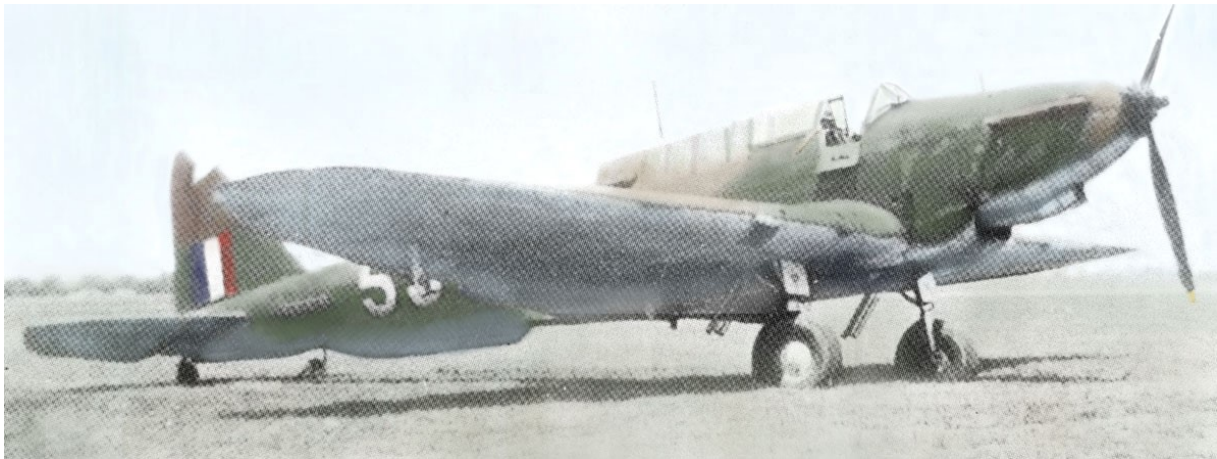
1 Operational Training Unit (1OTU) was formed on 8 DEC 1941 at its temporary base at RAAF Nhill, SA, to provide advanced operational flying and instruction, with training beginning at Nhill on 22 DEC. As accommodation facilities at East Sale would not be available until OCT, it was decided to locate 1OTU temporarily at Bairnsdale. On 14 JUN 1942 the unit began moving, and by JUL, 1630 personnel manned the unit. On 20 APR 1943, 1OTU commenced its move across East Gippsland to the new **East Sale** station – a move of 2411 personnel and 128 aircraft. The fleet comprised 25 Hudsons, 55 Beauforts, 35 Oxfords, and **14 Fairey Battles** to train pilots, observers (navigators) and wireless operator/air gunners for multi-engine squadrons. Battles included **L5629, L5636, L5644, L5653, L5655, L5658, L5659, L5676, L5678, L5693, L5702, L5704, L5727, L5738, L5751, L5763, L5765, L5785** and **V1270**.

The first part of each OTU course involved preliminary training and a six-week conversion to the Hudson or Beaufort – while pilots were undergoing conversions, the observers and WAGs received instruction in the Oxford and Anson. The sorties tested bombing and gunnery, ship recognition and reconnaissance, navigation and searchlight evasion among other operational tasks. The first accident at East Sale occurred when Beaufort A9-304 crashed into Bass Strait near King Island on 28 APR 1943. The subsequent loss of life became a portent of accidents to follow. With an establishment of some 130 aircraft and an intensive flying program of 2000 hours monthly, the demands of EATS training meant that 1OTU worked virtually 24 hours a day. In about three and a half years, 1OTU had suffered 147 aircraft accidents in southern Australia and New Guinea which left 131 aircrew dead or presumed missing during the Unit's intense program of training exercises and operational missions. The last entry in the Unit History Record is dated DEC 1945.¹⁰¹

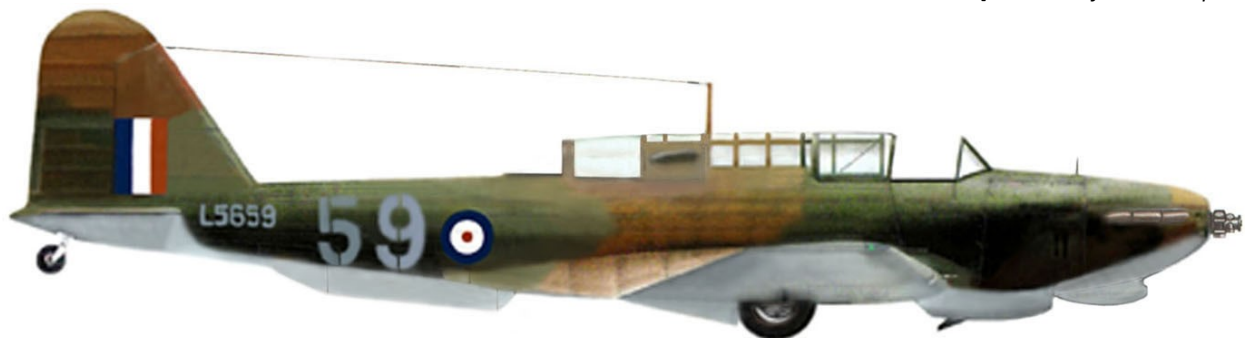
The marking of OTU aircraft generally mirrored the 1942 RAF policy, which stated: Battles "and other aircraft engaged on **operational training duties normally conform to the operational scheme**".¹⁰² Therefore, if not a target tower, OTU Battles carried **no Yellow trainer bands**, nor apparently **Yellow, but Grey, training numbers**. Battles also served nearby at 3BAGS at West Sale.

1OTU – BATTLE L5659 '59' BAIRNSDALE 1942

L5659 was a production-built target-tower with the ventral flag target box and Type B winch fitted on the line, and was received in Australia in OCT 1940. Serving on 1OTU from APR 1942 to JAN 1943, L5659 passed to 7AD in FEB 1943 for repairs from a forced landing, to be converted to components.



[colourised from Lever p.124]



L5659, with extended carburettor intake, retained RAF camouflage *Dark Green/Dark Earth* A.D.1160 B-scheme and Type-A fuselage markings, with a 27" x 24" fin flash. The only Australian changes evident were RAAF *Sky Blue* undersides and *Medium Sea Grey* '59' code number and serial.

EATS – 1BAGS EVANS HEAD

The role of the Bombing and Gunnery School (BAGS) was to complete the training of **Air Gunners** with a course of instruction in gunnery, and to train **Air Observers** in bombing and gunnery.¹⁰³ The abbreviation of these units is sometimes abbreviated as “BGS”, or “B&GS”, but the acronym “BAGS” is the most prevalent in RAAF documentation. Evans Head was planned in MAR 1940 with 17 Bellman hangars (Hangars 144 to 160, each 120ft x 100ft) to accommodate its Battles.¹⁰⁴ 1BAGS was formed at **Evans Head** NSW on 26 AUG 1940, and the first unit Fairey Battle arrived from 7 SEP, to enable instruction to commence on 15 SEP. The School was to train wireless operator/air gunners in all aspects of gunnery, firing on airborne drogues towed by Battles. Aircraft gradually arrived over the next six weeks, to have a strength of 43 by the end of OCT, and 60 Battles on strength by the end of 1940.¹⁰⁵



[colourised from *adf-serials*]

The beginning of 1BAGS at Evans Head in SEP 1940

Seven striped target-towing Battle TT.Is (in the L5599-L5797 serial range) in the front row, with overall **Yellow** Battle I trainers in the second row. Common marking features are all Battles have Type-A fuselage roundels and are without fin flashes. This was a publicity shoot for the formation of 1BAGS, probably around 26 SEP 1940 when 19 Battles were on strength, and the 17 Bellman hangars were yet to be constructed. In the background are three Wirraways and a Demon.

On 16 JAN 1941, while being ferried to the Evans Head from Victoria via Richmond, two target-tug Battles **L5683** and **L5700** collided over the water off Terrigal NSW, with the loss of two lives. The following month on 11 FEB, **R4006** crashed at Moss Vale on delivery from 1AD. Poor aircraft reliability was a feature during 1941-42, with many aircraft forced-landing due to engine failures. **52(R)SQN** operated 12 Battles within 1BAGS over DEC 1941-JUL 1942.

By the end of 1942, 1BAGS Battle strength was maintained around 85 aircraft. In one instance, which indicates the dangers of live firing, on 17 MAY 1942 a trainee fired a number of rounds through the port wing and tailplane of a Battle. During MAR 1943, 1BAGS had a total of 1647 personnel with its **83 Battles**, supported by four Ryan STM trainers and a Moth Minor used as runabouts.¹⁰⁶ 1BAGS was disbanded at Evans Head on 8 DEC 1943, with the base taken over by 1AOS arriving from Cootamundra. By NOV 1943 No.3 Air Observer Course and No.1 Air Gunner Courses were underway, with 1AOS operating Ansons at Evans Head until MAR 1945.

Out of the 17 Bellman hangars that occupied the airfield during the War, one still remains at Evans Head. The Evans Head Memorial Aerodrome had been listed on the NSW Heritage Register which includes the Bellman Hangar #156 which houses the Museum's F-111C A8-147, Canberra A84-203 and Kiowa A17-020. In 2018, the Museum also received the remains of Anson MG422, and the museum now forms part of the RAAF Aviation Heritage collection.

1BAGS EVANS HEAD – BATTLE TT.I L5704 1941-1942

Some 1BAGS target tugs have been illustrated by well known Australian aviation artists – **L5617** (Pentland Vol.1, p.53), and **L5602** (Ian Baker's AHCB #68, p.23), both without fin flashes, with Type-A fuselage and lower roundels, and Type-B upper roundels. This scheme is also illustrated by **L5609** (Lever's *Fairey Battle in RAAF*, p.122). As mentioned, these markings could vary, as shown here with **L5704** with an approximately 64"-wide fin flash.

L5704 was received at 1AP Geelong from UK on 27 OCT 1940. Passing through 1AD Laverton in NOV 1940 for acceptance checks, it was issued to 1BAGS at Evans Head on 7 DEC. It passed to 1OTU at Nhill SA in MAR 1942, serving there until DEC 1942 before repairs by Ansett at Essendon. L5704 underwent extensive repair over early 1943 at Ansett and then 1AD, before receipt at 2BAGS Port Pirie in JUL 1943. In line with the gunnery school realignment in DEC 1943, 2BAGS was transformed into 3AOS, and in FEB 1944 L5704 was transferred to its third major gunnery unit, Air Gunnery School (previously 3BAGS) at West Sale. Surviving longer and more diversely than most RAAF Battles, L5704 was issued to 1 Initial Training School (1ITS) at Somers VIC in 1944 as a training aid, then to No.1 Central Recovery Depot (1CRD) at Werribee at the end of 1944 having completed its service. Like most of the type, the authority for conversion to components was approved on 23 JAN 1945.¹⁰⁷



[colourised from adf-serials]

1BAGS Battle TT.I L5704 at Evans Head airfield over 1941-1942

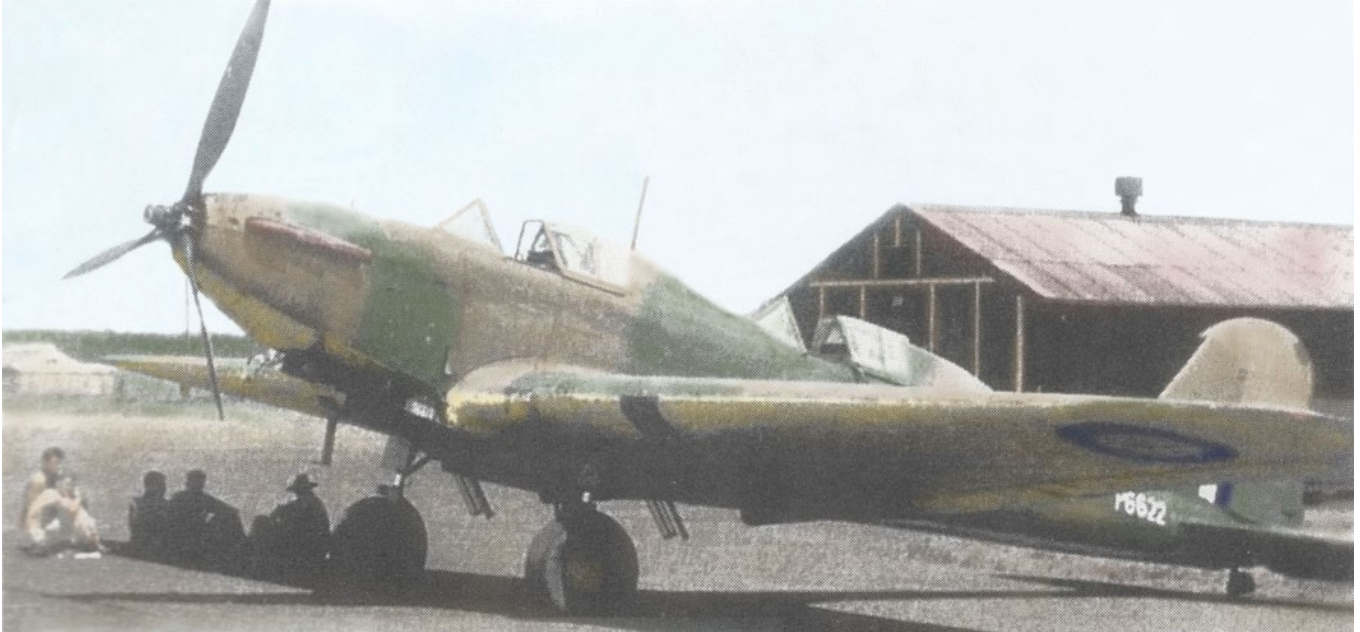
Factory-produced TT Battles appear to have been delivered in a shiny, medium gloss *Yellow/Night* finish with underwing serials, and with gloss National Markings¹⁰⁸ – not a bad thing to improve performance and aid observability against the trainee air gunners. Some aircraft had fin flashes, and **L5704** would have had *Red* deleted from National Markings in SEP 1942. In addition, some Austin-built tugs later had factory-applied camouflage from JUL 1941 on the uppersurfaces – this upper camouflage extended halfway down the fuselage (shown by 35SQN's Battles L5778 and L5779 in 1941). Standard size 8" x 5" serial, but some of this batch had half-size 4" serials.



Like all Austin-built target-towers in the L5598-L5797 production batch, **L5704** came complete for the TT role – with the ventral flag target box and a TT winch (here a Type B Mk.II). These 'extras' could be easily removed later if not required. The OCT 1940 AGI C.11 *Issue 3* did not specifically address target-towing stripes, and this was not formalised until the *Issue 4* of the AGI in AUG 1942, probably in response to the arrival of TT-striped Battles.¹⁰⁹

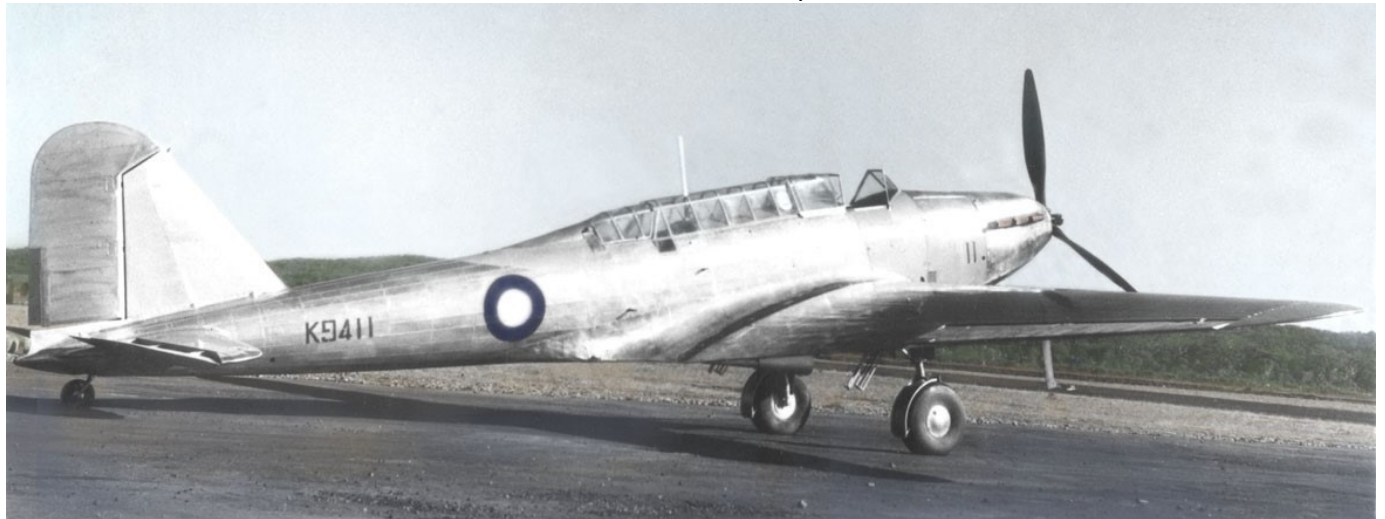
1BAGS / 1AOS EVANS HEAD 1943-1944

1AOS – No.1 Air Observer School (AOS) – had formed at **Cootamundra** NSW on 15 APR 1940, and the first course of 70 air observer trainees arrived at the end of the month. Observer training was in basic dead-reckoning (DR) nav and aerial photography. SQNLDR A M Murdock (a future Beaufort leader and CAS) was the first CO. For initial training of air observers with Ansons and Tiger Moths, and at one stage in AUG 1942, 1AOS had 107 Tigers on strength at Cootamundra.¹¹⁰ Personnel of the unit were involved with the formation of 73(R)SQN which was formed at Cootamundra on 1 JUL 1942. By DEC 1942, the strength of 1AOS had grown to 88 officers, 765 airmen, and 313 trainees.¹¹¹ On 9 DEC 1943, **1AOS re-formed Evans Head**, as the resident 1BAGS was disbanded. During its period at Evans Head, in addition to the Anson, 1AOS operated the Battle, Oxford, Ventura, Gannet and Tiger Moth. 1AOS ceased operations in JUN 1945, and was disbanded on 15 AUG 1945.



[colourised from Lever p.43]

1BAGS / 1AOS dual-cab Battle(T) P6622 trainer over 1943-1944, in 'A'-scheme camouflage and 3:5 Pacific roundels
P6622 was received by 1AD in OCT 1942, and then by 1BAGS at Evans Head in DEC 1942. Minimal changes were made to its RAF delivery scheme with probably the trainer *Yellow* undersides retained – in line with the policy at 1AD for minimal repainting due to higher priority of large numbers of combat aircraft being accepted. The necessary removal of *Red* for National Markings was made of course, and the serial number was made more visible in *Grey*, instead of the standard RAF *Black*.



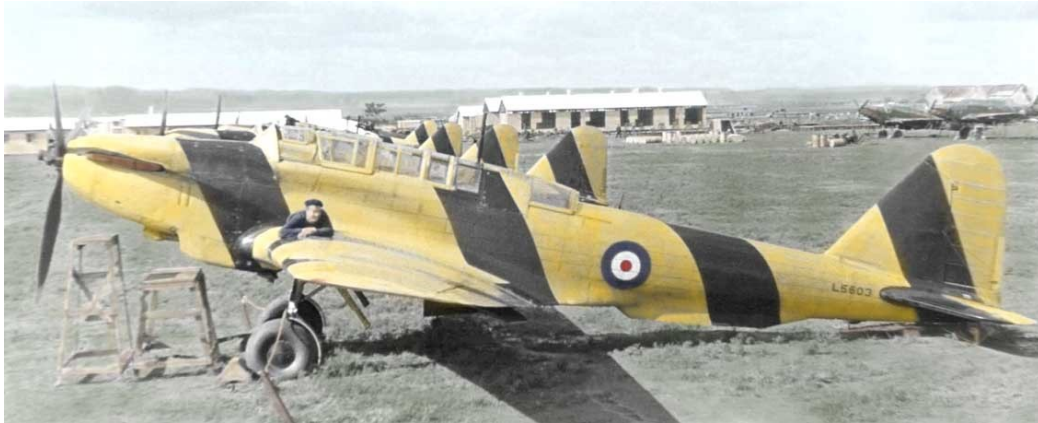
[colourised from RAAF image]

Stripped to bare metal, K9411 at 1AOS Evans Head in 1944

The stripping back to bare metal is unusual, and K9411 must have looked spectacular in this highly polished finish. The fuselage roundels that have been applied were the 1:2 proportioned RAAF Pacific roundels that began to appear in 1943. In SEP 1944 K9411 was converted into instructional airframe **I/A 12** for the ATC squadron at Charters Towers. It was eventually auctioned by the Commonwealth Disposals Commission (CDC) in 1947 to the Townsville Grammar School at the sale price of £5.

2BAGS / 3AOS PORT PIRIE

2BAGS formed on 15 JUN 1941 at **Port Pirie** for bombing and gunnery training for Air Observers and Air Gunners, as required by the EATS, working to the RAF standard syllabus. During the month, the first 15 Battle trainers were delivered from 1AP: **K9282, K9464, L5044, L5070, L5105, L5173, L5267, L5358, L5425, L5435, L5488, L5522, N2163, N2233** and **N2236**. The first trainees had been transferred from 2AOS (Mount Gambier) and by the end of JUL 1941, Battle strength had built to about 50. On 24 AUG 1942, 2BAGS formed a Reserve Squadron, **54(R)SQN**, with a strength of 262 personnel,¹¹² but this must have been short-lived as there is no further record of any 54(R)SQN. The period of training for each aircrew category was different: pilots training for two weeks, observers for eight weeks, and air gunners for four weeks. By the end of 1943, 2BAGS had trained nearly 3500 personnel – mainly wireless air gunners (WAGs). 2BAGS courses comprised air gunners training in Ansons, firing upon target drogues dragged by Battles (although sometimes not far enough behind for the Battle pilots!) – the Battle would fly at 90mph, as the Anson pilot swept back and forth under the drogue to simulate the curve of attack of a fighter aircraft attacking the Anson. With live ammunition, accidents did occur, but it was the aircraft themselves that were to cause the majority of incidents at Port Pirie, claiming some 20 lives. In one tragic accident on 27 AUG 1943, six crewmembers were killed during a gunnery exercise in the collision of two Battles (**K9380** and **L5654**) near Port Pirie aerodrome.



Target-tower L5603 of 2BAGS at Port Pirie 1941-1942

[colourised RAAF image]

Typical TT Yellow/Black stripes, no fin flash, Type-A roundels, probably with Red/Blue upper surfaces Type-B roundels, **half-size 4" serials**. Below the rear fuselage is the ventral flag target box, however the port-mounted Type B winch has been removed.



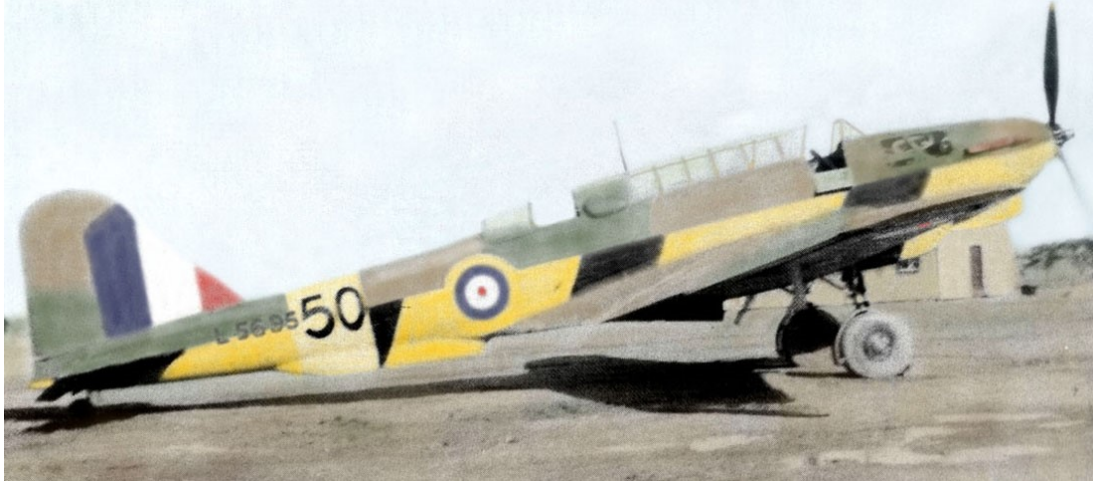
K9478 of 3AOS after running out of fuel nr Stawell VIC with a leaking starboard tank, 29 FEB 1944 [colourised from adf-serials]

K9478's mainplanes show to good effect the standard A.D.1160 'B'-scheme camouflage pattern, but oddly the tailplane shows an 'A'-scheme! With RAAF Pacific roundels and the late date of this accident, the aircraft has probably been re-painted in *Foliage Green/Earth Brown*, but the 'A'-pattern elevators appear a light colour – probably swapped from another airframe.

3 AOS formed at **Port Pirie** by the amalgamation of 2ANS and 2BAGS, on 9 DEC 1943.¹¹³ 3AOS was to provide aircrew navigation and bombing training on Ansons and Battles, with 46 Ansons and **102 Battles** on strength.¹¹⁴ 3AOS too had a Reserve commitment, as **55(R)SQN**. As well as this basic aircrew training, 3AOS conducted Anson conversions for navigators who had been trained on other aircraft, and advanced courses in staff (instructor) navigation and fighter pilot navigation. Examples of 3AOS Battles included **K9478, L5770, N2124, P2245**. During 1944 a reorganisation of 3AOS saw Battle operation ceasing in FEB 1944, aircraft passing AGS, or to 1CRD at Werribee.¹¹⁵ Observer training did continue on the Anson until SEP 1945, with 3AOS being disbanding on 31 JAN 1946.¹¹⁶

3BAGS WEST SALE – BATTLE TT.I L5695 / '50' 1942

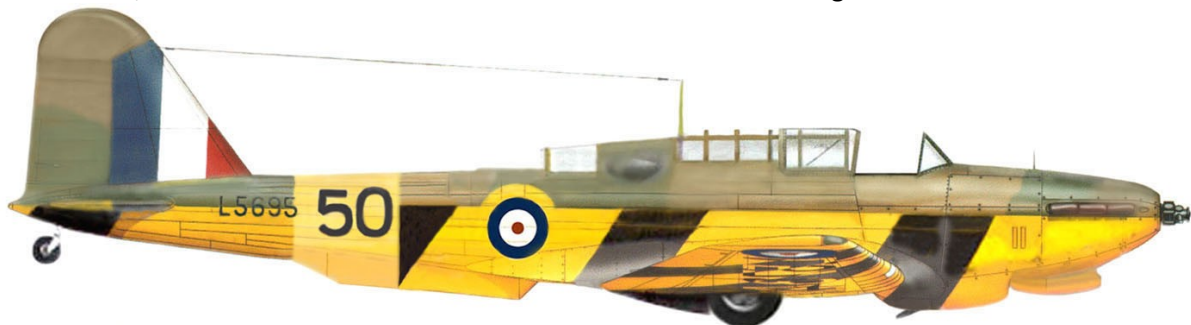
L5695 was erected by 1AD in FEB 1942 (fitted with a Type D winch) and flown by 3BAGS from MAY 1942 until the merging of 3BAGS into AGS in DEC 1943. 3BAGS Battle **L5695** coded **'50'** is in the revised Austin production colours of camouflage over target towing striping, Type-A1 fuselage roundel (uppersurfaces would be Type-B), with **full-fin** three-coloured flash. RAAF additions to these RAF markings were a *Yellow* trainer band and *Black* training number.



[colourised from Lever p.132]

1942 – 3BAGS Battle TT.I L5695 '50', in TT stripes and A.D.1160 'B' scheme camouflage, at West Sale MAY-SEP 1942

L5695 was built at mid point through the Austin production run of TT Battles, which were serialised L5598-L5797. While all this batch were built with winches installed and with the ventral flag target box, all also had *Yellow/Night* TT striping, but it appears that only the second half of this batch – as stipulated by the RAF AMO of JUL 1941 – re-introduced camouflage on the upper surfaces. This move also re-introduced the Type-A1 fuselage roundel, but it did nothing to standardise fin flashes. Therefore, like all Battles, some had fin flashes, others not, and L5695 had the fin-wide flash. This 36"-wide *Yellow* trainer band wrapped around the whole fuselage (obliterating the lower *Black* striping) and with its 3BAGS trainer number '50' applied in 20" high *Black*. One of the few Battles with the 64"-wide flash across the fin, **L5695** would have had *Red* deleted from National Markings in SEP 1942.



L5695 was repainted in the darker RAAF colours *Earth Brown* (K3/178) and *Foliage Green* (K3/177), but retained TT striping on the undersides. As well as a new *Yellow* training number ('95'), 3BAGS Battles also had *Yellow* serials.¹¹⁷



1944 – L5695 in FEB 1944 near Stradbroke with Pacific roundels and '95' training number [colourised from RAAF image]

The AGS A.50 records that L5695 forced landed on 16 FEB 1944 and destroyed by fire, four miles (7km) north of Stradbroke VIC.

3BAGS / AGS WEST SALE – V1238 ‘The Hearse’ 1943

An advance party for the formation of **3BAGS** arrived at **West Sale**, five miles west of Sale, 30 DEC 1941 – on 12 JAN 1942 the unit was formed under the command of 1 (Training) Group. The School was to carry out the function of completing the training of air gunners, and to train air observers and pilots in bombing and gunnery. The unit's first Battles arrived on 22 JAN 1942: **L5050, L5061, L5305, L5357** and **N2066**. Training commenced on 8 MAR 1942 with 43 trainees arriving from Mount Gambier.¹¹⁸ 3BAGS formed an Anson Reserve unit – **53(R)SQN** – in 1942. Over JUL-OCT 1942, 3BAGS also operated Hawker Demons for gunnery training, and from the beginning of 1943, 3BAGS received Oxfords with the manual gun turrets refitted. 3BAGS continued operating until disbandment on 9 DEC 1943 with a strength of **67 Battles**, 24 Ansons and 33 Oxfords.¹¹⁹



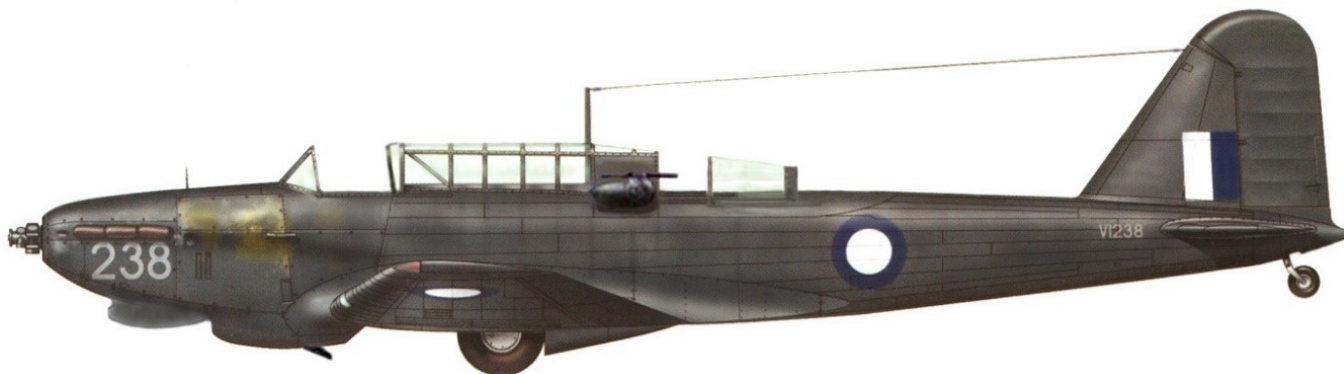
3BAGS Battles identifiable: L5763/63, L5754/54, 10TU L5659/59, L5727/27, L5124/24, dual - 26MAR1943 [colourised adf-serials]
L5659 appears to be wearing Grey '59' codes visiting from nearby 10TU East Sale, while the rest have Yellow codes.

Other known 3BAGS Battles included **K7649, K9362, K9375, K9442, K9232, L4998, L5015, L5031, L5124, L5217, L5257, L5725, L5727, L5754, L5763, L5764, L5789, N2089, N2096, N2250, N2256, P2263, P6631, P6677, P6762, V1237, V1238** and **V1250**.



All-Black V1238 of AGS forced landed near Seaspray VIC in DEC 1943 [colourised from Lever, p.156]

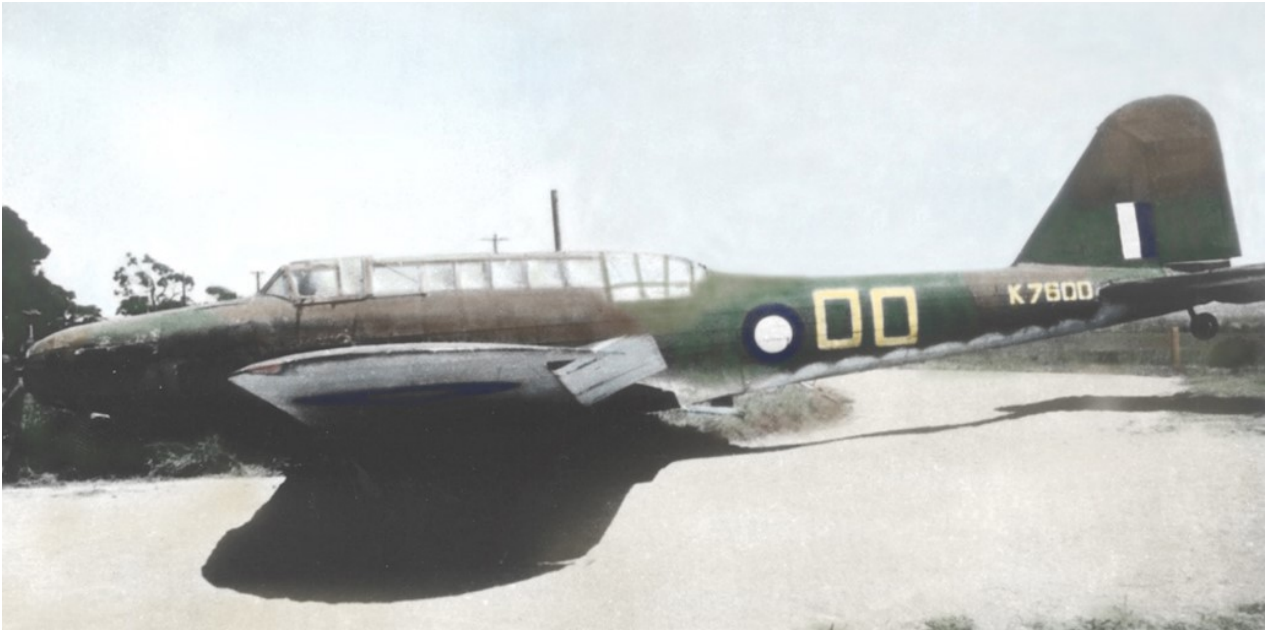
V1238 / '238' in an unusual overall *Night* (matt *Black*) scheme as an AGS target tug. Pentland recorded: "Colloquially known as *'The Hearse'* because of its sombre appearance in overall black, it carried the grey numbers 238 on the nose, small serial and traces of former *Yellow* colour scheme are visible".¹²⁰ Colour reference used is Huntley, p.28.



V1238 forced landed 29 DEC 1943, 8 miles (13km) southwest of Seaspray with a suspected glycol leak. By the end of the month with its slightly changed role, AGS was operating 79 Battles and 39 Ansons, where Battle operations became concentrated.

AGS WEST SALE – Camouflage 1944

At the end of 1943 all the gunnery schools were combined as the **Air Gunnery School (AGS)** at West Sale with the object of training all air gunners, WAGs and other RAAF personnel in air gunnery, with AGS Oxfords replaced by more Ansons and Battles. During DEC 1943, 30 Oxford were allotted away, most going to 6SFTS Mallala.¹²¹

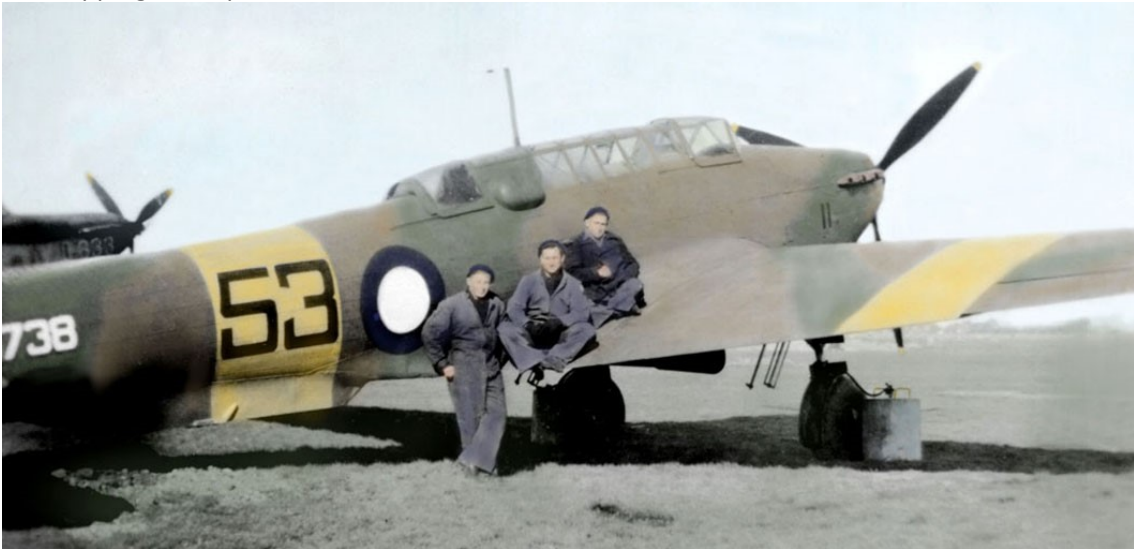


[colourised from adf-serials]

AGS K7600 forced landed with engine failure on the edge of Morwell township, VIC, on 27 JAN 1944

K7600/'00', a bomber variant, crashed in JAN 1944 in the darker 1943-1944 A-scheme camouflage of *Foliage Green* and *Earth Brown*, unusual *scalloped Sky Blue* undersides, with *Yellow* serial and training number. Fuselage markings were the 24" 1:2 ratioed Pacific roundel, *Yellow* training numbers 24" high x 15" wide, fin flash 24" x 16" wide – the **2:5 underwing** roundel appears to be the larger 63" upperwing size, and moved closer to the leading edge. When it crashed, it had clocked 1051 hours.

Battles remained at AGS later than the other Schools, and from FEB 1944 became the centre for Battle operation which continued into 1945, then ceased to function on 31 DEC 1945, with dispatch of the last aircraft to 1CRD for storage and scrapping. Examples of AGS Battles: **K7600, L5610, L5633, L5725, L5738, V1201, V1227, V1238, V1241.**



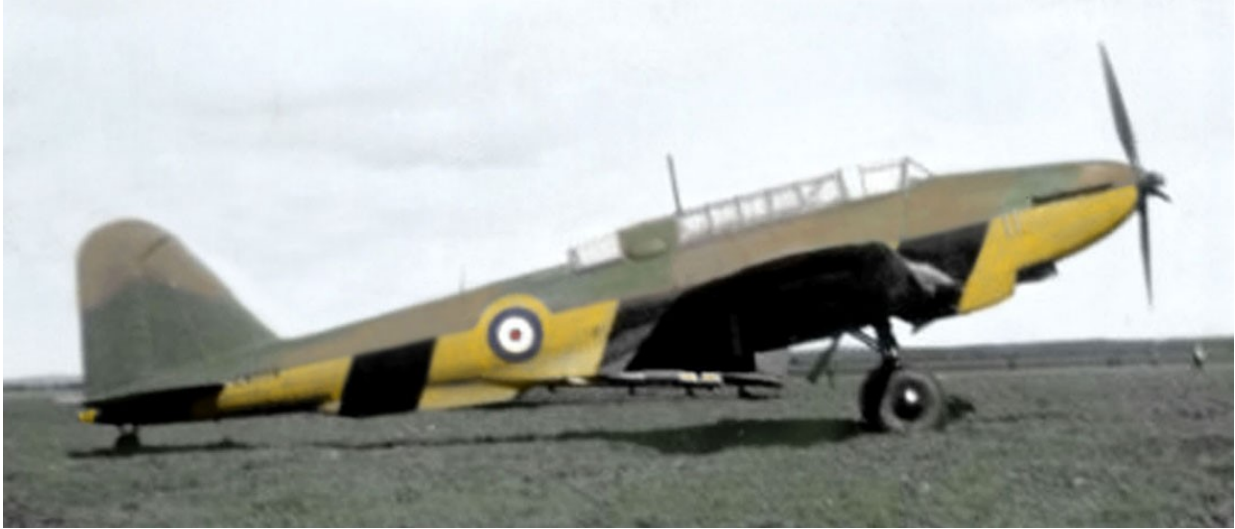
[colourised from David Vincent image]

L5738/'53' of AGS during 1944 – in 'B' camouflage with some unusual features, old and new

L5738 displays several markings that have been discussed. (Fellow target tower **L5633**, nose number '633', is in the background.) **L5738** was received in JAN 1943, and after service with 1OTU, joined AGS in JAN 1944; **L5633** joined AGS in MAR 1944, with both leaving West Sale in JUN 1945 for 1CRD Werribee for storage and scrapping. Unusual is the older style *Yellow* training band – it should not have been added by the previous unit as these were not applied by OTUs, nor typically were they applied by the BAGS units. Also the new *White* serial – it is much brighter in the monochrome image than the *Yellow* bands. It may have *Yellow/Black* TT stripes on the undersides – but is not possible to determine from this image. The MAY 1944 AGI would have changed these markings – if *FG/EB* camouflage was retained, the *Yellow* trainer bands would have been removed.

WEST COAST TARGET-TOWERS 1941-1944

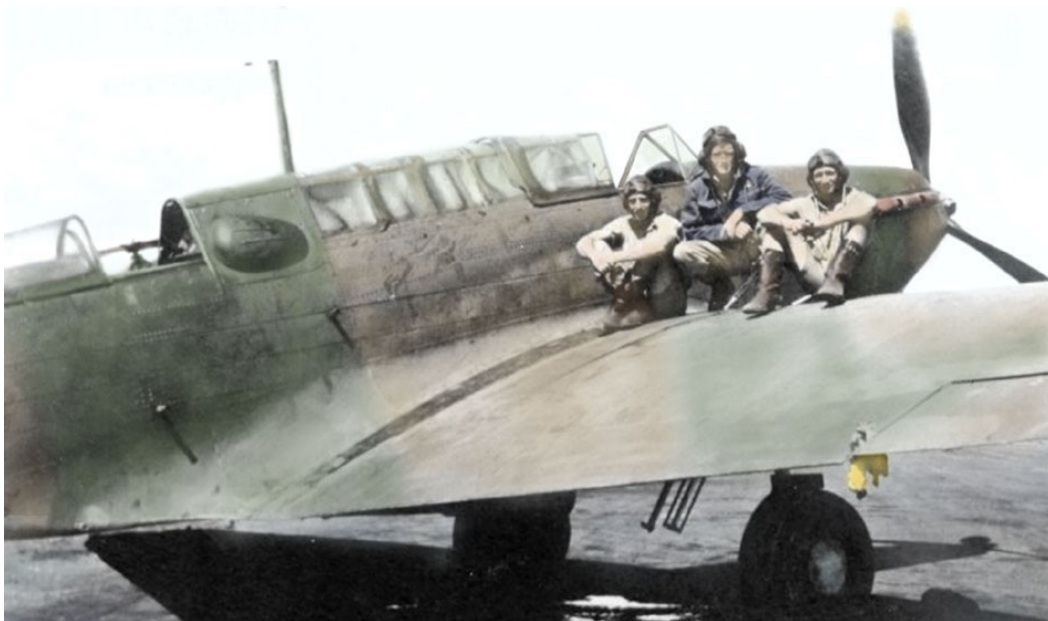
L5778 target tower was operated by **4SFTS** at Geraldton, with **L5779**, from MAY 1941 until it was transferred to **35SQN** at Pearce in FEB 1943, and then **7CU** in NOV 1943. **L5778** was delivered with the Type-D TT winch, and **L5779** with the Type-B Mk.II – when replaced by Vengeances at **7CU** in SEP 1944, both target-towers were transferred to AGS at West Sale, where Battle operation was consolidated. A third Battle, **L5774**, also was on **35SQN** in SEP 1942.



[colourised from *adf-serials*]

L5778 c1941-1942, in the delivery RAF camouflage scheme. Delivered with a Type-D winch, the bulge in the standard starboard winch operator canopy, allowed fitment of either the Type-B or D winch. Neither **L5778** or **L5779** carried a fin flash and had the very small half-size 4" serial number like many aircraft in this Austin TT-production batch.

Both **L5778** and **L5779** had served from 1941 with **4SFTS** at Geraldton: **L5779** posted south to **35SQN** in AUG 1942, followed by **L5778** in FEB 1943. **35SQN** had formed at Pearce in FEB 1942, equipped with D.H.83 Fox Moth (A41-1) and D.H.84 Dragon (A34-1), commencing operations in MAR, flying local transport and communications.¹²² Moving to Maylands in APR 1942, and two Battles (**L5774** and **L5779**) joined the Squadron in SEP 1942 for cooperation tasks, until Anson (DG751) was taken on strength in OCT. In NOV 1942 another Dragon (A34-19) was added, augmented over following months by a third Battle (**L5778**), Tiger Moths, Northrop Delta (A61-1), and two D.H.86s (A31-1 and A31-2). **35SQN** returned to Pearce in AUG 1943, and its mixed collection of aircraft was replaced by Dakotas, allowing in NOV 1943 for **7CU** to inherit the superseded aircraft and continue local comms and drogue towing.



[colourised from *adf-serials*]

35SQN Target Tug L5774, in A.D.1160 'B' camouflage, at Perth/Maylands 1942-43

L5774 was received at 1AP in MAY 1941, delivered with a Type B winch. After service over 1941-42 with **2BAGS**, **L5774** joined **35SQN** in SEP 1942, then **7CU** in NOV 1943. The port-mounted Type B winch is visible stowed in its upright position. The bulged starboard panel in the operator's position was common for both Type B and D winches, to allow swapping between aircraft.

BATTLE INSTRUCTIONAL AIRFRAMES

Thirteen aircraft were converted to Instructional Battles between 1941 and 1944, and then sold off by 1946. In 1941, the first two Battles were issued by 1AP direct for technical training at the Engineering School, Ascot Vale, Melbourne.¹²³ The E/E.88 for K7705 was even annotated on arrival in AUG 1941 as “for instructional purposes” and issued to 1ES as *Instructional Airframe 2*. Several of the Battle training schools (2BAGS and 3BAGS) also converted unserviceable airframes into training aids. Towards the end of the war, most of the Battle training aids were going to Air Training Corps squadrons for cadet familiarisation. By 1944 and 1945, most Battles had been either written off, and the few held in storage pending disposal were stuck off charge by 1949.



[coloured from Fairey Battle, Lever p.176]

Unidentified *Instructional Battle* outside a Bellman hangar, possibly at 2BAGS Port Pirie

This could be I/A.3 or I/A.4 which were converted as instructional aids at 2BAGS in OCT 1942.

Battle I/A No.	Serial	Date	Details
I/A No.1	L5142	MAY 1941	1 Eng School (1ES) 9 MAY 1941, converted to scrap
I/A No.2	K7705	AUG 1941	1ES issued 29 AUG 1941, converted comps 17 OCT 1945
I/A No.3	K9297	OCT 1942	2BAGS I/A.3 2 OCT 1942, components 22 SEP 1943
I/A No.4	L5529	OCT 1942	2BAGS I/A.4 2 OCT 1942, components 22 SEP 1943
I/A No.5	L5031	OCT 1942	3BAGS CR landing 27 SEP 42, E/E.88 states “components” 21 OCT 42
I/A No.6	n.k.		no known details, see below
I/A No.7	n.k.		no known details, see below
I/A No.8	L5257	AUG 1944	3BAGS, I/A.8 at 84SQN ATC Tasmania 10 OCT 1944, CDC sold 8 JUN 1946 for £15
I/A No.9	L5038	AUG 1944	3AOS, I/A.9 for ATC Tasmania, sold by CDC 4 JUL 1946
I/A No.10	N2091	SEP 1944	2CRD Richmond, converted to 1/A.10 1 SEP 1944, scrapped 8 NOV 44
I/A No.11	L5152	SEP 1944	I/A.11 for 36SQN ATC Lismore 8 SEP 1944, SOC by JUL 1948
I/A No.12	K9411	SEP 1944	I/A.12 153SQN ATC Charters Towers 8 SEP 44, CDC sold 18MAR47 £5
I/A No.13	K9324	SEP 1944	I/A.13 14 SEP 1944, sold by CDC £5

These three Battles, below, are possibilities for conversion into RAAF Instructional Battles.

L5644 1AD to Eng School 23 NOV 1942 for alterations to cockpit, no further details.

L5202 1AOS allotted 41SQN ATC 31 MAY 1944 for instructional purposes, then cancelled JUL 1944 and to components DEC 1944.

L5704 at AGS FEB 1944; from Somers (1ITS) to 1CRD Werribee DEC 1944 (ref 1CRD A.50).

DISPOSALS AND SURVIVORS

From 1944, the Commonwealth Disposals Commission (CDC) undertook the postwar sale of the incredible amount of unwanted Australian military equipment, and in the case of aircraft some were deemed as suitable to the civilian aviation market, while others were assessed as unsuitable. In the past we have covered the sale of airworthy Ansons for between £500-£250 per aircraft, and a total of 42 Ansons were purchased from CDC over 1946-47.¹²⁴ In the case of the Oxford, its glued wooden construction prevented its sale as airworthy and by 1947 hundreds of Oxfords could not be readily sold – so public auctions disposed of the Oxfords by selling them cheaply at a standard price of £5/10/- (\$11) for the quick sale of these “remnants”. Of course the largest number for release to the civilian hands were Tiger Moths, to a lesser extent Ansons and Wacketts. For the Battle, while some were disposed around Mallala with similar restrictions as the Oxford, the main disposal centres were the Central Recovery Depots for scrapping – primarily 1CRD at Werribee (with over 100 through 1944), with small numbers through 3CRD Amberley and 5CRD Pirie.

CDC disbanded in early 1949, with disposals kept within Dept of Supply under two Divisions – technically by Division of Aircraft Production (DAP), and procedurally by Dept of Supply Disposals Division (DSD). The original ‘DAP’ had been the Dept of Aircraft Production (Beaufort Division) which produced the DAP Beaufighter 21, and in NOV 1946 became Government Aircraft Factories (GAF); this previous DAP’s (Maintenance Division) then became Division of Aircraft Production, as the ‘new’ DAP within Dept of Supply. This ‘DAP’ had worked with CDC on aircraft storage and disposals, but by 1948 ceded this role to DSD Disposals Division, and DAP then concentrated on aircraft maintenance. Often E/E.88 Cards were marked as “handed over to DAP for disposal in accordance with CDC Certificate of Write-Off”.



[RAAF image]

Battle disposal – boneyard for Battles and Ansons, 1CRD Werribee c1944-1945

Most Battles earmarked for scrapping were issued to 1CRD at Werribee from early 1944. In JUN 1944, 133 Battles were held at 1CRD awaiting their fate; on 5 DEC 1944 this total was 119.¹²⁵ The better aircraft had been retained in service at AGS West Sale and from 1945 were under ‘E’ Category outdoor storage by CDC, then passing to DAP in 1947 for disposal, which amounted to being scrapped over 1948. Postwar, there was a total of over 3000 surplus RAAF aircraft – this comprised 76 Boomerangs, 307 Kittyhawks, 164 Mosquitoes, 199 Mustangs, 399 Spitfires, 300 Beaufighters, 329 Beauforts, 27 Hudsons, 207 Liberators, 32 Mitchells, 228 Vengeances, 52 Venturas, 52 Catalinas, 12 Kingfishers, 12 Mariners, 450 Ansons, 270 Oxfords, 195 Tiger Moths, and 380 Wirraways.¹²⁶ These figures do not include Battles as by 1948, CDC and DAP had done their work on returning Battles to saucers. The Tiger Moth was of course available for release to private buyers, agricultural use and aero clubs – 238 were purchased by these clubs.¹²⁷

When sold over 1946-1947, Battles often only raised £5. Partial remains of a handful ex RAAF Battles survive today, with the most complete being **N2188** which is undergoing long term restoration by the team at the South Australian Aviation Museum (SAAM) in Port Adelaide.¹²⁸ N2188 was recovered from swamp at Port Pirie by the South Australian Historical Aviation Museum Inc of Port Adelaide, and the SAAM Battle team are making steady progress to ensure we have a complete Battle for the future. In addition, Geoff Goodall’s *Warbird Directory* lists that an unidentified Battle had its derelict fuselage frame recovered from the former airfield rubbish dump site at RAAF Port Pirie SA: these components, with a Merlin II engine, are displayed at **Lincoln Nitschke’s Military & Historic Aircraft Collection**, at Greenock SA.¹²⁹

SAAM BATTLE N2188

The [South Australian Aviation Museum](#) at Port Adelaide, South Australia, is undertaking a restoration project using the remains of a Battle Mk.I which was recovered from a swamp near Port Pirie. This Battle is **N2188** (c/n F.3213) which was received by the RAAF in JUN 1941 to serve with 2BAGS until damaged in forced landing in tidal swamp at Port Davis, SA, on 7 MAY 1943. The port wing and fuselage were recovered over 1974-1976, and the undercarriage and other parts were recovered from rubbish dump of former wartime airfield Port Pirie. The components were held by the Warbirds Aviation Museum, Mildura, VIC, until 1980.



[J Smith / N Daw, SAAM]

N2188 on discovery in MAR 1974, reached for the first time since 1940s

With the SAAM since 1996, parts from several Battles have been utilised on this long-term restoration. For instance, ex-RCAF Mk. I **P2183** (c/n F.4096) was recovered derelict from farm Canada by the RAF Museum for parts used in the rebuild of its L5343 – and the wings were donated in 1999 to the SAAM in the restoration of **N2188**.¹³⁰ Other components have been obtained from Belgium, Iceland and the UK.



Cockpit section with windshield, 2003



Cockpit image in MAY 2013 by Brendan Cowan



Centre wing section was mated with the fuselage in 2015



Beautiful work on the empennage, OCT 2017

[images saam.org, Port Adelaide]

OVERSEAS SURVIVORS

Not many complete Battles survive worldwide in museums, so we will be fortunate when the SAAM example is completed. Perhaps this is due to a belief that has been recorded on the www.airvectors.net/avfyfly.html#m7 website: *“THE FAIREY BATTLE by Philip J.R. Moyes, PROFILE PUBLICATIONS, 1965 – this is one of the few sources available with any details on the Battle, **an aircraft that most preferred to forget.**”* Perhaps this is a little harsh – as the Battle did provide the EATS with a suitable crew trainer, and without it the RAAF would not have been able to achieve its required aircrew training output. Therefore, here have considered the Battle’s training service in Australia over 1941-1945, not its disastrous operational record over France in 1940. And similarly, it is this intense training record in Canada’s BCATP that sees two Battles restored, or being restored, in Canada – with single completed restorations in UK and Belgium. <https://www.goodall.com.au/warbirds-directory-v6/fairey.pdf>

BRITAIN



[Classic Warbirds]



[Warbirds Registry]

L5343 originally served in France in JUL 1940 with 98SQN RAF and survived, before subsequently crashing at Kaldadaranes, Iceland, in 1940 where it was abandoned. The hulk, recovered by the RAF Museum in 1972 to the UK, commenced restoration at RAF St Athan – using the centre fuselage of **L5340 (ex RCAF 1614)** – and completed in 1990. Displayed as L5343/VO-S by the **RAF Museum Hendon**, there has been a change to the fuselage camouflage pattern from an ‘A’ scheme (left), to later a ‘B’ scheme (right), but retaining the ‘A’ scheme tail pattern.¹³¹

CANADA



[Warbirds Registry]

BELGIUM



[airliners.net]

RCAF 7384 ‘35’ / R7384 (c/n F.4848) was converted into a Battle I(T) turret trainer in 1942, and was stored for future museum use in 1946. With various iterations of the museum (National Aeronautical Collection, and the National Aviation Museum) it has been displayed by **Canada’s Aviation and Space Museum** at Rockcliffe Ontario, since 1982.

RCAF 1317 / P2234 (c/n F.4139), a Mk.I which was held by LaVallee Cultural & Aeronautical Collection, Quebec, with many parts collected by the Canadian Museum of Flight & Transportation, is being restored at the **BCATP Museum**, Brandon, Manitoba, with parts from **L5306 / RCAF 2139**.

R3950, an Austin-built TT.I target-tower, went to Canada as **RCAF 1899** in 1941, and was sold as surplus in 1945, lying derelict on a farm until recovered in 1972 by the Strathallan Aircraft Collection in Scotland. Displayed on loan to IWM over 1987-1989 at Duxford as **R3950/HA-L**, in 1990 the Battle was exchanged for Spitfire RN201 by **Belgium’s Musee Royal de l’Armee** in Brussels. Displayed variously as R3950/HA-L, and RCAF “1558”, it is now marked representing a 1940 Battle as **Belgian AF “70”**.

The Fairey Battle



...the Fairey Battle, a type that is often quoted as being a failure, when in fact its failure was simply down to the Air Ministry not understanding the changing climate for operational requirements in the mid to late 1930s. At this time the move from biplane to monoplane and fabric covering to monocoque led the Air Ministry to try to obtain replacement designs with performance that was far outside that available by the (then) current aero engines, while the manufacturers were left trying to make the Air Ministry see sense. It seems almost a joke nowadays to think of weapons procurement being done in such an ill-informed manner, but in the case of the Battle, it was to prove to have tragic ramifications.

– Richard Franks
“Aviation Guide” Series Editor ¹³²

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Serving No 1(B) OCU RAAF: Canberra Mk20/Mk21

By Gordon Birkett 2020



A84-215 photographed over Newstead, Brisbane late in 1968. Note Kiwi zap on nose. [RAAF Official via ADF-Serials Album].

Introduction

In WW2 it was assumed that an aircraft had a specific useful life depending on role and the number of engines. Those that survive their initial service and had become obsolete would later be used as training aircraft in OTU/OCUs. The life of an aircraft depended on its type, for instance, a single engine fighter had a planned life of 1.5 years, bombers a little longer, at 2.5 years. Factored into that, including attrition through accidents and combat, an aircraft type seldom lasted in frontlines more than 1 year. Post war and into the fifties, development of designs and jet power pushed this "life" out to about 5 years of front line service on average depending on their airframe life in hours, followed by a short period of second line duties, before the aircraft type was withdrawn.

In RAAF the Canberra was earmarked for 10 years of frontline service with a further 5 years as a second line aircraft. But history tells us differently it seems.

Background: The RAAF Canberra Numbers

Following its development post 1949 and its introduction to service in 1952, the English Electric Canberra in its RAF B2 versions,¹³³ had a limited frontline service until it was replaced by more advanced versions or different modern types. That frontline service ended within five years. From the time a licence was obtained for a fully local built Australian aircraft, it would be at least two years before the Australian production-line began to flow (1955), and then that rate was one or two aircraft a month initially.

The first GAF-built Canberra Mk 20 (**A84-201**) flew in May 1953 and after trials, finally entered service with No 82 Bomber Wing in 1954. The first RAAF Unit to receive the Canberra, No 2 Squadron RAAF was followed by No 6 Squadron RAAF in 1955 which took over the training role from 2 Squadron, which in 1959 would again be passed to 1(B)OCU after 6 Squadron had performed the role.



At Essendon Vic in February 1957 is A84-502 with No 2 Squadron RAAF. [Lindsay Wise via ADF-Serials.com.au].

With two imported Canberra B2 Bombers(A84-125/307) preceding the production of forty-eight locally built Canberra Mk20s to be delivered, the in-service numbers gave the possible inventory total of some fifty Canberra bombers, less those unfortunately lost through attrition. These were the type's first aircraft withdrawn, were Canberra T4's **A84-501** and **A84-502** which had become Class 6 storage airframes, by late 1963, following service with the CFS (Central Flying School).

It was intended that by 1965, after a ten year operational life, that the Canberra would be replaced by another more advanced aircraft in RAAF Service. By Mid 1965, only forty-four locally built Canberra (thirty-nine Mk20s and five Mk 21s), and two UK Built Mk21s survived, making a grand total of forty-six airframes remaining in service. In the RAF, the remaining in-service Canberra B2 versions were, by 1960, now a second line aircraft type enjoying a further service in trials, OCU's and target tug roles, though in ever reducing numbers out to the eighties.¹³⁴

The last operational RAAF Squadron converted, No 1 Squadron, was finally converted in 1958, coinciding with the 48th and last Canberra Mk 20 (**A84-248**) being delivered in September 1958.¹³⁵

With the introduction of the GAF Canberra B Mk 20, (forty-eight Canberra B20 aircraft on order), it was planned to have one Bomber Squadron of 8 UE Canberra aircraft (6 IE and 2 IR) given the secondary role of Strategic Photographic reconnaissance within the three operational squadron structure.¹³⁶

The authorised establishment per Unit Equipment (UE) of each Unit/Squadron 1959 – 1968 period, was as follows:

- No 1 (Bomber)Operational Conversion Unit 6 UE
- No 1 Squadron, RAAF Amberley 8 UE
- No 2 Squadron, RAAF Butterworth 9 UE¹³⁷
- No 6 Squadron, RAAF Amberley 8 UE
- ARDU, RAAF Laverton 3 UE

That total would equal 34 airframes required for Unit Equipment. Attrition of five airframes between 1954 and 1968 period had already been reduced to an active inventory of 45 aircraft:

- **A84-202** that had crashed at Amberley 16/06/54 while attempting an overshoot from an asymmetric approach (Fatal)",
- **A84-243** that ground looped on landing after port main brake failed and gear retracted late after Sq'n Ldr D C Harvey DFC selected up to stop it, at Butterworth, Malaya 29/08/58,¹³⁸
- **A84-239** that crashed on take-off from Butterworth, Malaya, on 08/03/60,
- **A84-206** that was lost control during asymmetric overshoot and crashed at RAAF Amberley 16/02/65 (Fatal), and
- **A84-213** that crashed on take-off Darwin NT 07/04/65.



A84-206 Final. [*Courier Mail Newspaper via Robert Prosser*].



Canberra A84-213 after its aborted takeoff and overrun 7 April 1965, at Darwin RAAF during Exercise “High Sirius”. Crewed by F/Lt P D Jones (018752) and P/O J V Tyrrell (0315390) at the time, they did suffer superficial injuries. [*John Bennett, “RAAF Aircraft Markings since 1950 Squadron Markings – Part 2 – The Canberra” (2017)*].

Two earlier UK Built B2s, not in the total, were returned to the UK in the mid 1950's (A84-2/3).¹³⁹ A further addition of two Canberra T4s (A84-501/502) rounded out the total to actually 54 Canberra Airframes that were placed on A84 Serial block. These were the first two dual control aircraft used in training by No 2 Squadron.

By 1965, the remaining available airframes held, some 12 Canberra aircraft would be allotted for servicing, use by 82Wing and/or in reserve.

Note: An example of RAAF Canberra Mk20/Mk21 strength at the time of 19 August 1966 was at thirty-nine (39) airframes in use, with the balance being in Depot servicing or Class 6 Storage.

Recce Canberra: 1962 to when?

An investigation and decision by ARDU in early 1962, for integration tests, considered that the F95 Vinton camera would best fit between frames #28 and #30 in the fuselage. A sight head spigot and firing button would be fitted to control yoke, with a magazine contents indicator and frames per second being mounted on the top side of the instrument coaming.

The prototype PR aircraft, **A84-214**, was allotted to GAF circ 22/05/62 for the modifications, arriving there 25/07/62, and modified as stated above, then returned to 82 Wing on the 16/08/62. It would be 6-10 weeks before the required film would be received however before tests could be started in October 1962.



82 Wing A84-214 pictured with no Squadron tail markings in 1968 at Tindal. [Wg Cdr Bob Howe (Ret)].

In the event of war with Indonesia, a dedicated fourth Squadron, No 24 Squadron RAAF, with the main role of Strategic Photo Reconnaissance would be established, with a secondary bombing role assigned, with eight Canberra aircraft (6 IE and 2 IR). Aircraft would have been drawn from No 1(B) OCU Unit Establishment.

In fact, three Canberra aircraft were sent to No 24 Squadron at Edinburgh to facilitate aircraft servicing training on the type in November 1964 when things were "hotting up"¹⁴⁰

Canberra replacement options and resolution: 1963-1970

The Canberra inventory number plainly was just insufficient to fully equip all of these Units under Establishment numbers outlined. But then, those concerns to the north had already put in motion a requirement to replace this aircraft by 1965 as it was considered not survivable given the type of fighter aircraft Indonesia was equipped with, IE Mig21s. Submission of the "Selection of a replacement Strike/Reconnaissance Aircraft for the RAAF, per Cabinet Decision No 1022, dated 16 September 1963, outlined "based on the development and availability of the said aircraft and the time factor of the effectiveness of the Canberra Bomber, the Team accordingly concluded:

"The selection of the RA-5C to replace the Canberra is the quickest and most effective means of providing the RAAF with a Strike/Reconnaissance Force"

However, Cabinet Decision No 1057 on the 7th October 1963, concluded that the RA5C, as recommended by the Air Force Evaluation Team, should not proceed, but rather *"the Government should enter into a discussion with the United States Administration at a political level, concerning the problems of replacement and the way or ways in which the Government may deal with them"*.

That aircraft would be eventually the General Dynamics F-111A ordered under *Cabinet Submission #884* for RAAF Air Staff Requirement #36 in 1964.

Thereafter the Canberra Mk20 would end its operational days as a war reserve Light Bomber Squadron of eight Canberras from 1965 until sometime in 1970/1971, when all present operational Canberras were to be withdrawn, following the introduction of the F-111A in 1965. (*Note with changes, the model became the F-111C by 1966 and by then, delivery pushed out till 1968*).



Pictured is A84-224/232/221 and 229 with No 6 Sqn RAAF in formation. [RAAF photo 000-140-800 via ADF-Serials.com.au].

Konfrontasi

The Indonesian Confrontation, was set in motion on 8 December 1962 by an attempted *coup d'état* in the tiny pro-British sultanate of Brunei in north Borneo began by elements of the North Kalimantan National Army (NKNA). The coup itself was quickly suppressed by British Royal Marine Commandos (No 42 Commando) and Gurkha soldiers, who were flown in via Labuan Island.

When the Canberra Replacement aircraft, the F-111A (previously TFX), was ordered on the 22 October 1963 by the Australian Government, a commitment was made also to order an additional six F-111Rs (a purposed USAF Reconnaissance version, that would enter USAF service in 1970) to make a total of thirty aircraft to be ordered. Ever since signing up to the F-111A Programme in 1963, the Australian Government, specifically during confrontation, felt that there was a need for consideration given for an interim service aircraft to replace the GAF Canberra Bombers in frontline service as soon as possible.

We need something bigger and faster; why? They've got MiG-21s

The RAAF actually wanted a long-range bomber squadron as an interim aircraft, so as to reach targets in Indonesia with conventional or nuclear bombs. That 1962 request for consideration resulted in a proposed lease of twelve aircraft RB/B-47E lease (Submission No36/1964), currently being replaced by the B-52 Bomber in frontline service, to cover the capability gap.

Previously in 1962 eight days after the decision after stating interest in the TFX, a letter from the Secretary of the Air Force, Mr. A B McFarlane (a former WWII CO of Number 2 Squadron RAAF) to the Secretary of the Defence, Mr. E W Hicks, stated that the stated B-47E arrangement was a proposal only and that concern by the Department of Works was that the established runways, taxiways and hard standing would fail quickly if reconstruction work was not performed at the operating bases in Australia.

Only RAAF Darwin could operate these aircraft without any reconstruction work. RAAF Amberley would require existing pavements to be overlaid in concrete, as would be the other paved areas. As it would be the primarily the training location for this squadron, there was doubt whether or not the main runway would be long enough to safely operate the aircraft.

Amberley's length was 8000 feet, and would therefore require lengthening to 10,000 feet, with a start to commence by April 1964, which would require the current building of RAAF Tindal's pavements and runway by the RAAF's sole Airfield Construction Squadron, to be deferred by some fifteen months.

The late 1950's RAAF Canberra Nuclear Bomber: Getting more bangs for bucks

In October 1956, due to the recognised need of obtaining modern jet aircraft in the fighter and bomber role, the Minister for Air, and the Minister for Defence, Sir Philip McBride KCMG, requested that action be taken to approach the Government of the United States in requesting and obtaining Tactical Nuclear low yield weapons to be held in Australia, free of charge or at an agreed unit price, in the event of war with a neighbour further up north.

The main reason behind this was that the Service's GAF Canberra Mk20's all up weight and bomb bay size could only carry either one 5000-lb, or two 4000-lb or six 1000-lb bombs at any one time at a limited radius, and thus would have required a number of sorties to destroy any important target.

With the introduction of Green Satin navigation equipment and the T.4 Bomb Sight, the aircraft had a radius of action of some 1100 nautical miles, but still limited by this lack of punch and blind radar bombing ability. It was felt a more effective way to destroy a target was to carry a single Tactical Nuclear store inside the aircraft.

It was concluded, that the feature and the ability to do so, was already incorporated into the design by the RAF on Canberra B2/B6 and in the USAF, their B-57A models.

Despite visiting the USA on a mission in 1957 by the Defence Minister, nil came to bear on obtaining or getting satisfactory nuclear stores response under SEATO.

Meanwhile further discussions were held which under "SEATO plan 4" topic in the 1960s which could have seen American air delivered Nuclear bombs on Australian soil under joint basing agreement. We held the bombs; they held the triggers, under guard.

More so that it required a national commitment in providing a supporting Nuclear Power Industry base. Plans were in the pipeline for a large-scale nuclear reactor to be located at Jervis Bay in NSW.

With only one research Nuclear Reactor at Lucas Heights, NSW, it was implausible to develop an "Australian Nuke", following both the USA and UK in saying "no" without this new Nuclear Power Station. That site construction actually commenced in 1967, but stopped and shelved by 1969/70.

It should be noted; it was only February 1970, that Australia decided to forego the possible pursuit of nuclear weapons by agreeing and signing the Nuclear Non-Proliferation Treaty (NPT).

As it was later, Amberley Extensions post 1966, proposed a final requirement for a hard-standing extension between taxiway's "F" and "G" in an easterly direction for the return of the third Canberra Bombing Squadron (No 2 Squadron based at Butterworth, Malaysia), would be needed when it was due to return to Australia around June 1968, following the conclusion of Konfrontasi in 1966.¹⁴¹

The Chief of Air Staff (A/M Sir Valston Hancock) recommended later in 1964 that the US Government should be approached quickly for twenty-four F-4C Phantoms on long term purchase after having rejected the previous offered twelve aircraft RB/B-47E lease (Submission No36/1964).

Meanwhile, the RAAF resigned itself to the political fact that this may not be possible and that the GAF Canberra Mk20 would have to soldier on until 1968, albeit in reduced numbers. Cabinet Submission No 59 dated 1 May 1964 (further to No 41 17 March 1964) regarding an examination of an interim Strike/Reconnaissance aircraft for the RAAF until the delivery of the twenty-four RAAF F-111As ordered, in July 1967.

There was an option at that time, as recommended by the CAS, to take up a delayed delivery extension to accept deliveries between July and September 1968, after the USAF F-111As had been in squadron service for more than a year.

This would show up any problems in the aircraft and assist the RAAF to become operational on this now a tried aircraft by 1970. However, given the current opposing Indonesian force structure in the northwest and the remaining Canberra airframe hours left, it was decided that the interim Strike and Reconnaissance aircraft would not be required, providing the F-111As arrive by mid-1970.

On the negative side, no single Canberra Bomber could attack any worthwhile targets “northwest” from the Australian Mainland due to range limitations, thus negating the RAAF of a weapons platform that could strike worthwhile targets at long range for some perceived six years gap hence to 1970.

Eventually, the Biggest Canberra Unit in the RAAF: No 1 (B) OCU

On 12 January 1959, No 1 (B) OCU formed and took the training role from No 6 Squadron as a bomber Conversion Unit, with a unit establishment of two flights (A/B) with initially 3 Canberra Mk20 bombers and 3 Canberra Trainers. Airframe strength as of January 1959 was 3 Mk20s (**A84-213/214/215**, Radio Call signs **VM-HHA/B/C**) and 2 Trainers (T4's **A84-501/502** Radio Call signs **VM-HHD/E**). The remaining third Trainer, an Mk21, **A84-307 (VM-HHF)** was with 482 (M) Squadron.



No 1(B) OCU's A84-215(VM-HHC) on the apron at Amberley shortly after being formed. Taken on the 4th May 1959: Note original Black/Yellow chequered tails. [NAA vis RAAF Official, A50 History Sheet#5].

The use of the T4s were however, short lived when the duo were replaced from March/April 1959 by Australian built **A84-201** Mk21 and UK Built **A84-307** Mk21.

Actual numbers did fluctuate by one or two airframes below and above the Unit establishment against the official UE total for No 1 (B) OCU of 6 UE until May 1967 when held aircraft started to exceed the authorised strength by more than 1 airframe average. Like No 1 and No 6 Squadrons, No 1 (B) OCU occasionally had a small number of RR 109 powered Canberra B20 airframes, on hand at different times.

It has been practice that No 2 Squadron was prioritised in having the RR Avon 109 powered version of the Canberra Mk20 on strength since 1958 when the squadron deployed to Tropical Butterworth.

Stretching out the Canberra Service life, but then there was Indonesia and finally Vietnam requirements

No 2 Squadron, during the Konfrontasi period, was the primary offensive bomber squadron, based in Butterworth, Malaysia. As such, it was always equipped with the later Mk20 version with the Rolls Royce Mk109, rotated from Australia, continually from 1958 to 1967.

No 1 and No 6 Squadrons had only on average 2 of such versions on Unit Establishment between 1958 and 1967. These were mainly to assist training and currency on the higher-powered model by No 1 and No 6 Squadrons Crews selected for rotation and tours to No 2 Squadron.

The odd example for No 2 Squadron was the inclusion of a Canberra Mk21 Trainer on Unit Establishment, in addition to a transport flight of two C-47B. For example, from January 1966 to October 1967, Canberra Mk21 **A84-204**¹⁴² was regularly part of No 2 Squadrons Unit Equipment.



25QN Butterworth flight line 1966 – A84-204, an Mk.21 trainer, was not taken to Vietnam in 1967, but sent to No 1 (B) OCU in January 1968; A84-242 recently arrived still with light camouflage and white numbers; other aircraft in dark EDSG camouflage, although A84-241 was still to receive its red 25QN tail flash. [John Bennett, "RAAF AIRCRAFT MARKINGS SINCE 1950 SQUADRON MARKINGS – PART 2 – THE CANBERRA" (2017)].

By October 1967, from a pool of 19 extant RR 109 powered Canberra B20 airframes, including 1 assigned with ARDU (**A84-229**), No 2 Squadron was sent to South Vietnam from Butterworth Malaysia that year, with a Unit Establishment of 8 Canberra Mk20 versions with the Rolls Royce Mk109.

Initial four crews sent 12 October 1967 to Vietnam were from No 1 Squadron, following a transfer three months prior, of eight crews from No 6 Squadron to No 1 Squadron. All crew were on six-month tours. The balance of nine No 6 Squadron crews were already posted to the USA for F-111C training and conversion in June 1967.

1968; the big year of expectation

From the start of this deployment for No 2 Squadron, then incrementally, more airframes were added to the Unit Establishment "Immediate Reserve" thereon as a further 2-3 Canberra Mk20/Mk21s were held in reserve or "D" service at No 478 Maintenance Squadron Butterworth, Malaysia (from 1968), and a further Canberra Mk20 (RR 109 powered) airframe undergoing "E" Servicing at 3AD Amberley.

No 2 Squadron's sole Mk21, **A84-204** arrived ex Butterworth at Amberley on 23 January 1968 and then allotted, along with **A84-205** from ARDU, to No 1 (B) OCU Unit Establishment. **This was the first time that all operational Canberra Mk21s were at the same unit.**

By April 1968, all designated F-111C aircrew of No 6 Squadron were overseas on training courses in the USA. With production and delivery of the F-111C on schedule, the decision was to consolidate the remaining Canberra inventory

within No 1 (B) OCU, which would then be central in supporting crew and aircraft rotational replacements and interchanges for No 2 Squadron base now in South Vietnam.

Thereon from 29 April 1968, No 1 (B) OCU became a separate independent Unit, responsible to the Officer Commanding, RAAF Amberley and from June 1968, the Unit Equipment of No 1 (B) OCU was officially set at 26 aircraft, of which 5 being Mk21, though the actual No 1 (B) OCU's airframe strength as exemplified in June 1968 was 21, of which only 4 were Mk21s.

In order to provide flying currency for both or any of the small number of No 1 and No 6 Squadron Crews remaining in Australia at this time, aircraft were drawn from an available pool of No 1 (B) OCU Unit Equipment: *IE 2 aircraft in the morning, 2 aircraft in the afternoon.*¹⁴³

By September 1968, some 22 Canberra aircraft were on strength, but only 18 Canberra aircraft were active (14 Mk20s/4 Mk21s) with a further 6 in Class 6 Storage (5 Mk20s/1 Mk21) and one Mk20 in Class 3 Storage. *In the same month of 1969, a further 4 Canberra MK20/Mk21s aircraft were held by the ARDU on strength (A84-208/A84-229/A84-245 and A84-204).*

Inclusive to these flying requirements, training of ground staff and technicians for No 2 Squadron deployed in Vietnam was also a role which No 1 (B) OCU was involved with.

By January 1969, the unit had some 21 Canberra aircraft were on strength now (Officially reduced to 24 UE from 26 UE), with 21 Canberra aircraft being active (17 Mk20s/4 Mk21s) with a further 2 in Class 6 Storage (2 Mk20s) and 2 Mk20s in Class 7 Storage. Some 25 Canberra Mk20/21s on strength. These Unit Equipment requirements changed as a result of the soon to be expected F-111C arrival, thereby reducing to 15 Mk20s and 4 Mk21s by mid 1969, then again reduced again by October 1970 to 12 Mk20s and 3 Mk21s with the expected F-4E arrivals at that time.



Serviceability issues regarding cracked spars were exemplified by A84-222, as well with four other Canberras being inspected and subsequently cleared by the ARL Investigation Team regarding centre section forgings. These operational numbers remained right through to its disbandment in June 1971. [Gee Bees Aerospace Shop via ADF-Serials.com.au].

Things going smoothly...or was it?

With the first F-111C being officially handed over at Fort Worth on 4 September, 1968, after having flown earlier in July), it was within three weeks of this ceremonial hand-over it had been decided to delay deliveries, pending modifications. This halt was prompted by the F-111's eleventh USAF accident **F-111A 66-0043**, at Nellis AFB, in which included an RAAF Navigator on USAF exchange, F/Lt Neil Pollock, was part of the crew who ejected on the 4 March

1969, some 60 miles north of Nellis AFB after experiencing a Centre of Gravity problem when managing fuel between fore and aft tanks.



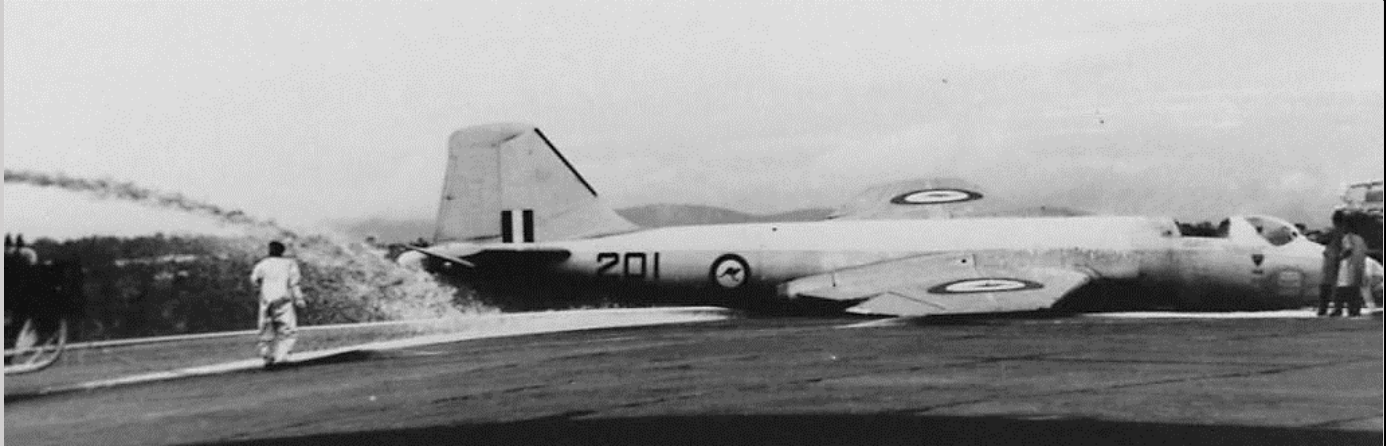
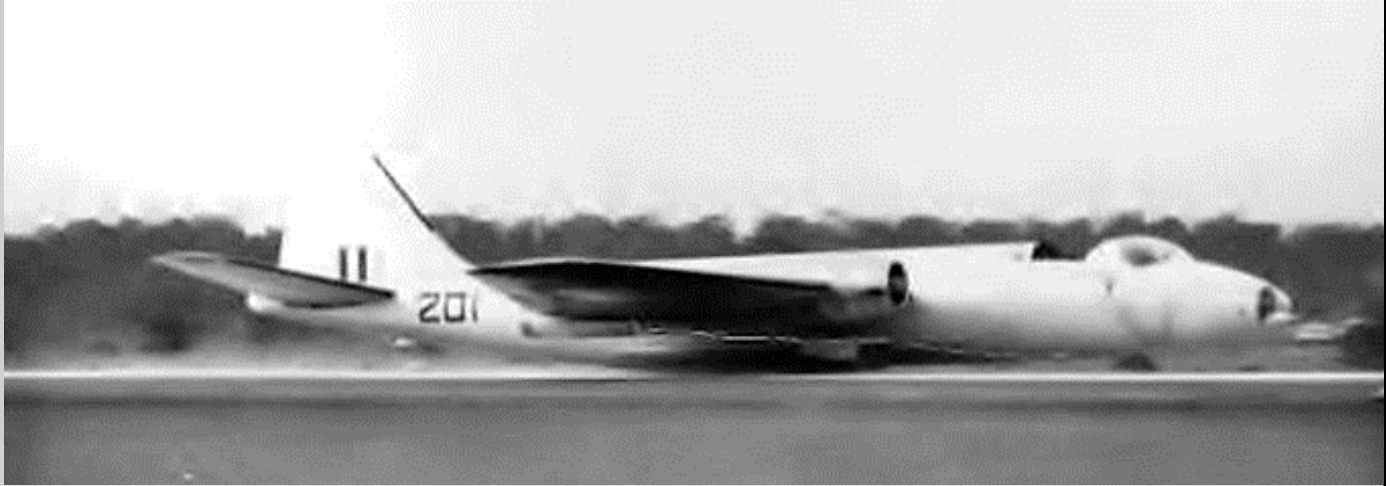
Seen here, are F-111Cs in storage at Carswell AFB in 1969. [Carswell US Air Force Base Historical, USAF Official].

The incident led to major repairs to the wing boxes of all F-111s, but even before these could be completed, fatigue cracking in the same area forced further modifications. Ironically, in Australia, on 24 March 1969 **TF30-P-3 Serial# 658822** was started and its growl was heard for the first time for the type, though on an engine stand (A/M 37-T6B), at No 482 Maintenance Squadron, at Amberley. On 1 April 1969, the F-111C Mission Simulator was accepted by the RAAF with training commenced at Amberley also. But by then, the completed RAAF F-111Cs went into storage as above. There were calls to have the F-111C aircraft programme cancelled and that the F-4E aircraft to be purchased in their place.

On 17 October 1969, Prime Minister John Gorton refuted the speculation by rejecting any consideration to acquire F-4E Phantoms instead of the F-111Cs.

In November 1969, the then Australian Defence Minister had asked the USAF to reactivate the stored F-111Cs for early delivery. Unfortunately, this coincided a month later with the US Air Force losing its 15th F-111A on the 22 December 1969, due to failure of the forged wing pivot fitting. All F-111As were grounded the next day. The grounding was only lifted on the 31st July 1970, but by then some sense prevailed, an arrangement for the short-term lease of 24 F-4E Phantoms was arranged, with an option to purchase had been finally actioned. By the grace of good sense, this aircraft was at that time the free world's premium multirole fighter bomber.

A bit of a scrape; the third time



Not a pretty sight above, as A84-201 skidding on its belly dated 13th May 1969. [Chris Jamesson via ADF-Serials].

It's Amberley 13th May 1969 and after experiencing a total hydraulic failure, the aircraft was landed on a spread of foam at Amberley. The Navigator's hatch has been jettisoned prior to landing. Deemed Cat 4 damage.

The crew was F/Lt R J Montgomery 043796 and F/Lt C R Furlonger 028774; both of No 6 Squadron RAAF, and were not injured. Refer Unit History 1(B) OCU Sheet #156 excerpt below:

13MAY69	4. A Mark 21 trainer aircraft A84-201 experienced complete hydraulic failure whilst being flown by a No 6 Squadron crew, and was forced to make a 'wheels up' landing on the main
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A84-201 Accident/s: It is often stated that this picture is dated 1955, including the ADF-Serial Album

The 1955 entry of the A50 History sheet of No 6 Sqn RAAF for that date, states that the landing was on mains, with only the nose gear retracted. Card reflects same. That crew was Acting Squadron CO, Major Rex J Stoner (USAF exchange) and Flying Officer M J Taylor (RAF exchange). Aircraft flown to GAF 29/07/55 with nose gear down and locked. Possibly of being the earlier dated 14/10/53 accident is negated as that too was just nose wheel collapse.

NO Folks! As it's an Mk21 conversion per nose in this picture, thus it is the 1969 dated accident.

Tugging

Meanwhile, on the 5 November 1969 discussions between the Airframe Projects Officer, Headquarters Support Command Melbourne were held with 3AD engineering regarding publication requirements for certain Canberra Mk20s with Mod 690, and discuss fitting a Canberra in the target tug role, in line of their second line role. It would seem that the modification was performed by 3AD sometime in late 1969. Two known modified aircraft were:

- Canberra A84-224 3AD 1(B)OCU 06/09/68 -14/04/70 to 3AD, Class 6 Storage 3AD 12/01/71
- Canberra A84-225 3AD Mod 690 03/05/68 - 01/07/68 back at 1(B) OCU 27/01/70. Class 6 Storage 3AD 19/01/71.



A84-224 with orange identification bands, on Butterworth tarmac. [ADF-Serials.com.au via TWC].



Beautiful picture of Canberra A84-225 Target Tug, Butterworth, 1970. [John Bennett].

Fitted with target towing equipment and 2G limited soon after. In 1970 two Canberra (A84-224 and -225) were used by 1 (B) OCU at Butterworth. Two orange bands were painted around the fuselage to aid visibility so the Mirage pilots of 3 and 75 Squadrons did not lock onto the tug, instead of the aluminium spreader-bar of target banner. Cracks in the main and centre spars of A84-224 and A84-225 effectively ended their flying lives in January 1971.

RESTRICTED

ANNEX A TO HQAMB
OPERATION ORDER NO 1/70
DATED 212200Z Jan 70
HQAMB/7/101/AIR(1)

MOVEMENT TABLE

SERIAL NO (a)	DATE (b)	CREW (c)	CALLSIGN (d)	ROUTE (e)	MET BRIEF (f)	ETD (g)	ETA (h)	OTHER REQUIREMENTS (i)
1.	28 Jan 70	Flg Off Smith Plt Off Murphy Plt Lt Rhodes	A84-225	ABAM - ADDN	272230Z	280030Z	280430Z	Overnight accommodation as per HQAMB Q245 070020Z
2.	28 Jan 70	Flg Off Copley Flg Off Morrissey Flg Off Cavanagh	A84-224	ABAM - ADDN	272230Z	280030Z	280430Z	Overnight accommodation as per HQAMB
3.	29 Jan 70	Flt Lt Rhodes Flg Off Cavanagh Plt Off Murphy	A84-225	ADDN - WSRB	282130Z	282330Z	290430Z	
4.	29 Jan 70	Flg Off Copley Flg Off Morrissey Flg Off Smith	A84-224	ADDN - WSRB	282130Z	282330Z	290430Z	

Research above, on 1(B) OCU A50 History records 1968-1970 page 95, shows the first attachment was from 28/01/70 to 28/03/70, with the commencement of the target towing on the 3/02/70, with three crews with command initially under F/Lt Lt P M Rhodes (Pilot) and F/Lt H O Beattie (Nav).

Further and final attrition numbers, were two Mk20s and one Mk21 by June 1971 which brought the final losses by all causes to 8 airframes (inclusive of 2 lost on operations) out of 54 Canberra airframes delivered to the RAAF:

- **A84-205** crashed following take-off from Amberley 23/03/70 (fatal)
- **A84-231** missing in Vietnam 03/11/70 (Located 2009) (fatal)
- **A84-228** shot down by SAMs 14/03/71 ¹⁴⁴

With the announcement of No 2 Squadron RAAF returning to Australia, all practice bombing ceased from 2 April 1971, and emphasis would be placed on photo reconnaissance tasks. When No 2 Squadron finally returned to Australia, No. 1 (B) OCU's UE was 13 aircraft (11 x Mk20 reduced from 14 (**A84-212**) and 2 x Mk21s (**A84-125/307**). Most of the active inventory Canberra aircraft were transitioned to No 2 Squadron and ARDU; following the disbandment. The remaining unneeded airframes from No 1 (Bomber) OCU aircraft, were stored with other previously stored Canberra aircraft.

There closed the history of the largest Canberra Bomber Unit in the RAAF.....vale No 1 (B) OCU.



An often used photo of three 1(B) OCU Canberras in formation above: A84-205/125/307 pictured in the early sixties; Perhaps 1960. Sadly, ten years later A84-205 would be lost with crew at Amberley in 1970. [Source RAAF Official via ADF-Serials.com.au]

The Canberra continued its service for another 11 years with No 2 Squadron and ARDU until 1982, when this Grand old Lady was finally retired with honour, after some 30+ years of service.

Notes Regarding No. 31 Squadron Beaufighters Whilst Based at Coomalie Creek

Garry Shepherdson

General

31SQN's first two operations were flown on 17th November, 1942. The last operation flown by their British built Beaufighters was COO42 of 4th October, 1944 (A19-140, -159, -181 and -203). The first operation flown by an Australian built Beaufighter of 31SQN was as part of COO36 of 29th September (A8-6). Beaufighter's of 31SQN were the first RAAF aircraft to use rocket projectiles on operations in the Pacific Theatre (Coomalie 29 of 17th November); they had carried them on operations for the first time on 29th September (Coomalie 36 and 37), but no suitable targets presented themselves and the rockets were discharged at sea on the way back to Coomalie Creek. 31SQN's last operation as part of 79WG and North Western Area was Coomalie 38 of 22nd November, 1944. On 26th November, 1944, the Squadron commenced its move from Coomalie Creek to Noemfoor Island and this was completed on 2nd December.¹⁴⁵

Colour Schemes

All of the RAAF's first 54 Beaufighters were Mark Ic's built by Fairey Aviation. There is conjecture as to whether they would have been factory finished in the RAF's Temperate Land Scheme (TLS – Dark Green and Dark Earth over Sky Type S) because Fairey's had previously built Beaufighters for Fighter Command or, because these were Coastal Command equipped aircraft, in the RAF's Temperate Sea Scheme (TSS – Dark Slate Grey and Extra Dark Sea Grey over Sky Type S). There is also conjecture that, if the aircraft left the factory in TSS, that they were repainted at a RAF Maintenance Unit for RAAF acceptance prior to being dismantled, packed into boxes, and shipped to Australia. The RAAF requirement at the time was for operational land planes to be finished in the RAAF colours of Foliage Green and Earth Brown over Sky Blue.¹⁴⁶ Because these 54 aircraft had been ordered by the RAAF, it is plausible that they would have received a surface finish in accordance with the ordering customers' requirements (either at the factory or MU) and as the required colours would not have existed in Britain, local equivalents colours would have been used. Those local equivalents were: Dark Green and Dark Earth over Sky (TLS). After arrival in Australia, and aside from touching up minor damage, they weren't repainted until more significant re-painting became necessary after a period of service,¹⁴⁷ which was reportedly happening in some circumstances after as little as 40 flying hours.¹⁴⁸

Later aircraft are believed to have arrived in Australia wearing the RAF's contemporary TSS appropriate to the period of manufacture.

Horizontal Stabilizers

RAAF Beaufighters from A19-1 to A19-72 inclusive, were all Mark Ic's built by Fairey Aviation Company in the United Kingdom.¹⁴⁹ Aircraft from A19-73 to -78, -85 to -90, -97 to -99, -110 to -112 and aircraft A19-114, -115, -119, -120, -125 to -129, -135 and -136 were Mark VIc machines, also built by Fairey Aviation.¹⁵⁰ Externally, these Mk VI's were virtually indistinguishable from the earlier Mk I's including having flat (0° dihedral) horizontal stabilizers. All of these aircraft had former RAF serial numbers in the "Tnnnn" range.

RAAF Beaufighters from A19-79 to A19-84 and A19-91 to -96 were Mk VIc's built by Bristol Aircraft Company, they also had the flat tail plane like the Fairey Aviation built machines. These aircraft had former RAF serial numbers in the "ELnnn" block. Aircraft with the serial numbers A19-100 to -109 (except -105 which wasn't delivered to Australia), -113, -116 to -118, -121 to -124 and -130 to -134 were also Mk VIc's built by Bristol's¹⁵¹ but were equipped with the 12° dihedral horizontal stabilizers. These aircraft had former serials in the "JLnnn" range.

All of the subsequent A19 serialled Beaufighters were either Mk X's or XIc's and all were built by Bristols¹⁵² with the 12° dihedral tail plane.

In so far as 31SQN aircraft were concerned, the dihedral horizontal stabilizer would have been factory fitted to A19-103, -113, -116, -117, -118 and on serial number A19-140 and up. Serial numbers A19-119, -112 and from A19-98 and below, had the flat tail plane.

In a postgram dated 9th May, 1943, the Commanding Officer of Number 31 Squadron discussed the relative merits of aircraft with which his Squadron was equipped citing aircraft from A19-16 to -19 inclusive, A19-57 to -72 inclusive and from A19-80 to -86 inclusive. The document dealt mainly with the various combinations of engine and armament installations pertinent to those aircraft and the various typical speed and range figures that those combinations produced. He concluded his remarks with the observation that “this Squadron has Beaufighter aircraft with marked dihedral tail-planes. This modification was carried out ... to increase fore and aft stability.”¹⁵³ This statement seems to have generated the belief amongst some that RAAF examples of British built Beaufighters manufactured with flat (0° dihedral) horizontal stabilizers were modified in Australia to incorporate 12° dihedral horizontal stabilizers.

The issue of longitudinal stability had been raised by CO 31SQN only a month earlier on April 10th, when he noted that, at airspeeds over 200 knots, the aircraft was (just) stable in pitch but, at lower speeds, such as at the aircrafts economical cruise of 160 knots, the aircraft was unstable in pitch and it was not possible to fly “hands off” which, in turn, caused “considerable physical fatigue to pilots”. He recommended either “a major modification in design and/or ... [the installation] of [an] automatic pilot.”¹⁵⁴ It seems clear that, at that time, none of his Squadron’s Beaufighters was equipped with the 12° dihedral horizontal stabilizer.

As recognised by the CO 31SQN, the change from 0° to 12° dihedral tail planes would have required a major re-design and consequently would not have been a locally applied field modification – at least not without an engineered and service authorised replacement empennage kit. If a modification of that complexity existed, it would have to have been devised, scratch built, tested, authorised, manufactured, issued to maintenance units (in sufficient quantities) and then implemented. Also, a Technical Instruction or some similar official document would have had to be raised to ensure the uniformity of the installation of such a modification so as to maintain integrity throughout the services fleet of Beaufighters.

From a Squadron CO’s recommendation on April 10th for a major structural design modification to enhance longitudinal stability, to his statement 28-days later on May 9th that his unit now had aircraft with that new design could not mean that any, let alone all, of his aircraft had been modified. It simply could not have been possible. But, what is possible is that the CO 31SQN was simply referring to the most recent delivery to his Squadron of an aircraft (A19-103 – the first of several others that were due for delivery later in the month) which was factory made with the 12° dihedral horizontal stabilizers and which, being at that time an orphan in his Squadron, was not included in the three distinct blocks of aircraft to which the postgram was primarily concerned.

The first official mention of factory fitted dihedral tailplanes was during April, 1943, (the same month during which CO 31SQN had raised the issue of longitudinal stability) when the Commanding Officer of Number 1 Aircraft Depot noted them for the first time, amongst other items, on five new Mark VI Beaufighters, which number included A19-103, referred to above.¹⁵⁵

Of course, several Beaufighter Instructions were issued relating to dihedral tail planes, but they were for issues relating to existing dihedral tail planes – such as adjustment of elevators, or the installation of additional drainage holes, etc. No mention of a Technical Order, Service or Technical Instruction or the existence of any type of retrofit kit for the post-manufacture installation of a 12° dihedral tail plane to replace a 0° unit on RAAF aircraft has been found.

The ONLY exception to this was A19-2. After service with 30SQN, A19-2 was handed over to the Department of Aircraft Production (DAP) to be used as a test bed. It received a pair of Wright Twin Cyclone engines and, in time, received a 12° dihedral tail plane.



A19-2 seen here at Fishermans Bend, Victoria, with the 12° dihedral horizontal stabilisers and Wright R-2600 Twin Cyclone engines. [ADF-Serials Gallery].



The flat horizontal stabilisers are illustrated here by 31SQN's A19-18/EH-T as it sits, dripping oil, on a convenient piece of flat, unobstructed ground, a considerable distance from the nearest airfield. The date was August 18th, 1943, and A19-18 had been engaged on a convoy escort. During the course of that job and whilst at (evidently) low level over the water the oil cooler of the starboard engine was ruptured (presumably by a shell casing) which had, no doubt, bounced off the water and hit it during the course of "test firing". The starboard engine was run dry due to engine oil being vented overboard and the engine was later assessed as being damaged beyond repair. Aside from that minor detail, there was no damage to the aircraft or crew. They were located by another of the squadron's machines which landed next to them and took them back to base. The aircraft was later repaired by 4RSU and returned to 31SQN on September, 21st. One wonders how the explanation was received by the Boss. [Image courtesy of 31 Squadron Beaufighter Association].

Aircraft Code Letter Allocations

Letter	Pre AFCO A3/43 Allocations		Post AFCO A3/43 Allocations "EH-"			
	Nov - Dec 1942	Jan – Apr 1943	Apr – Jun 1943	Jul – Dec 1943	Jan – Jun 1944	Jul – Nov 1944
A	16	16	16	16	176	176
B	17	17	17	17 / 88	88 / 169	169
C	19	19	-	-	177 / 191	191
D	20	83	83	83	83	198
E	21	21	21	21	165	-
F	22	84	84	84 / 82 / 160	160	160
G	29	29	29 / 112 / 40	40 / 143	143	-
H	31	31	113	30 / 149	149	149
I	-	-	-	-	-	-
J	45	45	45 / 117	117 / 144	144 / 161	161 / 197
K	46	86	86	86 / 162	162	-
L	47	47	47	47 / 148	148 / 181	181
M	51	51	51	51	51 / 159	159
N	57	57	57	145 / 158	158	-
O	58	58	58	116 / 36	172	172
P	59	59	59 / 103	8	155	155
Q	60	80	80	80	182 / 180	180
R	62	62	62	156	156 / 184	184
S	63	63	63	144 / 163	163	163
T	65		60	18	178	192
U	66	66	-	43	175	175
V	67	67	78	78	78 / 189	189
W	69 / 70	70 / 79	19 / 119	119 / 140	140	140
X	71	78	98	98	98	203
Y	72	72	72 / 118	118 / 70 / 152	152	-
Z	-	-	-	103	103	-
AA	-	-	-	-	161/	-
Unknown	-	81	-	-	193	193 / 204 / 208

The individual identification letter for three of 31SQN's British built Beaufighters hasn't been determined.

A19-193 didn't fly operationally before being destroyed during an attempted emergency landing on July 3rd, 1944. As the primary identification source used has been Forms Mauve acknowledging operational orders, the absence of same means that an alphabetic association for this aircraft isn't yet known and may not have existed.

Similarly, A19-204 which was damaged to such an extent by fire the day after it arrived at the Squadron that it wasn't used by 31SQN, means that it may never have had a letter allocated.

A19-208 was used operationally on one occasion but, it seems, was a replacement and so the operational documentation available only referred to the originally tasked machine, not the replacement.

There might be one example of available operational documentation referring to a British built 31SQN Beaufighter for which a serial number hasn't yet been ascertained.

The Form Mauve for mission Coomalie 42 of 4th October, 1944, referred to duty 4 as EH-S with the W/T callsign LD6S. 31SQN's A51 recorded that duty being undertaken by A19-181, with the crew as nominated in the Form Mauve. A19-181 had been "EH-L" since joining the Squadron in March, 1944. So, either A19-181 replaced the unknown aircraft "EH-S" or, A19-181 had been re-coded.

There doesn't seem any obvious reason why it would have been re-coded. This mission was the last operation it flew pending withdrawal from operational service as new Australian built machines were being delivered. The individual re-coding of an existing squadron aircraft usually occurred when a machine returned after an absence during which time a new arrival had been allocated its old letter. A19-181 hadn't been away from the Squadron and the only new deliveries that had arrived prior to October 4th – Australian built Mark 21's – have all had their individual letter allocations already identified. It is plausible, given that it was due to depart the unit within a few weeks, that it was re-coded so as to make the letter "L" available for a future delivery. It's plausible, but I have doubts.

The trouble is, if A19-181 hadn't been re-coded, who was "EH-S"?

The latest known British built aircraft to be allocated the individual identification letter "S" with 31SQN was A19-163, but that machine was re-coded "N" after returning to the Squadron towards the end of August, 1944 and was then lost in a fatal accident shortly after take-off from Broome on September 18th. It couldn't have been any of the three aircraft mentioned earlier (A19-193, -204, or -208) because none of them were still with 31SQN by October 4th and, as mentioned above, the individual letter identities of the new Mark 21 deliveries up to that point are known.

Perhaps the reference to "EH-S" was an error. If there was a mis-match between the aircraft identification letter and the corresponding W/T callsign suffix letter in a case such as this, then yes, because at least one of the letters must be incorrect. Since they're both the same doesn't mean that they can't still be wrong, but it is far less likely to be so. There doesn't appear to be any reason to doubt the accuracy of the Form Mauve.

Despite my disinclination to believe that A19-181 had been re-coded from "EH-L" to "EH-S", I suppose that, as Sir Arthur Conan Doyle wrote, "when you eliminate the impossible, whatever remains, no matter how improbable, must be the truth".

Code Letter Re-Assignments

The widespread change of individual aircraft identities within 13SQN and later, 2SQN, seems to have coincided with the *actual* application of full code letter markings in those units and, for those units, suggest that single-letter identification was probably *not* previously marked on their aircraft. Such a change didn't occur at 31SQN which might support the notion that single-letter individual codes were actually carried by its aircraft, although photographic evidence of this is conspicuous by its absence. As mentioned above, whether marked or not, the tables show that the allocations were real.

Of the aircraft that had a single-letter allocation and had survived until the introduction of full three-letter codes, only four received an identification letter that varied from that with which it was associated before the change. Specifically, that is to say that, thirty-one aircraft had single letter allocations (with an additional machine probably having one). Of those, ten were lost prior to the introduction of three-letter codes and so, obviously, didn't receive a three-letter allocation. However, twenty-one aircraft transitioned from having an individual letter allocation to having a full three-letter allocation. Of those, only four differed.

A19-60/Q was damaged and sent off to the local RSU and was replaced by A19-80 which received the now vacant letter "Q", this allocation was carried over when full three-letter codes were applied during April, 1943. By the time A19-60 returned to 31SQN (in May, 1943), the letter "Q" was taken so, it received the letter "T" therefore becoming "EH-T".

A19-70/W was damaged and also sent off to the local RSU and was replaced by A19-79 which received the freshly vacated letter "W". Unfortunately, -79 was lost on its first operation so the letter was, in turn taken up by A19-19 which was recoded and became "EH-W". This aircraft was lost a month later so the letter was then taken up by a

newly delivered machine, A19-119. By the time that A19-70 finally returned to 31SQN after repairs, the letter “W” was in use by A19-119 and A19-70 was allocated a new letter, “Y”, and thusly became “EH-Y”.

A19-78/X was successfully force landed “in the field” but due to conditions had to remain pretty much abandoned for several months until it could be recovered so, accordingly, was handed over to the local RSU for that period. In between times, it had been replaced on the squadron by a new machine which took up its letter and became “EH-X”. So, when A19-78 was recovered – undamaged – its letter was no longer available and it had to be recoded, becoming “EH-V”.

A19-19/C has already been briefly mentioned as having been recoded to become “EH-W”. Of these four re-coded machines, it is unusual in that it was not allotted away from the squadron during the period of it having its identification letter changed. However, the new formal system of code letters prohibited the use of the letter “C” as an individual identifier and that, I believe, accounts for this machine being recoded.

After 31SQN adopted full three-letter codes, another four machines, out of all of the others, received more than one identity.

A19-103 started off as EH-P, but after a period at 14ARD returned and was re-coded EH-Z. A19-144 was EH-S, but after a spell at 14ARD returned to become EH-J. A19-161 started off, temporarily as EH-AA, becoming EH-J and then, EH-Y. A19-163 was EH-S, but after a period at RSU was re-coded EH-N.



This is 31SQN's A19-180/EH-Q. [Image courtesy of 31 Squadron Beaufighter Association].

Here is a tabular analysis of the accuracy of the identification letter to serial number association for each of 31SQN's Beaufighters in NWA for which an identification has been made during the research from which this article has been drawn.

Accuracy equals "Tasked and Recorded" divided by the sum of "Tasked and Recorded", "Tasked but Not Recorded" and "Not Tasked but Recorded", multiplied by 100.

Serial	Letter(s)	Tasked	Known Cancellations	Tasked and Recorded in A51 as Flying	Tasked but Not Recorded (Apparently replaced by...)	Not Tasked but Recorded (Apparently replaced...)	Accuracy (%)
A19-8	EH-P	15	0	14	1	1	87.5
A19-16	A	22	2	19	1	0	95.0
	EH-A	27	0	27	4	5	75.0
A19-17	B	24	1	20	3	3	76.9
	EH-B	33	0	29	4	1	85.2
A19-18	EH-T	13	0	12	1	2	80.0
A19-19	C	14	0	12	2	4	66.6
	EH-W	6	0	5	1	0	83.3
A19-20	D	8	1	7	1	0	87.5
A19-21	E	10	0	9	1	1	81.8
	EH-E	20	0	20	0	3	86.9
A19-22	F	13	2	9	3	1	69.2
A19-29	G	30	0	25	5	1	80.6
	EH-G	8	0	7	1	1	77.7
A19-30	EH-H	21	1	20	0	2	90.9
A19-31	H	18	3	13	2	4	68.4
A19-36	EH-O	5	0	4	1	2	57.1
A19-40	EH-G	17	0	15	2	2	78.9
A19-43	EH-U	34	1	30	3	2	85.7
A19-45	J	18	0	15	3	2	75.0
	EH-J	7	2	5	1	0	83.3
A19-46	K	1	0	1	0	0	100
A19-47	L	24	2	21	1	2	87.5
	EH-L	14	1	13	0	0	100
A19-51	M	16	1	14	1	4	73.6
	EH-M	49	2	43	4	3	86.0
A19-57	N	22	0	20	2	5	74.0
	EH-N	9	0	9	0	0	100
A19-58	O	21	1	20	0	2	90.9
	EH-O	8	0	8	0	0	100
A19-59	P	23	4	18	1	0	94.7
	EH-P	1	0	1	0	0	100
A19-60	Q	4	0	4	0	0	100
	EH-T	4	0	4	0	0	100
A19-62	R	24	2	20	2	5	74.0
	EH-R	7	0	7	0	0	100
A19-63	S	26	2	22	2	3	81.4
	EH-S	27	2	24	1	3	85.7

Serial	Letter(s)	Tasked	Known Cancellations	Tasked and Recorded in A51 as Flying	Tasked but Not Recorded (Apparently replaced by...)	Not Tasked but Recorded (Apparently replaced...)	Accuracy (%)
A19-65	T	2	0	1	1	0	50.0
A19-66	U	20	0	16	4	2	72.7
A19-67	V	12	1	11	0	3	78.5
A19-69	W	3	0	3	0	1	75.0
A19-70	W	7	2	5	0	0	100
	EH-Y	8	1	7	0	1	87.5
A19-71	X	20	2	17	1	0	94.4
A19-72	Y	24	4	18	2	2	81.8
	EH-Y	2	0	2	0	0	100
A19-78	X	7	0	7	0	0	100
	EH-V	34	1	31	2	2	88.5
A19-79	W	1	0	1	0	0	100
A19-80	Q	8	1	7	0	1	87.5
	EH-Q	46	1	41	4	4	83.6
A19-81	T	1	0	0	1	0	0
A19-82	EH-F	11	0	6	5	0	54.5
A19-83	D	11	3	7	1	0	87.5
	EH-D	34	2	29	3	0	90.6
A19-84	F	6	1	4	1	1	66.6
	EH-F	35	2	31	2	2	88.5
A19-86	K	11	1	9	1	0	90.0
	EH-K	30	1	27	2	1	90.0
A19-88	EH-B	19	0	17	2	1	85.0
A19-98	EH-X	33	1	29	3	3	82.8
A19-103	EH-P	6	0	6	0	0	100
	EH-Z	34	0	32	2	8	76.1
A19-112	EH-G	1	0	1	0	0	100
A19-113	EH-H	5	0	5	0	0	100
A19-116	EH-O	29	1	27	1	3	87.0
A19-117	EH-J	18	0	15	3	0	83.3
A19-118	EH-Y	6	0	5	1	0	83.3
A19-119	EH-W	22	0	20	2	1	86.9
A19-140	EH-W	52	2	48	2	2	92.3
A19-143	EH-G	32	0	30	2	4	83.3
A19-144	EH-S	6	0	5	1	0	83.3
	EH-J	6	0	5	1	0	83.3
A19-145	EH-N	12	0	11	1	2	78.5
A19-148	EH-L	22	0	22	0	1	95.6
A19-149	EH-H	43	1	41	1	2	93.1
A19-152	EH-Y	27	0	26	1	1	92.8
A19-155	EH-P	14	2	12	0	0	100
A19-156	EH-R	24	2	20	2	2	83.3
A19-158	EH-N	32	0	27	3	3	81.8
A19-159	EH-M	19	1	17	1	1	87.5

Serial	Letter(s)	Tasked	Known Cancellations	Tasked and Recorded in A51 as Flying	Tasked but Not Recorded (Apparently replaced by...)	Not Tasked but Recorded (Apparently replaced...)	Accuracy (%)
A19-160	EH-F	32	2	29	1	0	96.6
A19-161	EH-AA	1	0	1	0	0	100
	EH-J	29	1	26	2	3	83.8
	EH-Y	1	0	1	0	0	100
A19-162	EH-K	14	1	11	2	1	78.5
A19-163	EH-S	28	2	22	4	1	81.4
	EH-N	2	0	2	0	0	100
A19-165	EH-E	1	0	1	0	0	100
A19-169	EH-B	15	0	14	1	1	87.5
A19-172	EH-O	13	0	12	1	1	85.7
A19-175	EH-U	23	1	19	3	0	86.3
A19-176	EH-A	16	1	12	3	2	70.5
A19-177	EH-C	2	0	2	0	2	50.0
A19-178	EH-T	5	0	5	0	0	100
A19-180	EH-Q	27	3	23	1	3	85.1
A19-181	EH-L	24	0	22	2	2	84.6
A19-182	EH-Q	1	0	1	0	0	100
A19-184	EH-R	30	1	27	2	2	87.0
A19-189	EH-V	19	1	17	1	1	89.4
A19-191	EH-C	21	3	17	1	0	94.4
A19-192	EH-T	13	1	12	0	1	92.3
A19-197	EH-J	6	1	5	0	0	100
A19-198	EH-D	16	1	15	0	0	100
A19-203	EH-X	12	1	10	1	0	90.9
A19-208		0	0	0	0	1	0

The highest accuracy figure recorded was 100% on 24 occasions. The lowest accuracy figure recorded was 0% on two occasions (A19-81 and A19-208). Despite these and a couple of 50%'ers, the vast majority of the individual accuracy figures (103 out of 107) don't come close to being low enough to attribute to chance.

As mentioned in the previous "Notes Regarding" instalment, the mission tables that I had prepared during this research and, accordingly, that this accuracy table displays an analysis of, were derived from surviving and available records. There may have been contemporaneous documents that have since either been lost, destroyed or not yet re-discovered, that may have provided further proof of an aircraft having been replaced, or replacing, another on a flight. The accuracy of an aircraft's individual identification letter to serial number association will be adversely affected if that aircraft was available for use as a replacement (especially in the apparent absence of additional, now perhaps lost, evidence). One of the main points of my research method was to ignore photographs as a source of evidence to prove an identification letter to serial number association (due to the relative lack of suitable surviving photographs and the wide dispersal of those that have survived). You may have noticed that the images of the two 31SQN machines that preceded this table were of A19-18/EH-T and A19-180/EH-Q, that both of those images clearly showed both the aircraft's serial number and its individual identification letter (not at all common) and that both of these aircraft, according to the analysis, returned an accuracy figure of less than 100% (80% and 85.1% respectively). I believe that that reinforces the relative "weight" of those percentage figures.



This image shows (left to right), A19-165/EH-E, A19-152/EH-Y and A19-140/EH-W. Interestingly, these three machines flew together on Coomalie 12 of 22nd February, 1944, which was A19-165's only operation. Could this photograph have been taken prior to their departure on that job? *[Photo Keith Fitton via 31 Squadron Beaufighter Association].*



A19-80/EH-Q after its incident of 3rd December, 1943. *[Image courtesy of 31 Squadron Beaufighter Association]*



A19-140/EH-W at Coomalie Creek. See also ADF-Serials Telegraph, Volume 10, Issue 4, pages 111 to 114 for further information. [Image courtesy of 31 Squadron Beaufighter Association].



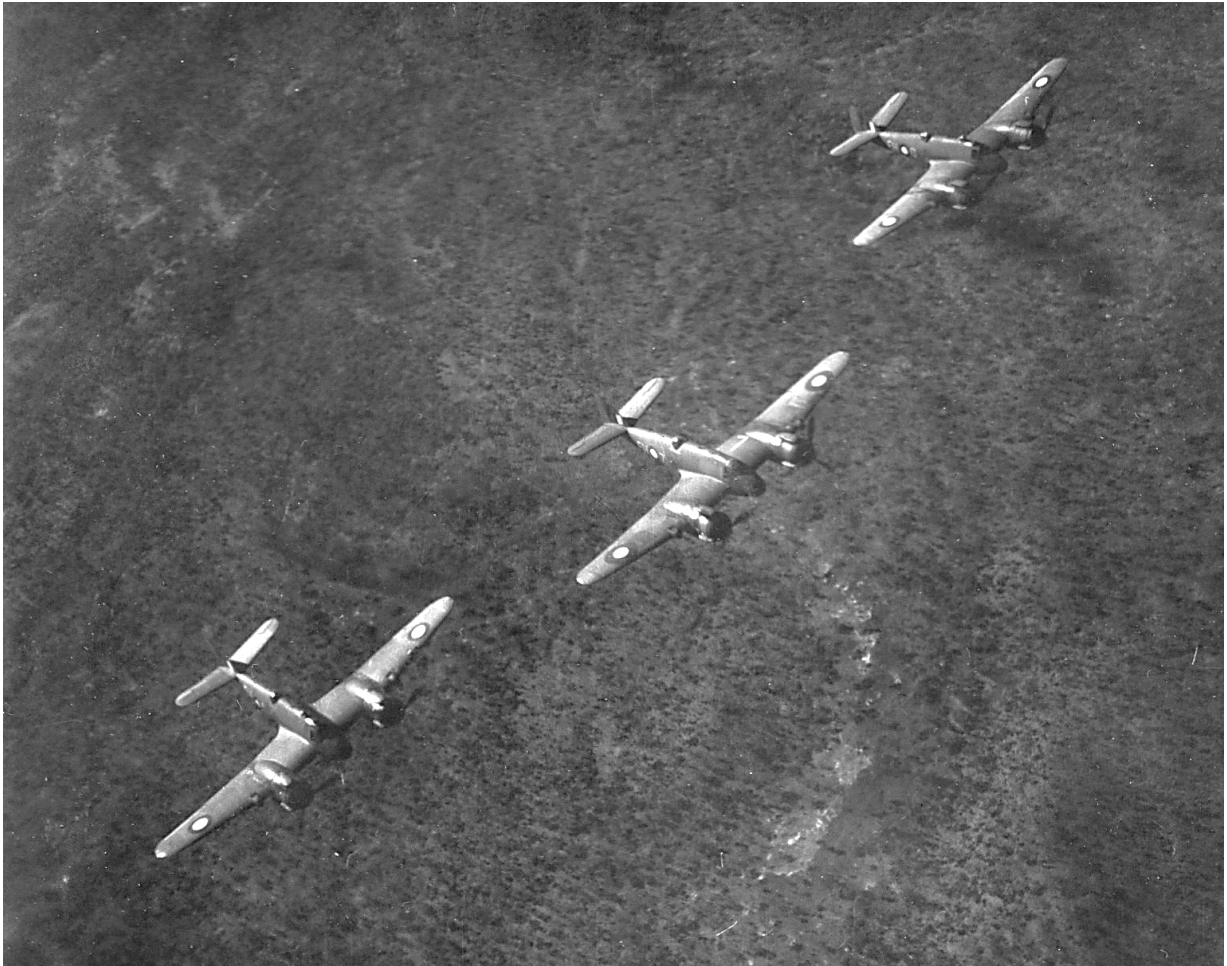
A19-184/EH-R "Eat 'Em Alive". Unfortunately, the two troops have had their heads cropped from the picture. [Image courtesy of 31 Squadron Beaufighter Association].



I reckon this is A19-169/EH-B. Of the three British built Beaufighters operated by 31SQN with the individual identification letter "B", only A19-169 had the 12° dihedral horizontal stabilizer. The positioning of the demarcation between the upper camouflage (original British Temperate Sea Scheme or perhaps Foliage Green and Dark Earth?) and the lower camouflage (RAAF Sky Blue) is unusual and seems superficially similar to the scheme originally intended for RAAF Mosquito's. [Image courtesy of 31 Squadron Beaufighter Association].



The caption for this image, as it appears in the 31SQN Album, says "[a]t Millilingimbi [sic]. After attack on Doka Barat 7-5-44. Norm Tritton Cyril Hensen Dave Strachan Ron Leckie F/O Quinlan Alan Cobb Sid Green". The attack referred to was COO24/7 May with six aircraft participating. Post-strike, two returned to Coomalie Creek and four landed at Millingimbi – three of them damaged. The most significantly damaged was A19-176/EH-A flown by Tritton and Leckie. It is probably reasonable to assume that this is a picture of that aircraft and seven of the eight aircrew that landed at Millingimbi – Flight Sergeant Brassil isn't in the picture, was he the photographer? Regardless of which aircraft it is, the lower camouflage colour seems unusually dark and seems too dark to be the original British Sky type S – was it Medium Sea Grey or perhaps even PRU Blue? [Image courtesy of 31 Squadron Beaufighter Association].



A nice over-head view of A19-103/EH-Z leading A19-181/EH-L (lower) and A19-180/EH-Q (upper). [Image courtesy of 31 Squadron Beaufighter Association].



Another aspect of the same three aircraft. [Image courtesy of 31 Squadron Beaufighter Association].



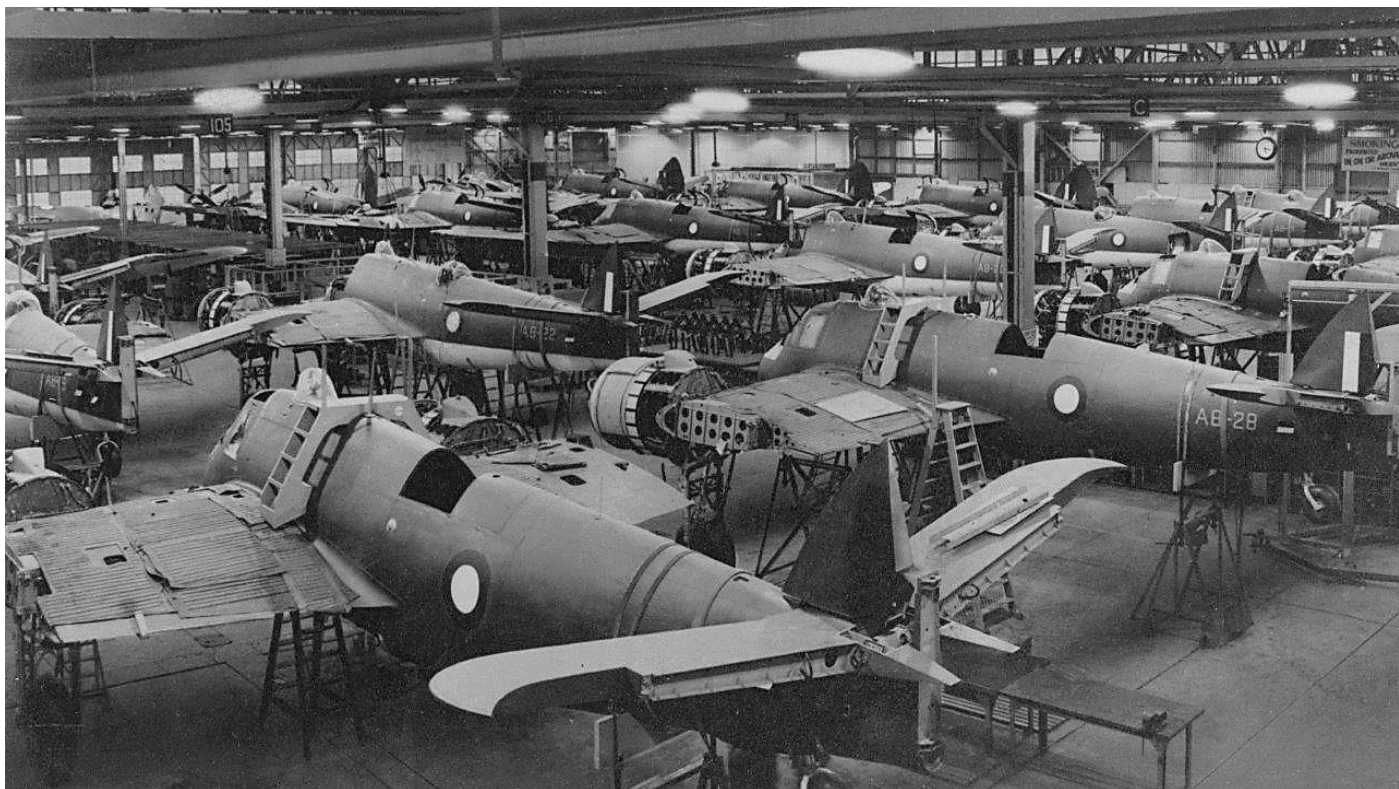
An unusual shot although not so good for identifying specific airframes. The Beaufighter at top left of the image, that is, in echelon starboard to the leader of the second vic (assuming the photo-ship is leading the first vic) is sporting a large piece of nose art and the upper camouflage colours seem very light – indeed it seems to be wearing a uniform, wrap-around, light colour scheme – I suspect that it is actually A19-156/EH-R – but that’s only a suspicion. The lead aircraft of the third vic – the machine immediately above the photo-ships fin – has a Tiger’s face on its nose and the aircraft flying echelon starboard to it appears to have a camouflage scheme very similar to that displayed on A19-169/EH-B. The positioning of visible under wing roundels varies from aircraft to aircraft. *[Image courtesy of 31 Squadron Beaufighter Association].*

Summary, Australian Built Beaufighters

Between 20th September and 1st November, 1944, Number 31 Squadron received 24 Australian built Beaufighter Mk21's at Coomalie Creek. They were A8-2, A8-5 to A8-26 inclusive and A8-35.

Colour Schemes

Deliveries of Australian built Beaufighters to 31SQN would have been in factory applied overall Foliage Green which was in accordance with AGI Part 3, Section C, Instruction 1 of 26th May, 1944. In a letter to DTS dated 28th June, 1944, North Western Area stated a requirement for its Beaufighters to instead have their "... upper surfaces to be irregular areas of foliage green and medium sea-grey; under surfaces, sea-grey".¹⁵⁶



A view of the Beaufighter assembly line. Of interest are the two colour schemes on the floor – the aircraft in the line closest to the camera are finished in overall Foliage Green, however those in the other four rows are Foliage Green over a pale colour which looks like it might be Sky Blue, although Azure Blue was the specified under-surface colour for a short time, the under-surface colour here is surely too pale to be that. Identifiable in overall Foliage Green is A8-28 (nearest row, right hand side of image). Identifiable in the next row (in Foliage Green over possibly Sky Blue) are from left: A8-19, A8-22, A8-20, A8-unk, A8-21 and A8-16. In the third row, the serial number of the aircraft at centre top of this image looks like A8-17. All of those identifiable serial numbers (except A8-28) were delivered to 31SQN; incidentally, those visible serial numbers appear to have been applied in Medium Sea Grey. [*Beaufort and Beaufighter Production in Australia, NAA: M3908, 2*].



This is a heavily cropped portion of an image of two of 31SQN's A8 serialled Beaufighters. A8-21/EH-R is seen here in overall Foliage Green, however the previous factory floor image showed A8-21 as wearing Foliage Green over (possibly) Sky Blue. Was the paint scheme amended by DAP prior to delivery? [*AHM of WA image P028663*].

Aircraft Code Letter Allocations

Due to the impending departure of 31SQN and the consequent meagre utilisation of Australian built Beaufighters by North Western Area during the second half of 1944, very little operational documentation was raised.

EH-	Serial
A	8
B	9
C	24
D	11
E	19
F	7
G	6
H	
I	12
J	14
K	13
L	18
M	20
N	5
O	16
P	15
Q	22
R	21
S	
T	10
U	26
V	25
W	
X	17
Y	23
Z	2
none	
unk	35

Serial numbers for the letters H, S, and W, prior to 31SQN's departure from North Western Area, are not currently known. Two early deliveries of Mk21's to the Squadron *after* it left Australia, specifically A8-37 and A8-44, received the letters "W" and "S" respectively. Perhaps that therefore means that A8-35 was coded "H".

For additional information on Beaufighter colours and camouflage, see John Bennett's excellent article, *RAAF WWII in Colour, No.1 – RAAF Beaufighters*, in Volume 9, Issue 3, Spring 2019 of the ADF Serials Telegraph.¹⁵⁷

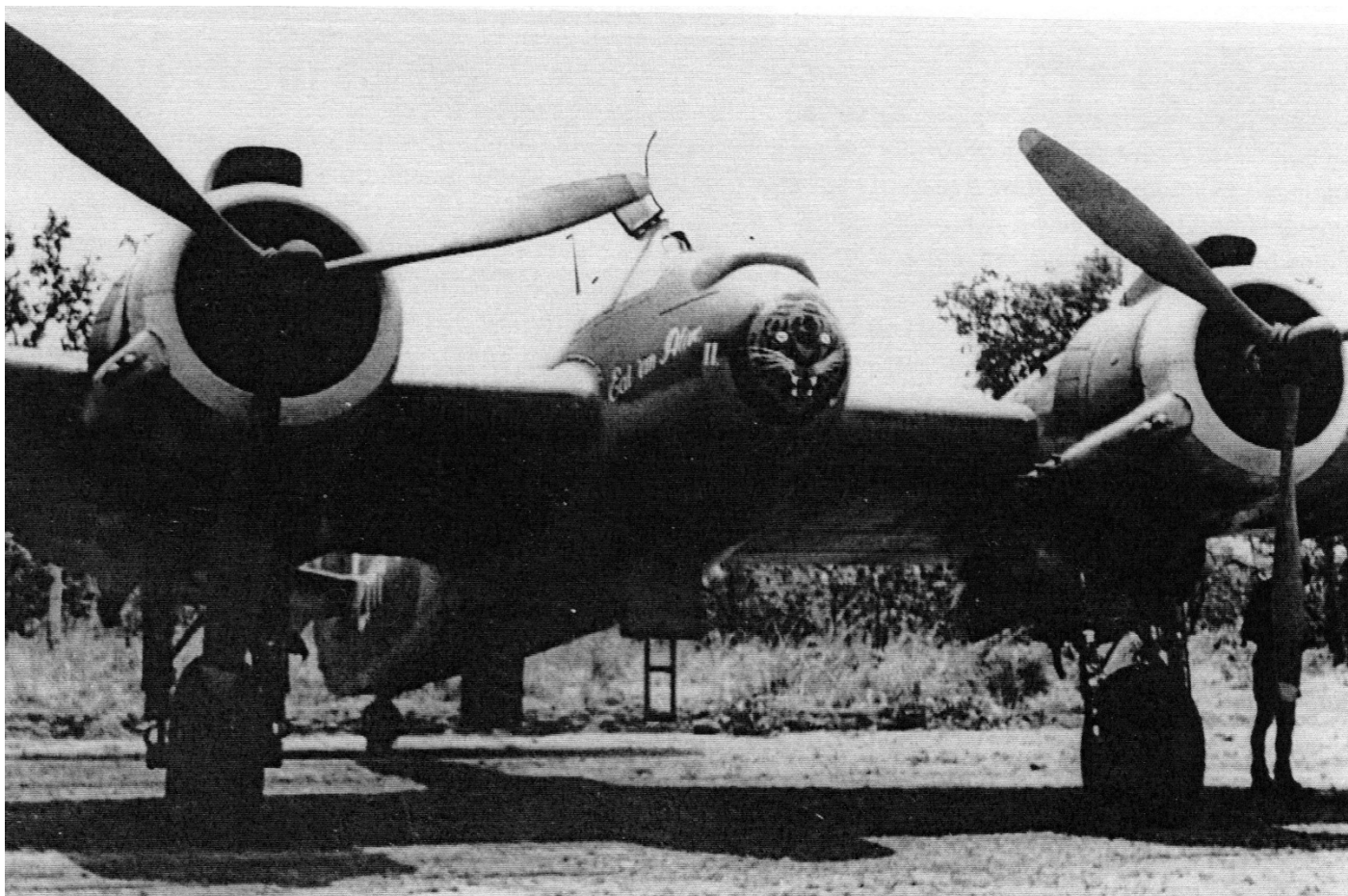
Here is another tabular analysis, this time showing the accuracy of the identification letter to serial number association for each of 31SQN's Australian built Beaufighters in NWA for which an identification has been made during my research.

Serial	Letter(s)	Tasked	Known Cancellations	Tasked and Recorded in A51 as Flying	Tasked but Not Recorded (Apparently replaced by...)	Not Tasked but Recorded (Apparently replaced...)	Accuracy (%)
A8-2	EH-Z	1	0	1	0	0	100
A8-5	EH-N	4	0	4	0	0	100
A8-6	EH-G	3	0	2	1	2	40.0
A8-7	EH-F	3	0	1	2	0	33.3
A8-8	EH-A	3	0	3	0	2	60.0
A8-9	EH-B	2	0	2	0	0	100
A8-10	EH-T	3	0	3	0	2	60.0
A8-11	EH-D	2	0	1	1	2	25.0
A8-12	EH-I	1	0	1	0	0	100
A8-13	EH-K	2	0	2	0	0	100
A8-14	EH-J	1	0	1	0	0	100
A8-15	EH-P	4	0	4	0	0	100
A8-16	EH-O	4	0	3	1	0	75.0
A8-17	EH-X	1	0	1	0	0	100
A8-18	EH-L	1	0	1	0	0	100
A8-19	EH-E	3	0	3	0	0	100
A8-20	EH-M	3	0	3	0	0	100
A8-21	EH-R	3	0	3	0	1	75.0
A8-22	EH-Q	5	1	4	0	0	100
A8-23	EH-Y	4	0	2	2	0	50.0
A8-24	EH-C	4	0	3	1	0	75.0
A8-25	EH-V	2	0	2	0	0	100
A8-26	EH-U	1	0	0	1	0	0
A8-35		0	0	0	0	0	0

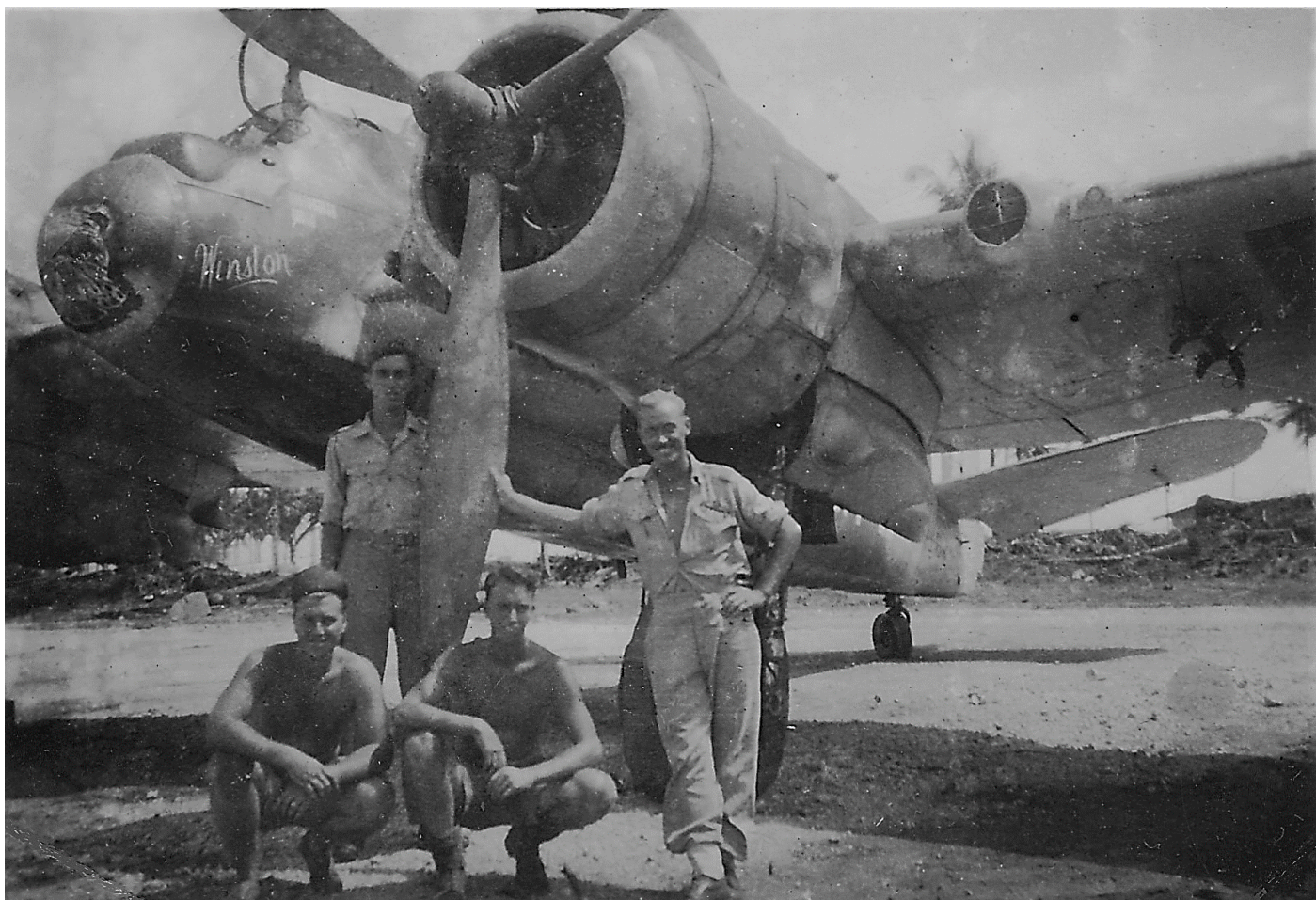
The highest accuracy figure recorded was 100% on 13 occasions. There were two returns at 60% and three at 75%. The lowest accuracy figure recorded was 0%, being recorded twice. A return of 25% was recorded for one machine, 33⅓% for another, then a 40% and a 50%. These figures are not as conclusive as one would hope however, the very low operational utilization of these machines whilst with 79WG precludes a more definitive result. Despite that, there is still a high level of certainty for many of the serial number to code letter associations that have been made and there is no evidence to doubt the others. Be aware also, that any aircraft that has an entry in the "Not Tasked but Recorded" column will have its accuracy percentage adversely affected for apparently flying when it wasn't tasked (i.e. flying as a replacement).



This is A8-5/EH-N (not A8-6 as captioned on the website gallery). It would have been delivered to 31SQN in overall Foliage Green but has received a local disruptive pattern. It would make sense for the darker of the upper colours to be Foliage Green but whether it is or not, grey has also now been applied and a third, much lighter shade has been applied to the undersides – evidently in keeping with NWA’s stated desire for Beaufighters to be Foliage Green and Medium Sea Grey over “Sea Grey”. [ADF-Serials Gallery via Mike Mirkovic].



I believe this is A8-7/EH-F “Eat ‘em Alive II”. This also appears to have a three-colour (two top, one bottom) non-standard disruptive camouflage finish. [Image via Mark Harbour].



This is "Winston" at Morotai. This aircraft was A8-6/EH-G. [AWM image P01157.009].

Bibliography

AMOE Technical – Aircraft General Instruction C11 Issue 3 Standard Aircraft Finishes Markings and Markings of Unit Equipment; NAA: A705, 150/4/852.

DTS – Beaufighter Aircraft – General Technical File; NAA: A705, 9/32/11.

Garry Shepherdson, *The Identification of Various Aircraft; Beaufighter Aircraft of Number 31 Squadron, November, 1942, to November, 1944* (unpublished manuscript).

Neville Parnell, *Whispering Death – A History of the RAAF's Beaufighter Squadrons* (1980).

RAAF Command Headquarters – Beaufighter Aircraft – A19; NAA: A11093, 452/A19 PART 1.

RAAF Unit History Sheets Number 31 Squadron Aug 42 to Aug 45; NAA: A9186, 61.

Thanks to Ian Madden, 31 Squadron Beaufighter Association, for permission to reproduce the 31 Squadron Beaufighter Association images.



Curtiss Corner: P-40E-1 41-25109/ET433 *Ex-pat Australian Defence Aid P-40E-1 comes home again.* Aka Col Pay's Second Kittyhawk: VH-KTY and her sisters

Gordon R Birkett



An original post restoration shot in vivid Desert colours. [www.paysairservice.com.au].

His first Kittyhawk was ex Royal Canadian Air Force Kittyhawk Mk1 AK752, VH-KTH, which was the first to fly in Australia since WWII; it was sold in 1993. The second one had been owned by Mike Subritzky, Auckland-Dairy Flat, New Zealand. He had recovered the aircraft from Asplin's Supplies scrap yard, Hamilton, NZ, in 1971, where it had deteriorated as a hulk from 1954. Col Pay acquired it as a restoration project in June, 1994 and, after a long period of restoration was completed, flew again on 6 December, 2005, as VH-KTH.

Generally, it's acknowledged that this P-40E-1, USAAF FY 41-25109, was an ex Royal New Zealand Air Force Kittyhawk Mk1a, ex NZ3094 that has now been lovingly restored by the late Col Pay in desert colours as Sqn Ldr Bobby Gibbe's Number 3 Squadron RAAF's Kittyhawk Mk1a, ET953/CV-V, as the original aircraft was in the Desert Air Force in 1942.

What's little known is that it is the second time that this aircraft has arrived into Australia. Its first time was 1942. The aircraft history is that it was accepted by the USAAF on the 12 February 1942 from Curtiss Wright, along with ten other P-40E-1s on that day. Six of these remained Stateside initially with the 33rd Pursuit Group, before all being shipped via Africa and flown off from the USS Ranger, to the China Burma India (CBI) Theatre. Those included P-40E-1's, 41-25008, 41-25042, 41-25050, 41-25051, 41-25052 and 41-25053.



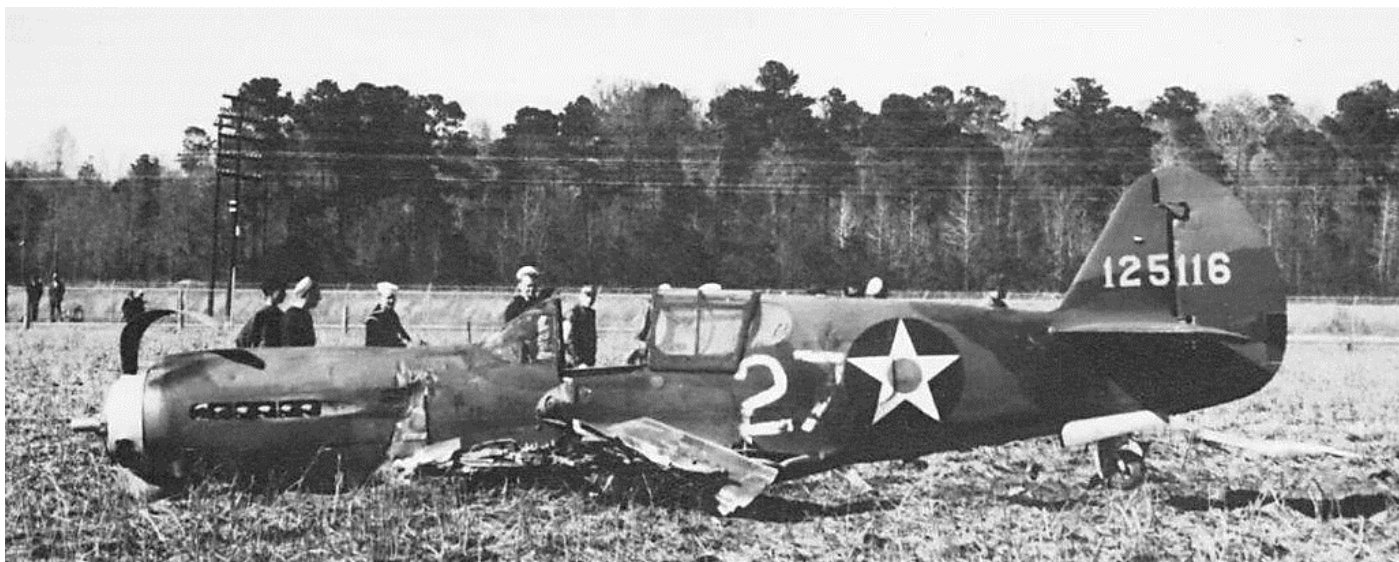
Those six were aboard when this picture was taken ... somewhere in the Atlantic embarked on the USS Ranger, its destination Africa, during its second trip. [USN Archives, Collection held].

Of the other four accepted that day, P-40E-1s; 41-25103/41-25108/41-25109 and 41-25117, well they were boxed as part of RAF Defence Aid Contract #3 Diversion and shipped off to Australia with others via the Port of New York and Panama Canal, arriving here on 10 May 1942. The RAF Defence Aid Contract #3 Diversion (DA3) consisted of one hundred and twenty-five P-40E-1 aircraft diverted from the RAF orders for the RAAF. Within this run on the production line the very next P-40E-1 41-25110/ET434, was the first DA3 P-40E-1 to be accepted by the RAAF, as A29-82.



Sister ship to ET433, A29-82 was ex ET434. [Argus GRB Collection].

As we had begged and borrowed some earlier eighty-one USAAF reserve aircraft to form our three RAAF Squadrons, a total of eighty-six DA3 aircraft, including these four P-40E-1 aircraft, were returned to the USAAF in re-payment from April 1942. One of these four before mentioned, P-40E-1, 41-25103 ex ET427, was re-assembled and sent off to join the 7th Fighter Squadron, 49th Fighter Group in the Northern Territory and sadly was soon wrecked on 30 May 1942 at Batchelor Strip on landing, when piloted by Lt Paul M Hansen. The other three, along with a further twenty-two other P-40E-1s still boxed at Amberley, were allotted to the then Australian based 68th Fighter Squadron, 58th Pursuit Group USAAF at Amberley RAAF Station. This Unit had been used to help assemble initial P-40E/E-1s after its arrival in Australia in early March 1942. It was the twelfth earmarked USAAF P-40E Squadron to be formed in Australia, following on from the original five USAAF Provisional Squadrons (17th/20th/3rd/33rd/13th), the three 49th Pursuit Group Squadrons (7th/8th 9th), and finally, the three RAAF Squadrons (No 75/76/77).



Of course, some 33rd PG P-40E-1 from the follow-on batch that was received two days later on the 14 February 1942 from Curtiss Wright never made it to the USS Ranger for carriage to Africa. P-40E-1 41-25116 #27 crashed en route on the 12 April 1942 near Elizabeth City, after colliding with P-40E-1, 41-25118. Both crashed. [GRB Collection].



On further P-40E-1, 41-25094 (CW#879) delivered on 12 February 42, was held back for company tests. [Curtiss].

As the need to protect the Pacific Ferry Route airfields from Japanese Carrier attack, one of those Pacific island groups that needed an allotted squadron as such, was Tongatabu Airfield, Tonga Islands. Reloaded in crates from Amberley RAAF Station, Queensland, twenty-one P-40E-1s sent on SS Maetsuysker ex Brisbane on 8 May 1942 to Tonga, and arriving at Tongatabu Island on 17 May 1942.



Pictured here before by some months is P-40E-1 41-25125/ET449 #7 at Tongatabu. Later it would become NZ3097 in November 1942. [USAF AHRA].

The 68th Fighter Squadron remained there till the 28 October 1942, now part of the 347th Fighter Group at the beginning of the month, before moving to Noumea, New Caledonia without aircraft on 2 November 1942. Thereafter the 68th Fighter Squadron moved to Guadalcanal on 12 November 1942, re-equipped with new aircraft.



A few of the unserviceable 68th FS aircraft left were used as decoys on the surrounds of the base, buried with undercarriage extended and rudderless. Odd yes, with P-40E-1 41-25139/ET463 #21 later repaired as NZ3095. [Buz Album Collection].

What happened to the twenty-one P-40E-1 aircraft?

The surviving seventeen P-40E-1s, along with an orphan P-40K were handed over to the Royal New Zealand Air Force at Fuamotu, Tonga, on 27 October 1942. After being formed in June 1942, under the command of Squadron Leader A. Crighton, No.15 Squadron was sent to Tonga without aircraft later that year where it began operating those left-over P-40E-1s. It would later be deployed to Kukum Field on Guadalcanal in April 1943 with later models. The P-40E-1s were accepted and marked from NZ3091 to NZ3107 (Including NZ3094 ex 41-25109). The orphan P-40K-1 became NZ3108.



Just discernible on the original Hi res picture perhaps on three digits is NZ3094 or alternatively perhaps NZ3104. Dated in late 1942 at Tonga. Note right, a partial wing with USAAF Cockade. [Buz Album Collection].



Another picture of an unidentified No 15 Squadron P-40E-1 undergoing servicing at Tonga in late 1942 without Rudder Flash added yet, though still retaining its 68th FS Group Number: #1. [Buz Album Collection].

With their replacement by later model P-40s, the tired P-40E-1s made their ferry flight to New Zealand via Norfolk Island for further service as training aircraft within No 4 Operational Training Unit. There she and her sisters performed their secondary role as operational trainer aircraft for the remaining part of the war.

Of note per Australian Defence DA3 contracts

In fact further RAF Defence Aid Contract #3 Diversion (DA3) aircraft destined for Australia had been already been redirected to the RNZAF earlier in the form of the first 10 P-40E-1 aircraft for the RNZAF (NZ3001-NZ3010/ex

ET471,ET472, ET476 to ET483). These ex Australian assigned Defence Aid aircraft, had been sent from the USA on 9 March 1942.

So, in total, adding the redirected USAAF P-40E-1s, a total of 27 ex-Australian Defence Aid P-40E-1s served in the RNZAF, including "our" long lost ET433 err 41-25109 err NZ3094! Some 75 years after her last RNZAF flight, ET433 graces our skies over Australia today.



At rest, VH-KTY photographed at Scone NSW 25/3/18. [Warren Meyer].

Correction

It was correctly, if unnecessarily bluntly, pointed out that there was an error in the caption for the image that appeared on page 50 of Volume 10, Issue 6.

The caption should have read:

... no upper roundels (possibly A21-6); two aircraft in scheme A.D.1169 (left is Avro Avian VH-UKD “Instructional Avian No.1” taken over 2 JUL 1940, and right is a D.H.60), the Avian has a fuselage trainer band, the D.H.60 apparently trainer bands on wings only ...

Thank you to the reader for pointing out the error. Accuracy in recording history is vitally important and we strive to make our articles as accurate as possible.

End Notes

RAAF WWII in Colour, No.9 – RAAF Battles

¹ Sometimes quoted are totals of 366 or 367 Battle delivered to the RAAF. But Brendan Cowan’s research in the A22 *adf-serials* database shows that while 367 were despatched from UK, two (L5696 and L5698) were presumed lost in transit, with 365 received in Australia. Furthermore, confusion in serial numbers – largely due to poor transcription, or illegibility, of the E/E.88 Aircraft Status Cards – adds to the past errors in the RAF serial numbers of the Battles received. The total of 366 is given in R J Francillon, *The RAAF & RNZAF in the Pacific*, Aero Pictorials 3, Aero Publishers, Fallbrook CA, 1970, p.5; and P J R Moyes, *Fairey Battle, Profile 34*, Profile Pubs, Leatherhead Surrey, 1965, p.10; however, the correct total of 365 is provided by J Lever, *Fairey Battle in the RAAF*, self-published, Koorlong Vic, 2002, p.35. The *adf-series* database explains the individual anomalies with the E/E.88 cards.

² I D Huntley, *Aviation Guide No.1, Fairey Battle*, SAM Publications, Bedford, 2004, p.12.

³ Moyes p.12 gives the 2,185 total and breaks down the company deliveries. Huntley p.8 breaks this down further: from the 2,419 ordered, 334 were cancelled from Austin production in NOV 1940 but then a further 100 were added while Austin switched over to Stirling production; added to the 2,185 RAF total is a further 16 aircraft delivered to Belgium, to make a grand total of 2,201. Some sources state 18 were built for Belgium, but 16 is the correct figure, delivered in 1938; Shail, p.19; Huntley, p.8.

Fairey c/ns of these 16 aircraft were F.3258 to F.3273; <http://www.letletlet-warplanes.com/2018/07/30/the-fairey-battles-of-the-belgian-aeronautique-militaire/>

⁴ Specification P.27/32 called for a 2-seat single-engined day bomber which could carry 1000-lb of bombs for 1000 miles at 200mph, to replace the Hawker Hart; Moyes, p.3.

⁵ Huntley, pp.6-7.

⁶ **Blackout Blocks.** In the ‘L’ serial block, a change occurred with the allocation of British serials. Previously numbers had been allotted in direct numerical sequence, but from there onwards allocations for production orders were broken down into batches of between 10 and 50 numbers in runs, with unused numbers (“blackout blocks”) in between left vacant. This system continued for the rest of the war, and since. B Robertson, *British Military Aircraft Serials 1878-1987*, Midland Counties, Leicester, 1987, p.97.

⁷ <http://www.adf-serials.com/2a22.htm>

⁸ S Shail, *The Battle File*, Air Britain, Tunbridge Wells, 1997, p.19 states the first production aircraft (K7558) was built at the Hayes factory and flew in APR 1937 from Great West Aerodrome; the remaining 154 aircraft of the first batch (K7559-K7712) were built at Fairey’s new factory at Heaton Chapel, Stockport, and flight tested at Ringway Airport, Manchester.

⁹ Robertson, p.64; Shail, p.19.

¹⁰ Moyes, pp.6, 12.

¹¹ Moyes, pp.3, 5.

¹² Robertson, p.97.

¹³ Huntley, p.8.

¹⁴ Moyes, p.6.

¹⁵ Robertson, p.99.

¹⁶ Robertson, p.113.

¹⁷ Many AGS aircraft had *Yellow* serials (although the nose codes were *MSG*) as unit aircraft were quite dark; Pentland, Vol.2 p.19.

¹⁸ Shail, p.19.

¹⁹ NAA A705 9/27/104 M.10 in reference to RAF letter of 16 APR 1942.

²⁰ www.bombercommandmuseum.ca

²¹ 1AD A.50 Unit History, APR 1943: “One Battle aircraft is being fitted with a Blenheim turret. Work on this aircraft has been stopped pending completion of the erection of Vulture Vengeance aircraft.” This ongoing Vengeance requirement did not end in the near term, but the A.50 records in JUL 1943: “Battle aircraft A22-K7676 which is being fitted with a Blenheim turret, is nearly completed and almost ready for testing.” By SEP 1943, it was completed, tested, and handed over to 1AD Production, Test & Ferry FLT. K7676 was received by 1BAGS on 4 OCT 43. In addition, Anson LV211 was fitted with a Bristol B.1 turret for use at West Sale.

²² The details of this Bristol Turret installation are not recorded on the E/E.88 Aircraft Status Card, apart from annotation “BT”, probably for Bristol Turret. Some details are recorded in the 1AD Laverton Unit History, with modification to K7676 between APR and AUG 1943, and successful testing in SEP 1943. The E/E.88 then records its receipt at 1BAGS on 4 OCT 1943.

²³ Differences of R7380 at 1AP, NAA A705 9/27/104(3B) of 9 SEP 41.

²⁴ 1AP A.50 Unit History, AUG 1940 records this for use in training on conversion courses, but there is no mention of this fitment on the aircrafts' E/E.88s.

²⁵ 1AD A.50 Unit History, JUN 1941: three Battles were fitted with target towing equipment from Seagulls.

²⁶ 1AD A.50 Unit History, JUL 1942. With 1AD Erection & Test SQN, aircraft were stored at Lara by Aircraft Storage Section, then passed to Maintenance Section at Laverton for the induction servicing and acceptance. While being swamped by more urgent work, 1AD passed some Battles for assembly to commercial contractors – L5291 was an example in FEB 1943 sent to ANA at Essendon “for complete overhaul and erection”.

²⁷ 1AP A.50 gives this date, while the E/E.88 gives 3 MAY 1940.

²⁸ I K Baker, *Aviation History Colouring Book 68, RAAF Colour Schemes & Markings Part 4a*, Queenscliff Vic, 2009, p.22.

²⁹ G Pentland, *RAAF Camouflage & Markings 1939-45 Vol 1*, Kookaburra, Melbourne, 1980, p.16.

³⁰ RAAFHQ AGI C.11 of 22 SEP 1939, Amendment List No.5 (A/L 5), RAAFHQ file 150/4/658, of 26 JAN 1940, para.1(a)(ii).

³¹ RAAFHQ AGI C.11 *Issue 3* of 3 OCT 1940 specified allover *Yellow* for trainers (Scheme E.1), or interim *Yellow* stripes on camouflage (Scheme E.2) until the next 30-hrly inspection (not 40-hrly as earlier cited). However, two months before the arrival of the first Battles in JUN 1940, the DCAS (Bostock) advised CAS (Burnett) in APR 1940 of the difficulty in obtaining *Yellow* dope: RAAFHQ file 62/3/43, transferred to 1/501/329 (37A) with DCAS M.3 of 18 APR 1940. (Furthermore this AGI specified *red-white-blue* ‘M.2’ roundels in all positions – this ‘M’ terminology would soon be dropped, and we will refer in future to these in more conventional terminology as being type-A roundels.)

³² Huntley, p.57.

³³ RAAFHQ file 62/3/43, transferred to 1/501/329 (37A) with DCAS M.3 of 18 APR 1940.

³⁴ With the Battle being removed from frontline duties to training roles from mid-1940, changes to fin striping were not always made at the required time. Many Battles retained the whole fin area striping long after the mid-1940 change to full height, narrow stripes of 8” wide each. From four weeks later this was cut down to a standard 24”-wide and 27”-high, which was not due for introduction until 12 DEC 1940. Huntley, p.58; AMO A.926/40, cited in Tanner, p.11.

³⁵ P Lucas, *Camouflage & Markings No.2*, Scale Aircraft Monographs, Guideline, Luton, Beds, 2000, p.9.

³⁶ For fighters – the Spitfire and Hurricane – Air Ministry drawings were issued on 20 FEB 1937, and both Supermarine and Hawker had received them by MAR 1937. E B Morgan & E Shacklady, *Spitfire – The History*, Guild Publishing, London, 1988, p.622.

³⁷ E.g. Hawkers in 1940 with its Tornado prototype P5224 used the standard reversed Hawker drawing D.114155, but also reversed the colours; J Goulding & R Jones, *Camouflage & Markings RAF Fighter Command 1936-1945*, Doubleday, New York, 1971, p.78.

³⁸ With the Hurricane, the mirror ‘B’ scheme was abandoned in JAN 1941 (having been used since 1937) and future Hurricanes were produced in the ‘A’ scheme only. Goulding & Jones, p.64. For the Spitfire, on 14 JAN 1941 the ‘A’ and ‘B’ mirror scheme merged to become the ‘A’ scheme only; Morgan & Shacklady, p.624; Goulding & Jones, p.18. However, the choice of which pattern to use as standard was left to individual companies, with the Defiant being continued in the ‘B’ scheme only; Goulding & Jones, p.176. Similarly, for the Oxford in 1941, the ‘B’ scheme became the sole pattern.

³⁹ RAF A.D.M.332 Issue 3, CD44/41 of 15 NOV 1940, filed as RAAFHQ 150/4/852(12).

⁴⁰ AMO A.513/41 of 10 JUL 1941, in J Tanner, *British Aviation Colours of World War Two*, Arms Armour Press, London, 1986, p.20.

⁴¹ RAF ADM.332 (Issue 3) filed as RAAFHQ 150/4/852(12).

⁴² RAAFHQ file 1/501/329(53A), SAS.9984 also listed as DTS 368/41, of 23 DEC 1941. This message also directed that RAAF *Earth Brown* (K3/178) and *Foliage Green* (K3/177) be used instead of RAF *Dark Earth* and *Dark Green*. RAAFHQ file 1/501/329(63A), SAS.7396 also listed as DTS 280/42, of 18 JUN 1942

⁴³ RAAFHQ Aircraft General Instruction No.C.11 (Issue 4), Appendix I, of 31 AUG 1942.

⁴⁴ Appendix I of the AGI noted that: A.D.1164 (twin-engined flying boats) be used for Sunderland and Empire, as no separate scheme for 4-engined flying boats was available (this was A.D.1163); A.D.1165 (twin-engined biplane flying boats) be used for Seagull V (Walrus), as no separate scheme for single-engined flying boats was available; A.D.1291 (4-engined biplanes) be used for Gannet, D.H.84 and D.H.89 as no diagram for these types was available (for the biplanes this was A.D.1175).

⁴⁵ At this stage, neither the Kittyhawk nor Vengeance were listed.

⁴⁶ NAA A11083 21/4/AIR, *NEA HQ Camouflage of Aircraft*, pp.88-89.

⁴⁷ Huntley, pp.52-53.

⁴⁸ So as not to disjoint the narrative too much, the Battle also trialed a A.D.1158 ‘C’ scheme and a ‘D’ scheme, which were the ‘A’ and ‘B’ with the colours transposed. P Lucas, *Camouflage & Markings No.2*, Scale Aircraft Monographs, Guideline, Luton, Beds, 2000, p.9; Huntley, p.52-53.

⁴⁹ Years later in 1966, RAAF Support Command in Melbourne in response to a query from Dept of Air, realised that all the wartime camouflage drawings had not been retained and “disposed of for the purpose of saving space”; RAAF DEPAIR letter 579/3/104 of 22 DEC 1966. However, the response to DEPAIR revealed that some drawings still existed and were identified by RAAF Drawing Numbers, probably from 1943, listed below; RAAF HQSC C3/8/Air Pt 2, dated JAN 1967.

A.D.1157 RAAF Drawing No A5185; A.D.1159 A5189-1; A.D.1160 A5192; A.D.1161 A5189-2; A.D.1162 A1813; A.D.1164 A5189-1; A.D.1168 A5188; A.D.1291 A5186.

⁵⁰ For example, official references for roundels were generally a description of the colours, but from OCT 1944 referred to roundels as Type I, Type II, Type III, etc (which related to the postwar invented ‘non-official’ references B, C, C1 respectively); AP 2656A Vol 1 Sect 6 Chap 2, and Chap 2 Table 1 of OCT 1944, Tanner pp.49-56.

⁵¹ Lucas, p.13.

⁵² The *Yellow* was introduced to the RAF roundel on 1 MAY 1940; P Lucas, *Camouflage & Markings No.2*, Scale Aircraft Monographs, Guideline Pubs, Luton, 2000, p.45. The RAAF policy AGI C.11 of SEP 1939 used AMO A.154 as a main reference, which introduces the Type-B roundel to fuselages (which would become the RAAF “M.1” roundel) in 1939; AMO A.154/39 of 27 APR 1939, cited in Tanner, p.1. The RAAF revised AGI C.11 policy of OCT 1940 introduced the outer *Yellow* ring to the “M.2” roundel to become the “M.3”; and the tri-colour fin flash was the “M.4” marking. *Yellow* shows as a light colour on panchromatic film, but as a dark colour on orthochromatic, which can be altered by lens filters.

⁵³ RAAFHQ DTS 9/1/442 of 12 SEP 1939.

⁵⁴ Cited in Tanner, p.9.

⁵⁵ Peter Malone, *Britmodeller* site, 12 JUN 2020.

⁵⁶ The Hurricane ‘B’ scheme was abandoned in JAN 1941 and future Hurricanes were produced in the ‘A’ scheme only. Goulding & Jones, p.64. For the Spitfire, on 14 JAN 1941 the ‘A’ and ‘B’ mirror scheme merged to become the ‘A’ scheme only; Morgan & Shacklady, p.624. However, the choice of which pattern to use as standard was left to individual companies, and for the Oxford in 1941 the ‘B’ scheme became the sole pattern, and this appears the case too for the Battle.

⁵⁷ Cited in Tanner, p.21.

⁵⁸ RAAFHQ AMEM D/DTS 1/501/329 SAS 13552 of 8 JUL 1943, specified 32” *Blue* roundel, 12” *White*, i.e. 3:8 (approx 2:5); fin flash 24” (high), 16” wide (8” each colour). If hurriedly repainted, the type-C flash would be asymmetric with 13” *White*, 11” *Blue*.

⁵⁹ Cited Tanner, pp.32-56.

⁶⁰ RAAFHQ S.A.S. 2699 1/501/329(55A), undated but c JUL 1940.

⁶¹ Lucas, p.79. The MAP 33B stores reference series are stock numbers with the last three digits identifying the size of the paint can – so on the RAF Directorate of Technical Development (DTD) 314 scale, *Dark Green* 33B/201 was for a half-gallon can of varnish, 33B/202 a one-gallon can, and 33B/203 a five-gallon container. Similarly, the various size cans for *Dark Earth* were 33B/198 to 33B/200. The DTD specifications for compliance were DTD 314 (matt pigmented oil varnishes), DTD 308 (matt cellulose finish), or DTD 83A (aeroplane doping schemes); *Aircraft Design Memorandum No.332 (Issue 3)*, CD44/41, para.4, of 15 NOV 1940, filed on RAAFHQ 150/4/852(12).

⁶² RAAFHQ AGI No.C11 A/L.5 filed on 150/4/658, of 26 JAN 1940.

⁶³ DTS Minute to AMOE 62/3/431(31A) of 26 MAR 1940.

- ⁶⁴ RAAFHQ AGI No. C.11, Issue 3, para. 1(a) Training Aircraft, of 3 OCT 1940.
- ⁶⁵ RAAFHQ AGI No. C.11, Issue 3, para. 4(b) Training Aircraft, of 3 OCT 1940. This Instruction also left to the discretion of the Station CO to allot different coloured numbers for identification to different units operating at the base.
- ⁶⁶ RAAFHQ AMOE Letter S.A.S.9984, DTS 368/41, of 23/12/41 filed as 1/501/329(53A). This directive referred to the troop carrier D.C.2 to comply with A.D.1157, the Anson to A.D.1159, and Wirraways and Battles to A.D.1160.
- ⁶⁷ RAAFHQ Letter 36/501/244 to CO 51(R)SQN, cDEC 1941, files as 1/501/329(56A).
- ⁶⁸ RAAFHQ file 1/501/329 Minute Sheet, M.2 DTS to DCAS of 6 JAN 1942; M.3 DCAS agreement same date.
- ⁶⁹ RAAFHQ Letter S.A.S.7396 DTS.280/42, filed as 1/501/329(63A), from DTS for AMEM to all Area HQs, of 18 JUN 1942.
- ⁷⁰ RAAFHQ AGI No. C.11, Issue 4, of 31 AUG 1942, files as 150/4/852(1A). This AGI lists all the A.D. numbers (in Appendix I) for the various types.
- ⁷¹ RAAFHQ T.O. AGI Pt 3(c), Instruction 1, file 150/4/5056 (1A), of 26 MAY 1944.
- ⁷² **Mensuration:** These training numbers of 20" x 13" in 3" stroke are determined by mensuration – the sizes of some aircraft markings are often provided here from mensuration, checked against surviving policy documents. Digital imagery, with large monitors, now makes it easier to accurately measure markings. For calibration, known dimensions are used and extrapolated – for instance, aircraft serial numbers are generally 8" high and 5" wide (Imperial measures used, as that was the standard of the day), and some Tech Orders provide roundel and fin flash dimensions. Generally, training number sizes vary and are often in the 8" x 5" proportions (e.g. 24" x 15", so probably in this case 20" x 12½"), but no laid down standards survive. Such mensuration is accurate if the camera lens is directly perpendicular and horizontal to a flat subject. But perspective is further affected by fuselage curvature, or other shaped panels, and there can be camera lens imperfections. So while an imperfect art, in general sizes of aircraft markings can be provided inside a 2" (50mm) margin of error.
- ⁷³ Pentland Vol.2, p.19.
- ⁷⁴ <http://www.adf-gallery.com.au/newsletter/ADF%20Telegraph%20Vol%2010%20Issue%203%20Winter%202020.pdf>
- ⁷⁵ The syllabus of an air observer school included dead-reckoning navigation, signalling (morse and visual), reconnaissance, etc; the air navigation school gave the trained observer (who had survived the air observer and bombing-and-gunnery courses) a further four weeks' instruction on astro-navigation. Gillison, p.83.
- ⁷⁶ J Herington, *Air War Against Germany & Italy 1939-1943*, AWM, Canberra, 1962, pp.530-1; AM Sir Richard Williams, *These Are Facts*, AWM, Canberra, 1977, pp.300-1. This Ottawa Conference also recast the original EATS, greatly empowering Canada's size and influence within the scheme, which probably accounts why they prefer reference to 'The Plan', and not 'Empire' as in EATS.
- ⁷⁷ Australian-produced Wacketts, Wirraways and Tiger Moths also served on EATS and SFTS units.
- ⁷⁸ Gillison, p.137.
- ⁷⁹ N M Parnell & C A Lynch, *Australian Air Force since 1911*, Reed, Sydney, 1976, p.54. From initial training, Australia would hand over 194 trainees per month for further training in Canada.
- ⁸⁰ A Bombing and Gunnery School was also abbreviated to B&GS, or BGS, especially on an E/E.88 – I have standardised on BAGS.
- ⁸¹ J Forsyth, *The D.H.82A Tiger Moth in Australia*, Skyline, Melbourne, 1995, p.xxiii.
- ⁸² Gillison, p.108.
- ⁸³ NAA A705 files 151/1/629, and 171/11/191.
- ⁸⁴ Huntley, p.36.
- ⁸⁵ Moyes, p.4.
- ⁸⁶ A.P.2656A Vol.1 Sect.6 of OCT 1944, para 40, cited in J Tanner, *British Aviation Colours of World War Two*, Arms & Armour Press, London, 1986, p.40.
- ⁸⁷ *Britmodeller* website, 5 AUG 2020.
- ⁸⁸ RAAF HQ Technical Order Target Towing Instruction No.2, of 8 JAN 1943, NAA CRS A705 150/4/3569, folios 2A and 22A.
- ⁸⁹ Modified under 'Wirraway Instruction No.24', Buckmaster 'Design Bureau', Target Towing Wirraways, 27 SEP 2012 website: Eventually in 1944, Battle TT aircraft were being replaced by the Vengeance fitted with 'Type B' winch at OTUs, and Wirraways fitted with the 'Type D' at the gunnery schools, which would enable the Battle to be declared obsolete.
- http://dbdesignbureau.buckmasterfamily.id.au/tech_info_cac_wirraway_tt.htm
- ⁹⁰ 1APU file A/6/20 of NOV 1944, in NAA CRS A705 9/15/490 (38A).
- ⁹¹ Dept of Air Minute of 20 JAN 45, NAA CRS A705 9/15/490 (40A); and Minute 30 of 4 OCT 1944.
- ⁹² RAAF HQ signal TJ.408 of 17 OCT 1944, NAA CRS A705 9/15/490 (33A).
- ⁹³ RAAF HQ signal QT.950 of 11 MAY 1945, NAA CRS A705 9/15/490 (45A). In the end, A20-685 was not converted, and A20-539 was substituted.
- ⁹⁴ This covered assembly of drums and winch in the aircraft, launching the first target, exchange of targets (by attaching to a "fish"), release of towing cable, and breakage of cable or failure of the target exchange fish to operate. The first target was launched onto the cable, out of the bomb-aiming doors under the fuselage just aft of the wing. Once the first target was damaged by gunfire, the second target was launched onto the cable. A fish-shaped fitting on the end of the cable allowed the first target to drop from the end of the cable when the second one reached the end, allowing several targets to be streamed from the same cable one after another without having to retrieve the cable to exchange targets. If a cable became damaged or a target refused to unclip, then the cable was dropped (over the airfield for retrieval) and the next cable was unwound from its drum.
- ⁹⁵ Buckmaster 'Design Bureau' website: http://dbdesignbureau.buckmasterfamily.id.au/tech_info_cac_wirraway_tt.htm
- ⁹⁶ NAA A705 series 9/31/63 Pt. 1 of 1943-44, and 150/4/4651 of 1944.
- ⁹⁷ J Lever, *7OTU Tocumwal*, self-published, Koorlong Vic, 1996, pp.61-63.
- ⁹⁸ 2AD A.50 Unit History, 26 JAN 1956.
- ⁹⁹ Moyes, p.4.
- ¹⁰⁰ *Evans Head Memorial Aerodrome Heritage Interpretation Plan*, Ainsworth Heritage, Final Report FEB 2011, p.36.
- ¹⁰¹ *Units of the RAAF, Vol.8 Training Units*, pp.65-68.
- ¹⁰² AMO A.1377/42, Appendix II, of 24 DEC 1942, cited in Tanner, p.30.
- ¹⁰³ 3BAGS A.50 Unit History, 12 JAN 1942.
- ¹⁰⁴ Air Board Agenda 2750/40, NAA A14487 14/AB/2750, 30 MAR 1940. 2BAGS at Port Pirie was also planned with 17 Bellmans.
- ¹⁰⁵ 1BAGS A.50 Unit History, 31 DEC 1940.
- ¹⁰⁶ *Units of the RAAF, Vol.8 Training Units*, pp.9-10.
- ¹⁰⁷ E/E.88 Aircraft Status Card for L5704.
- ¹⁰⁸ RAF AMO A.926/40 para. 6(ii)(c) of 12 DEC 1940 specifies for TT aircraft: "Black inclined stripes are to be painted on a yellow background, the black stripes being 3ft wide with 6ft yellow spacing." AP 2656A Vol 1 Sect 6 para.40 later clarified that the stripes on the undersides "should be inclined at 60° to the lateral axis of the aircraft, and should run aft from port to starboard". Cited in Tanner, p.11 and p.40.
- ¹⁰⁹ RAAFHQ Technical Order AGI C.11 Issue 4 para.1(d), of 31 AUG 1942, filed on 150/4/852.
- ¹¹⁰ Forsyth, p.207.
- ¹¹¹ *Units of the RAAF, Vol.8 Training Units*, p.4.
- ¹¹² 2BAGS A.50 Unit History, AUG 1942.
- ¹¹³ No.1 Training Group HQ, A.50 Unit History, 9 DEC 1943.
- ¹¹⁴ 3AOS A.50 Unit History, 31 DEC 1943.
- ¹¹⁵ 3AOS A.50 Unit History, FEB 1944.

- ¹¹⁶ *Units of the RAAF, Vol.8 Training Units*, p.8, pp.11-12.
- ¹¹⁷ Pentland, Vol.2 p.19; many AGS aircraft had *Yellow* serials as unit Battles were quite dark – presumably RAAF FG/EB camouflage.
- ¹¹⁸ *Units of the RAAF, Vol.8 Training Units*, pp.13-14.
- ¹¹⁹ 3BAGS A.50 Unit History, 8 DEC 1943.
- ¹²⁰ Pentland, Vol.1, p.128; also referenced in Vol.2, p.117.
- ¹²¹ AGS A.50 Unit History, 31 DEC 1943.
- ¹²² 35SQN A.50 Unit History.
- ¹²³ 1AP A.50 Unit History: 9 MAY 1941 (L5142); and 22 SEP 1941 (K7705), although E/E.88 gives “issue” as 29 AUG 1941.
- ¹²⁴ <https://www.goodall.com.au/australian-aviation/anson-civil-1/civilansons-1.html>
- ¹²⁵ 1CRD A.50, JUN and NOV 1944.
- ¹²⁶ W Green & J Fricker, *The Air Forces of the World*, Macdonald, London, 1958, p.22.
- ¹²⁷ J Forsyth, *The D.H.82A Tiger Moth in Australia*, Skyline, Melbourne, 1995, p.xxv.
- ¹²⁸ <http://www.adf-serials.com/2a22.htm>
- ¹²⁹ <https://www.goodall.com.au/warbirds-directory-v6/fairey.pdf>
- ¹³⁰ <http://www.warbirdregistry.org/battleregistry/battle-n2188.html>
- ¹³¹ This change to a ‘B’ cam pattern of the RAFM Battle L5343 was because this was the scheme when with 98SQN RAF in France in 1940. However, the restoration involved using the fuselage of L5340 which may have revealed an original ‘A’ pattern, and subsequently changed to ‘B’ pattern for display. However, an ‘A’ pattern tail has been retained (iaw the painting depicted).
- ¹³² Huntley, p.5.

End Notes: Serving No 1(B) OCU RAAF: Canberra Mk20/Mk21

- ¹³³ The aircraft received the name of “Canberra” in 1950 to honour the Australian capital for the Australians having committed to purchase of the aircraft still in development.
- ¹³⁴ This is exemplified in the RAAF by the change of role to survey and target towing use by No 2 Squadron RAAF following its return to Australia in June 1971 to its disbandment in 1982.
- ¹³⁵ Details obtained via <https://www.airforce.gov.au/sites/default/files/minisite/static/7522/RAAFmuseum/research/aircraft/series2/A84.htm>
- ¹³⁶ Refer RAAF Reconnaissance Part 2 Fin.docx GRB @2019.
- ¹³⁷ At one stage in Malaya in early 1959 No 2 Sqn had 10 Canberra aircraft on strength and two C-47Bs, then down to 9 Canberra (including one Mk21).
- ¹³⁸ Became the first and only Canberra A84-243 (Albeit its fuselage only) to be placed into the cargo hold of a C-130A for transit to Australia 14-19/07/1959 per A97-205 Special flight. The first flight of a Hercules from Australia to Malaya (Malaysia) was performed earlier in the year by this aircraft on the 14/01/1959 via Changi. Carriage of a replacement Sabre was also performed ex Australia to Butterworth, disassembled of course in-between.
- ¹³⁹ A84-1, WD935, was never delivered.
- ¹⁴⁰ Refer A50 Unit History Sheet No 1 Squadron, Sheet #298 November 1964.
- ¹⁴¹ Article: The New RAAF Strike Aircraft choice: GAF Canberra B20 Replacement @2016 GRB.
- ¹⁴² A84-204 nearly came to grief some ten years prior, when initially assigned as an Mk20 at 0952Hrs 17/01/55. Whilst over Stanthorpe Queensland, during an instrument flying practice, the captain of the aircraft, F/Lt J G Stewart 034438, lost control at about 4000 feet altitude. At 500 feet descent, he instructed the Navigator, F/O R U Martin (RAF 4054424) to abandon the aircraft for his safety. Subsequently the aircraft captain regained control of the aircraft and recovered safely to Amberley. Unfortunately, the ejection of the navigator was outside the parameters of the ejection seat and was sadly killed. The aircraft was thought to be overstressed, but was not and sent to ARDU for airframe systems and investigation until 16/02/1955.
- ¹⁴³ Example given by JB Ret then at 1(B)OCU 1969-70 in email 16/10/2020.
- ¹⁴⁴ Ironically, A84-228 was sent to Vietnam 11/11/1970 as the replacement for the missing A84-231! Refer Aircraft Card. It was not the first time it served in No 2 Squadron.

Notes Regarding 31SQN Beaufighters

- ¹⁴⁵ RAAF Form A50 Operations Record Book of 31 Squadron, Commanding Officer’s Operational Summary for the Month of November, 1944, in RAAF Unit History Sheets Number 31 Squadron Aug 42 to Aug 45; NAA: A9186, 61.
- ¹⁴⁶ Air Force Headquarters Technical Order, Aircraft General Instruction C11 (Issue 4), Standard Aircraft Finishes and Markings, Part I [1 a i and ii] in AMOE Technical – Aircraft General Instruction C11 Issue 3 Standard Aircraft Finishes Markings and Markings of Unit Equipment; NAA: A705, 150/4/852.
- ¹⁴⁷ Air Force Headquarters Technical Order, Beaufighter Instruction No. 22 [5] in DTS – Beaufighter Aircraft – General Technical File; NAA: A705, 9/32/11.
- ¹⁴⁸ Enclosure 72A, Extracts from Miscellaneous Notes by the Director of Aircraft Maintenance – Serial No. 2, Port Moresby 23rd June, 1943, ibid.
- ¹⁴⁹ Neville Parnell, *Whispering Death – A History of the RAAF’s Beaufighter Squadrons* (1980) 106.
- ¹⁵⁰ Ibid 107.
- ¹⁵¹ Ibid.
- ¹⁵² Ibid.
- ¹⁵³ Postgram titled “Beaufighter Aircraft” from CO 31SQN to the Area Engineering Officer, NWA, dated 9th May, 1943, in RAAF Command Headquarters – Beaufighter Aircraft – A19; NAA: A11093, 452/A19 PART 1.
- ¹⁵⁴ Postgram titled “Beaufighter Aircraft, Manufacture in Australia” from CO 31SQN to AOC, NWA, dated 10th April, 1943, ibid.
- ¹⁵⁵ Postgram titled “Changes Noted During Erection of New Aircraft Beaufighter Mark VI” from CO 1AD to 4MG HQ, undated but forwarded to the Air Board by 4MG on 13th April, 1943, DTS – Beaufighter Aircraft – General Technical File; NAA: A705, 9/32/11.
- ¹⁵⁶ Letter titled, “Camouflage Schemes and Identification Markings of Aircraft” dated June 28th, ‘44; 1/501/329 (174A).
- ¹⁵⁷ There are a few small corrections in the following issue, Volume 9, Issue 4, Summer 2019.