



# ADF Serials Telegraph News

News for those interested in Australian Military Aircraft History and Serials

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## News Briefs

- **20th April 2017:** The sixth KC-30A, **A39-006**, returned to Seville after being painted at Manching , Germany. It is an ex QANTAS A330-302 MSN892 and is designated MRTT39. (Photos: Dietmar Fenners )



- **28th April 2017:** The State Department has made a determination approving a possible Foreign Military Sale to New Zealand for P-8A aircraft and associated support. The estimated cost is \$1.46 billion. New Zealand has requested the potential sale of up to four (4) P-8A Patrol Aircraft.
- **11th May 2017:** One of five Oakey based Tigers, **A38-001** has become the first Tiger in the global fleet to reach 2,000 flying hours.



- **26th June 2017:** The US State Department has made a determination approving a possible Foreign Military Sale to Australia for Gulfstream G550 Aircraft with Airborne Intelligence, Surveillance, Reconnaissance, and Electronic Warfare (AISREW) mission systems. The estimated cost is \$1.3 billion. The possible sale of up to five (5) Gulfstream G-550 aircraft modified to integrate Airborne Intelligence, Surveillance, Reconnaissance, and Electronic Warfare (AISREW) mission systems, Global Positioning System (GPS) capability, secure communications, aircraft defensive systems; spares, including whole life costs of airborne and ground segments; aircraft modification and integration; ground systems for data processing and crew training; ground support equipment; publications and technical data; U.S. Government and contractor engineering, technical and logistics support services; flight test and certification; and other related elements of logistical and program support. The total estimated program cost is \$1.3 billion.
- **30th June 2017:** The RAAF's sixth C-27J Spartan (serial **A34-007**) arrived at RAAF Base Richmond



- **5th July 2017:** The latest, digital standard of RAAF Hawk advanced jet trainer, from the Lead-In Fighter Capability Assurance Program (LIFCAP under AIR 5438 Phase 1A ), A27-16, was accepted the first upgraded aircraft from BAE Systems. Each upgraded Hawk provides new training capabilities including simulated radar, electronic warfare, digital mapping, ground proximity warning system and traffic collision avoidance. The upgrade also includes the replacement of two legacy synthetic training devices with three full mission simulators provided by CAE.
- **5th July 2017:** The Australian Government has approved a \$582.5 million upgrade of the RAAF's six E-7A Wedgetail airborne early warning and control (AEW&C) aircraft. Under Project AIR 5077 Phase 5A, over a six-year, three-release program, Boeing Defence Australia will upgrade the RAAF Wedgetails with new advanced combat identification sensors, tactical data links, communications hardware and encryption systems, and mission computing hardware and software upgrades.
- **10th July 2017:** The Royal Australian Navy's multi-role aviation training vessel (MATV) MV Sycamore arrived in Australia, and will be handed over on the 28th July 2017.



- **11th July 2017:** The US State Department has made a determination approving a possible Foreign Military Sale to Australia for upgrades for F/A-18E/F Super Hornet aircraft. The possible sale is for thirty-two (32) Multifunctional Information Distribution System Joint Tactical Radio System (MIDS JTRS) with four channel Concurrent Multi-Network (CMN-4), and thirty-nine (39) AN/ALQ-214A(V)4 Countermeasure Systems.



- **12th July 2017:** RAAF completed delivery of all 12 EA-18G Growlers of No. 6 Squadron RAAF, with the arrival of the last Growler at RAAF Base Amberley. The first two Growlers arrived in Australia in February 2017.



- **27th July 2017: F-35 News:** The US government obligated \$2.18 billion in funding from foreign military sales customers and international partners in the Joint Strike Fighter programme for an interim contract to Lockheed Martin to continue F-35 production. The award funding 50 international aircraft was expected, following a 7th July agreement known as an "Undefinitised Contract Action" (UCA) that continued domestic aircraft production. The Joint Programme Office values the award at \$2.18 billion, though the office previously valued the contract at \$2.28 billion. The office did not respond to a request to explain the difference. The UCA, which has a \$5.57 billion price ceiling, allows Lockheed to continue producing aircraft until the low-rate initial production Lot 11 contract is finalised. Ultimately, LRIP 11 will include 91 US jets, plus 28 for international partners (one British F-35B, one Italian F-35A, eight Australian F-35As, eight Dutch F-35As, four Turkish F-35As, six Norwegian F-35As aircraft) and 22 F-35As for Foreign Military Sales customers. The U.S. Air Force reduced its maximum annual rate of aircraft procured from 80 per year down to 60 per year, which extended the planned purchases by six additional years from Fiscal Year (FY) 38 to FY44.
- Also the F-35 Lightning II fighter aircraft fleet recently exceeded 100,000 flight hours while the F-35 Integrated Test Force teams are completing the remaining requirements in the program's System Development and Demonstration (SDD) phase. Meanwhile, the cause of the only F-35 hull loss to date, states Strong winds whipping through the exhaust of a F-35A Joint Strike Fighter starting its engine at Mountain Home Air Force Base, Idaho, resulted in the engine catching fire last year, according to an investigation report. The Accident Investigation Board report concluded the 23rd Sept 2016, mishap was caused when a tailwind "forced hot air into the inlet of the Integrated Power Pack," an internal system where the conventional auxiliary power unit and an emergency power unit combine. The forced air "led to a series of events resulting in insufficient torque applied to the [mishap aircraft] engine during start, and thus the engine rotation speed slowed," the report said. "At the same time, fuel continued to be supplied to the engine at an increasing rate, which enabled an uncontained engine fire. The fire came out the engine exhaust and was carried along the outer surfaces of the [mishap aircraft] by the tailwind, causing significant damage," it said.



## RAAF AIRCRAFT MARKINGS SINCE 1950

### SQUADRON MARKINGS – PART 4 – THE VAMPIRE

John Bennett 2017

Two types of jet fighters were delivered to the RAAF from the late-1940s, the Vampire and the Meteor, the latter covered in our last instalment, Part 3. Both aircraft were from the UK and marked in the RAF colours of the day – and then standardised to overall aluminium and the red/white/blue Type-D national markings. The RAAF serial block A77 was allocated to the Meteor, A78 to the first UK-supplied RAF Vampires, and A79 to the Australian production of the Vampire. Aircraft were generally delivered with “scrambled” serial numbers, but there were exception which will be described. Again, thanks to those who have contributed images to *adf-serials*.

#### Vampire Fighters

In 1946, approval was given for the purchase of an initial 50 D.H.100 Vampire fighters for the RAAF. To assist with familiarisation and production, three British-built aircraft – an F.1, F.2 and FB.5 and allocated serial numbers A78-1 to A78-3 – were delivered over 1947, 1948 and 1949. The F.2 (A78-2) was particularly significant as it was powered by the more powerful Nene jet engine, rather than the usual Goblin, and all the eventual 80 F.30 fighter and FB.31 fighter-bomber aircraft built in Australia by de Havilland at Bankstown were powered by CAC-built versions of the Nene. The Nene required a greater intake cross-section than the original Goblin, and the initial solution was to mount auxiliary “elephant ear” intakes on top of the fuselage behind the canopy. Unfortunately at high mach numbers, shock waves from these intakes led to elevator blanking, which exacerbated the compressibility effect of lack of control response. Several aircraft were lost in unrecoverable dives, and so all Nene-engined Vampires were modified to have the auxiliary intakes moved beneath the fuselage, rectifying this problem.

The first Vampire F.30 fighter (A79-1) – basically a Vampire F.2 with the Nene engine – flew in June 1949, and it was followed by 56 more F.30 variants (A79-91 was the last delivered in 1952), before the final 23 aircraft (scrambled as A79-564 to A79-282 delivered over 1952-53) were completed as FB.31s. For the fighter-bomber role, the FB.31 had the FB.5's strengthened and clipped wings with four underwing hardpoints for carrying up to 2000lb (900kg) of stores.<sup>1</sup> One visual modification, for F.30 and FB.31 variants, was the addition of the radio compass (or auto direction finding – ADF) loop antenna in a housing above the nose (ahead of the cockpit) from 1953.<sup>2</sup> The last ‘clipped wing’ FB.31 was delivered in August 1953, and 24 late-production F.30s were subsequently upgraded to FB.31 standard by 1956. FB.31s, and some F.30s, were retrofitted with ejection seats. The one-off FB.32 (A79-737) development had a modified wing leading edge intake to eliminate the auxiliary scoops, but this project was not progressed.

To operate the new aircraft 2(F)OTU was re-formed at Williamtown on 1 March 1952,<sup>3</sup> and remained the primary user of this type as a jet lead-in trainer towards the Meteor and Sabre. While 75 and 76SQNs operated RAF-supplied FB.9s in Malta over 1952-54, the only fighter squadrons at home to fly Vampire fighters were the reserve Citizen Air Force (CAF) units, 21 and 25 SQNs, which ceased flying in 1960. Most F.30 aircraft not upgraded to FB.31 did receive ejection seat and target towing modifications over 1955-57.<sup>4</sup> In JUN 1961, approval was given to begin disposal of the remaining single-seaters, and so the last Williamtown aircraft were withdrawn from service, and scrapped at Tocumwal.<sup>5</sup>



The first Australian built Vampire – F.30 A79-1 as a gate guard at Williamtown in the early 1970s

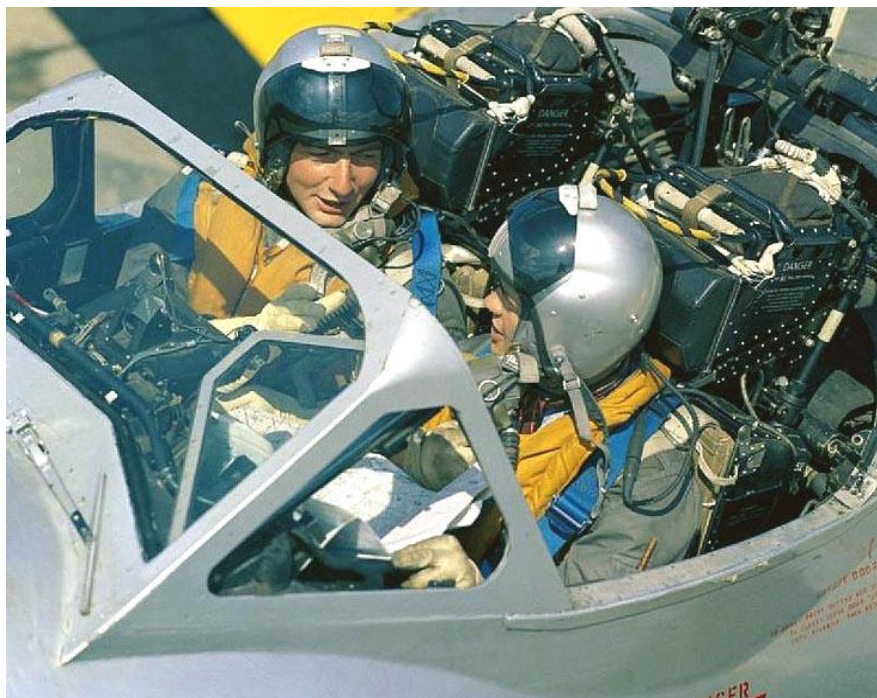




**25SQN Vampire fighters and two T.33 trainers (A79-810 and A79-816) at Forrest in SEP 1955 deploying to Darwin <sup>6</sup>**

### **Vampire Trainers**

Australian production of the D.H.115 Vampire T.11 trainer was unique, as other countries ordering the T.11 trainer received UK-production export aircraft designated the T.55. However, Australian T.11 production for 36 aircraft ordered in 1951 was designated the T.33 (the 30, 31 and 32 marks had already been used for fighters), and discernable by having a ribbed canopy – as there were no ejection seats – and the lack of a dorsal finlet ahead of the fin.



**The crowded confines in the office of the twin ejection-seat Vampire trainer**

The improved UK T.11 introduced ejection seats and a clearer canopy, and an aerodynamic fin fillet, and in Australia the last production T.33 (A79-836) was upgraded on the production line as the first of the improved T.35 variants (as A79-600). Sixty-eight new-build T.35s were ordered in 1955, and then the remaining T.33s in service were upgraded to a common standard as the T.35A. This upgrade was also carried out at Bankstown over 1957-1959 in parallel with the T.35 production run, and typically took about six months.<sup>7</sup> Later as wing fatigue became a problem at No.1 Applied Flying Training School (1AFTS) – the RAAF's jet training school at Pearce – T.35 aircraft received low fatigue wings from other Vampire trainers. These have been informally referred to as the T.35Ws.

The main Vampire trainer operators in the RAAF were Central Flying School (CFS) at East Sale, and 1AFTS at Pearce. Other units normally also had a Vampire trainer on strength to enable dual instrument flying checks, for instance 34SQN at Fairbairn, and ARDU at Laverton. CAF units operating Vampire and Meteor single-seaters would also have one or two dual Vampires for check flights, or as communications aircraft.

Within the fighter force, the Sabre squadrons at Williamtown, at various times in the 1950s, had a Vampire dual on strength for instrument flying checks. What is not generally known is that two Vampire T.35A trainers – A79-803 and A79-810 – were on strength of 78 Wing at Butterworth from early 1959 in support of the two Sabre units, 3SQN and 77SQN.<sup>8</sup> In 1962, A79-646 and A79-667 replaced the T.35As, and remained until late 1966.<sup>9</sup> Significantly, as the fourth Sabre squadron was being raised, 76SQN was re-activated at Williamtown in JAN 1960 with Vampire trainers, and operated some 18 aircraft in a fighter lead-in role until enough Sabres became available to re-equip in mid-1961. 20CU as well as 50TU continued to operate the type at Williamtown for fighter lead-in and weaponry training until 1970.



**2(F)OCU Vampire T.35 A79-637 Open Day at Richmond SEP 1960, the tiger's head tail on both Vampire and Sabres**

### Serial Numbering

The imported Vampire fighters from UK were allocated the group identifier A78, and perhaps unnecessarily Australian production was allocated A79. The various deliveries received different series of 'last three' numbers, depending on the RAAF serialling policy at the time. The first aircraft from UK were "consecutive" (A78-1, -2, -3). Then the local F.30/FB.31 were purposely "scrambled" for security (the policy at the time of the Korean War), then finally the trainer deliveries during 1952 were in the "century" block numbering system<sup>10</sup>, -800 series for the original T.33 and -600 series for the improved T.35.

To clear the way for the Vampire trainers to be issued with "century" block numbers, in APR 1956 some Vampire fighters with -600 and -800 series "scrambled" numbers had to be re-numbered as -400 series aircraft. This simply involved changing the first number of the "last three" to a '4' – for instance, 2(F)OTU A79-844 became A79-444 (to allow for -800 series T.33/T.34 numbering); A79-609 became A79-409 (to allow for -600 series T.35 numbering).<sup>11</sup> Vampire serial numbering is summarised below.

Serial Number	Policy	Aircraft Mark	Details
A78-1, -2, -3	Consecutive	F.1/F.2/FB.5	<b>3</b> - Early deliveries from UK 1947-49
A79-1 to A79-996	Scrambled	F.30/FB.31	<b>80</b> - Australian production delivery 1949-53, some "last-three" numbers later changed to -400 numbers in 1956 to allow for -600 and -800 century block allocation for the trainers <sup>12</sup>
A77-801/-836	Century	T.33/T.35A	<b>36</b> - First Australian trainer production delivered 1952-55, later upgraded to T.35 standard as the T.35A
A79-837/-842	Century	T.34/T.34A	<b>6</b> - Naval variant of T.33 (T.34) and T.35 (T.34A); note that <b>4</b> RAN UK T.22s retained RN serials
A79-600/-668	Century	T.35/T.35W	<b>68</b> - A79-836 was upgraded on production line as the first T.35 A79-600, T.35W had fatigued wings replaced from other aircraft

### RAN Vampires

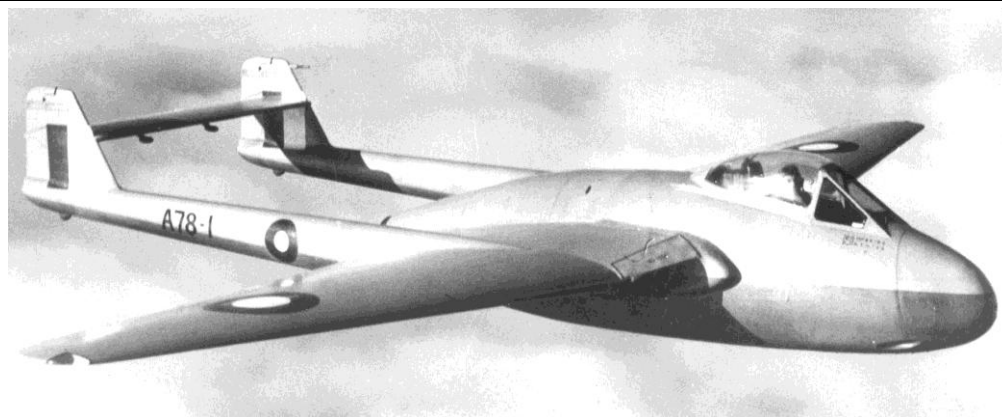
The Navy received five T.33-standard trainers from de Havilland Bankstown production as the T.34. As an attrition replacement another was ordered from T.35 production as the T.34A, while the remaining T.34s were also upgraded to T.34A standard – T.34 upgrades did not receive the fin modification, however the last (A79-842) did, having been finished to T.35 standard. For further attrition, the RAN bought four Royal Navy T.22s direct from the UK over 1957-59, which were to the later-T.11/T.35/T.34A standard. However, it appears no resources were devoted to bring these four to a common standard (regarding cockpit equipment and layout) with the Australian produced trainers.



## A78-1 / TG431 VAMPIRE F.1



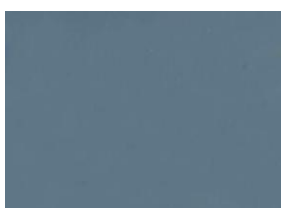
**1947** A78-1 was a Vampire F.1 serialled TG/431 from RAF production and delivered in the UK in the then current scheme similar to TG/278 (above) – RAF 'Day Fighter' colours of *Dark Green/Ocean Grey/Medium Sea Grey*, with Type-C/C1 national markings.<sup>13</sup> This was soon changed to the newer two-tone scheme (below).



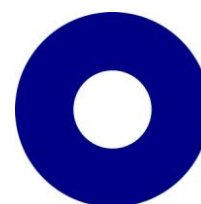
When A78-1 commenced flying in 1947 with 1APU, its colours were the standard RAF 'Day Fighter (High Flying)' scheme of *Medium Sea Grey* on the upper surfaces, with *PRU Blue* undersides.<sup>14</sup> The current RAAF Pacific roundels were 18" (45.72cm) diameter on the booms and 36" (91.44cm) diameter on the wings. Later, the overall colour scheme was standardised to overall aluminium and 1:2:3 Type-D national markings as promulgated by RAF AMO A.413/47 of MAY 1947,<sup>15</sup> and RAAF Special Instruction General/96 of 14 JAN 1948<sup>16</sup>: roundels were the same size, 18" diameter on the tail booms and 36" diameter on the wings. But because of the different tail design of the F.1, the Type-D fin flash on A78-1 was taller (see below): 18" wide (three equal width colours) and 27" (68.58cm) high. This anomaly can also be seen on its 'C' and Pacific fin flashes.



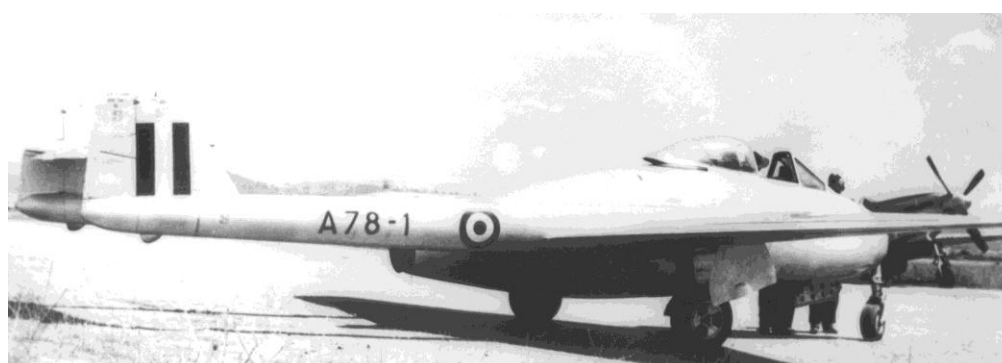
**Medium Sea Grey**  
33B/679



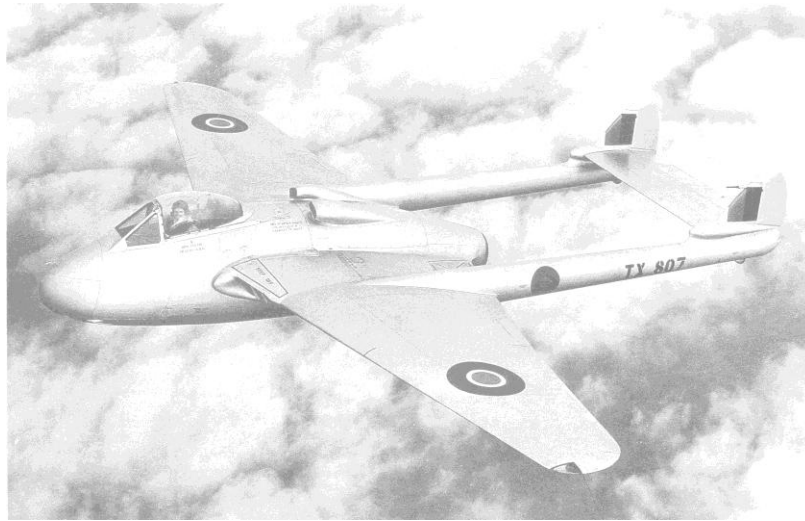
**PRU Blue**  
33B/683



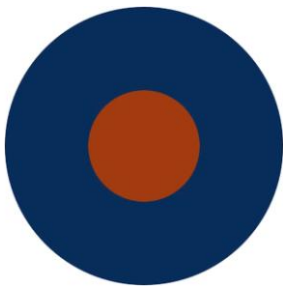
**RAAF Pacific Roundel**



## A78-2 / TX407 VAMPIRE F.2



**1948** A78-2 was a UK-produced Vampire F.2, delivered in 1948 in aluminium finish with Type-B boom roundels and tail flashes, but Type-C wing roundels. Soon after delivery to 1APU at Laverton, markings were changed to the RAF 1947 1:2:3 Type-D national markings in all positions, and in a *brighter gloss blue and red*,<sup>17</sup> mandated by the RAAF Special Instruction General/96 of 14 JAN 1948. On Vampire single-seat aircraft, the Type-D roundels were 18" diameter on the tail booms and 36" diameter on the wings. The Type-D fin flash was 18" square with three equal width colours. A78-2 was used for intake development of the Australian Nene-powered F.30. The brighter Type-D marking shown below, as specified by 1948 RAAF policy, was adopted for Australian production.



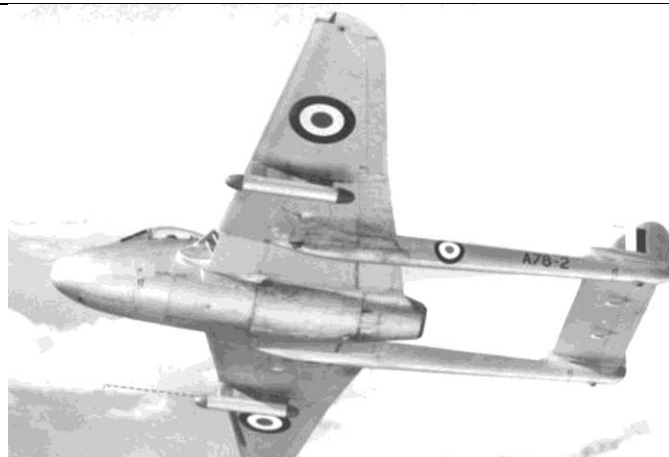
Type-B Fuselage Roundel



Type-C Wing Roundel



Brighter Type-D Roundel<sup>18</sup>





## A78-3 / VV465 VAMPIRE FB.5



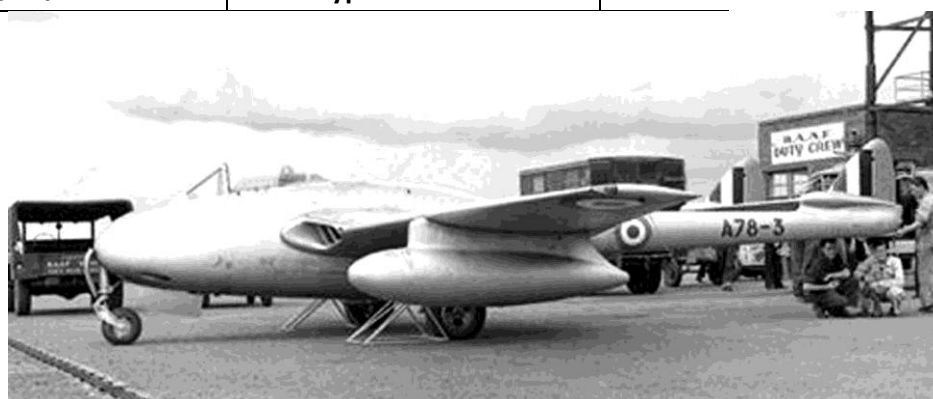
**1949** A78-3 was a UK-produced Vampire FB.5, delivered in 1949 in aluminium finish, with Type-D national marking in all positions. On Vampire single-seat aircraft, the Type-D roundels were 18" diameter on the tail booms and 36" diameter on the wings. The Type-D fin flash was 18" square with three equal width colours, with the red leading edge cut off to fit the fin. The picture above shows all three UK-supplied Vampires at 1APU Laverton c1950. All three aircraft now have standard markings: the 1949 overall *High Speed Silver* aluminium, the RAF 1947 Type-D National Markings, and the RAAF Special Instruction General/96 1948-specified glossy National Marking colours. The 'clipped-wing' A78-3 was used for fighter-bomber trials for the development of the Australian-produced FB.31.



Aluminium '*High Speed Silver*'

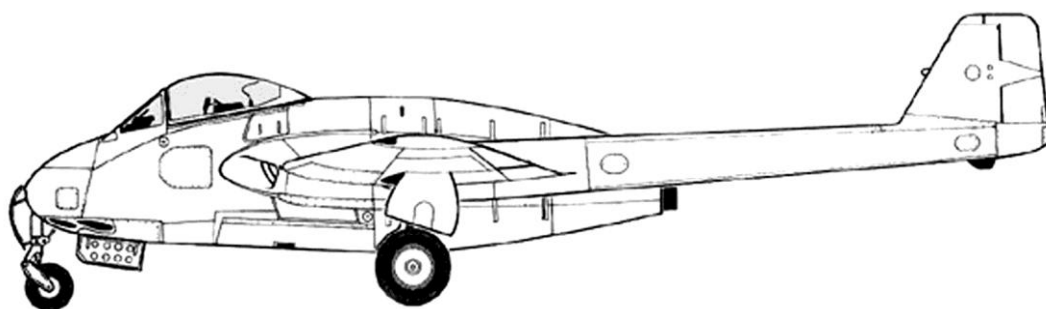


Type-D Roundel

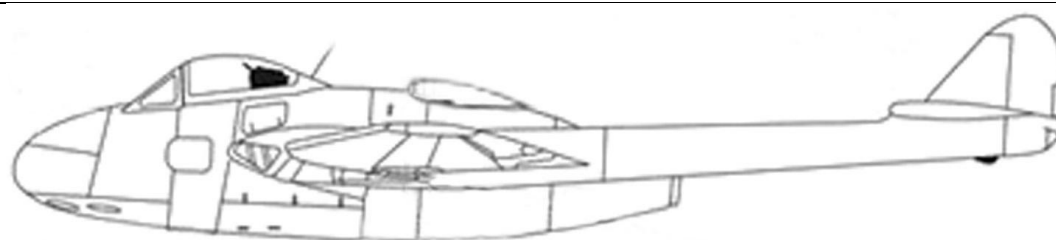


A78-3 in 1951 with 21SQN at Laverton, and in 1952 went as an instructional airframe to Wagga. This interesting style of red nose was adopted on 21SQN's early Australian-produced F.30s in 1951 as a unit marking.

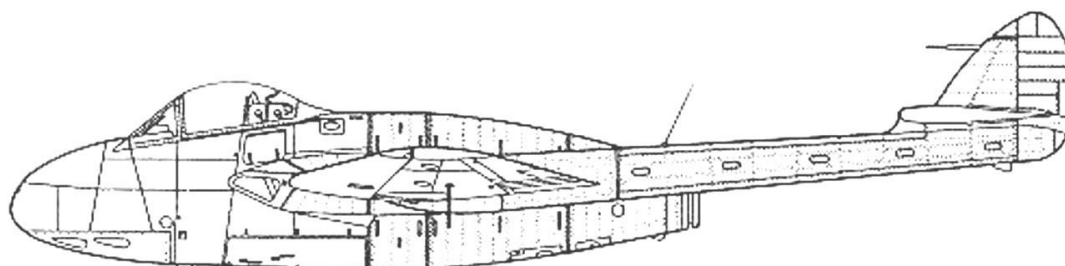
## UK VAMPIRE FIGHTER VARIANTS



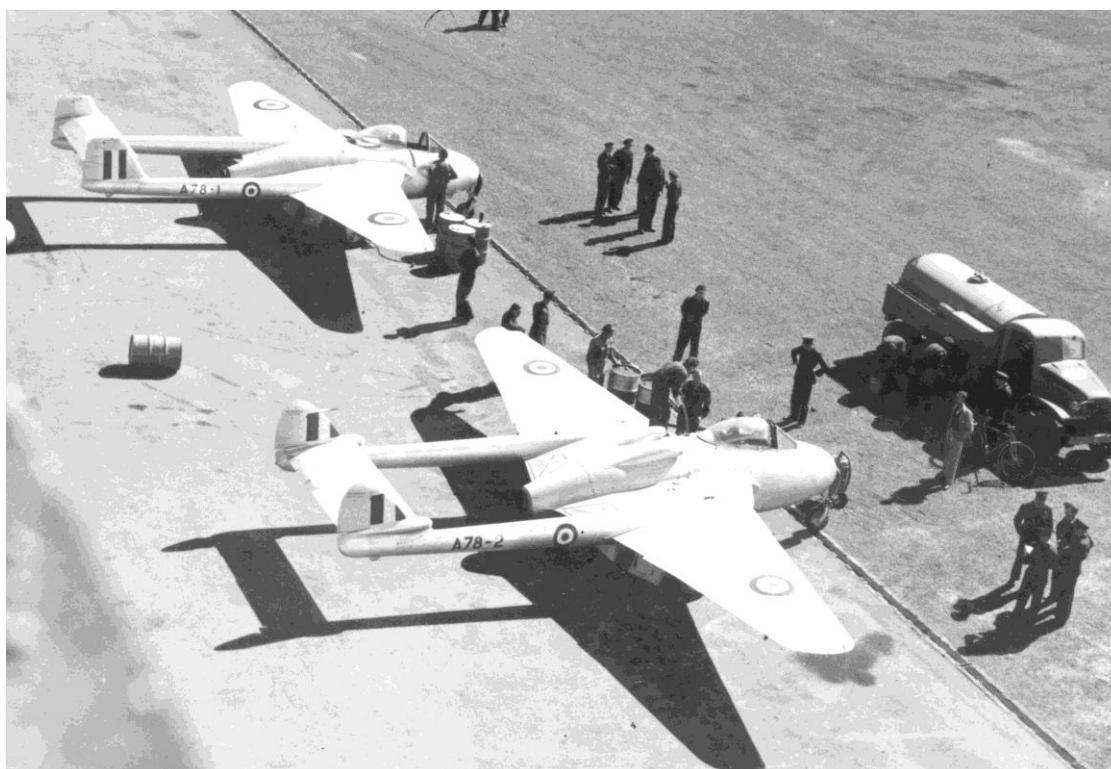
**A78-1** Vampire I, or F.1, Goblin-powered with squared tail.



**A78-2** Vampire II, or F.2, Nene-powered and the definitive Vampire tail.



**A78-3** Vampire FB.5 fighter-bomber, Goblin-powered, which the RAF developed into the FB.9 and which RAAF squadrons of 78 Wing flew in Malta over 1952-54.



The first two UK-supplied Vampires at 1APU Laverton c1950, now with the standard markings of overall aluminium and Type-D national markings.



## 78 WING MALTA – RAF VAMPIRE FB.9



75 and 76 SQNs operated RAF-supplied Vampire FB.9s in Malta over 1952-54. The two half-strength squadrons forming 78 Wing were in Malta from JUL 1952 until DEC 1954, operating initially from Hal Far, and later from Ta'Kali.<sup>19</sup> The FB.9s were: WP993, WP997, WR109, WR110, WR116, WR118, WR133, WR136, WR138, WR140, WR147, WR148, WR151, WR173, WR174, WR185, WR187, WR189 and WR239, plus trainer T.11 WZ495.<sup>20</sup>



Aluminium 'High Speed Silver'



Type-D Roundel



Colourised 78 Wing Nose Marking



**WR138** 78WG 1952-54, standard RAF fighter markings of overall 'high speed silver' and Type-D national markings



78 Wing pilots admire the unit badge applied to the RAF Vampire FB.9s

## Major Vampire Modification and Servicing...and Painting

In the 1950s and the 1960s, Australia had an aircraft industry which manufactured aeroplanes and engines. In this postwar era, the Commonwealth Aircraft Corporation (CAC) manufactured the Sabre and Winjeel and many engine types, the Government Aircraft Factories (GAF) built the Lincoln, Canberra and primed the Mirage, and de Havilland (DH) produced the Vampire. With such an aviation support base on which to rely, the RAAF awarded these aircraft factories sustainment contracts for major modifications and deeper level maintenance, without having to carry all such work out in its Aircraft Depots (ADs) or Maintenance Squadrons.

Examples of this technical effort, and by no means a complete list, is given below.

- DH at Bankstown built both Vampire fighter and trainer variants, and as manufacturer conducted major modifications and major 'E' Servicings. Major upgrades that have been covered by this instalment include the fighter F.30 to FB.31 upgrade (1954-56), F.30 ejection seats (1955-57) and the trainer T.33 to T.35A retrofit (1957-59). DH became Hawker de Havilland (HDH) in 1963, and on award of the major deeper maintenance contract for 1AFTS Vampires and Macchis, built a new hangar at Guildford in 1966, which avoided long transits to Bankstown. Some Vampire deeper maintenance was also conducted (as was the Meteor) at 2AD Richmond.
- CAC completed Winjeel 'E' Servicings (1000-hourlys) at its factory at Fishermen's Bend. Sabre 'E's were carried out by 1AD at Laverton, and any major modifications were done by CAC at Avalon, such as the enhancement to the Aden cannon in the Sabre's early service, and the Mk.31 retrofit (1959). Lower levels, e.g. 'D' servicing (250-hour inspections),<sup>21</sup> were also done by an AD or a Base Maintenance Squadron (478SQN or 481SQN). From 1961, 3AD at Amberley conducted Sabre 'E' Servicing. Winjeel 'E's transferred to Parafield in 1967.
- GAF (later becoming ASTA), which moved from the wartime Department of Aircraft Production (DAP) factory at Fishermen's Bend to a greenfield site at Avalon near Geelong, was responsible for the Canberra and Mirage. DAP restructured as Division of Aircraft Production for maintenance. Canberra major servicing was taken over by 3AD Amberley, and major Mirage servicing and rectification was done at Avalon, or by 478SQN or 481SQN.

The introduction of revolutionary fluorescent dayglo schemes to RAAF aircraft was a major process, more than just applying another coat of paint. Fluorescent paint was a new product, and its application was lengthy, strictly following a Military Standard. This involved stripping the surface back to bare metal, applying two smooth coats of white primer, and then after the prescribed intervals, three applications of the fluorescent orange dayglo, then three sealer coats.<sup>22</sup>



**1AFTS A79-665 in JAN 1967 at the new HDH Guildford facility to undergo fatigue repair**

For the Vampire *trainer* – as Vampire *fighters* were being withdrawn from service in 1960 – the dayglo process was carried out by DH at Bankstown, under the Vampire Modification 332 program over the second half of 1961, and took two weeks per aircraft.<sup>23</sup> (Winjeels received dayglo in the first half of 1961.) Subsequent maintenance and repair of dayglo was not necessarily required at the factory, and was done at a Base level, except perhaps when the repaint was wrapped into a factory major servicing.

The next instalments will cover the Dakota, and then large RAAF silver aircraft during the 1960s which received dayglo, generally from 1960. These examples were: C-47 Dakotas maintained at depot level and painted at Parafield by DAP (which became Airframe Repair Workshops, ARW, in late 1960); Bristol Freighters by Bristol Aviation Services at Bankstown; Convair Metropolitans by the airline TAA at Mascot and Essendon; and C-130As by 2AD at RAAF Richmond.

### National Markings

For Australian production Vampires, aircraft were all-over bare metal finish, or aluminium. RAAF Standard for colours was the '3K5' specification, and the stores identifiers for aluminums were K3/162 *Enamel Cellulose Aluminium*, and K3/168 *Dope Finishing Cellulose Aluminium*. The only bright colours marked at this stage in the early 1950s were the National Markings. In 1947 'Red' was being added back into our National Markings using the wartime colours – K3/197 *Dull Blue* and the gloss K3/169 *Bright Red* (hitherto used only in Ambulance markings).<sup>24</sup>

The RAAF K3/ stores vocabulary, which added colour numbers consecutively, was effective in that it identified specific colour names by number, where the wartime RAF Ministry of Aircraft Production (MAP) had rather inaccurately only used names, and used the RAF 33B/ system of colours as stores identifiers. It was the subsequent British Standard Institution (BSI) BS381C which allocated numbers to names – later in 1948 in a numerical sequence of colour groups (e.g. 100s for blues, 300s for yellows, 500s for reds). This pattern of colour groups formed the concept, too, of the US Federal Standard 595 (FS595), which went even further by the first number specifying the lustre (gloss, semigloss, matt).

The 1948 RAAF National Markings were changed to glossy, brighter colours – which mirrored 1947 RAF policy changes in RAF Air Publications A.P.1086 and A.P.119A-0601-1E. These new glossy RAAF National Marking colours were specified in the Special Instruction General/96 of 14 JAN 1948, which had directed 1:2:3 roundels (Type-D) in the gloss K3/346, K3/342 and K3/343 colours.<sup>25</sup> The specified Standard 3K5 red and blue colours in the RAAF vocabulary were also added in JAN 1951 to the Aircraft Engineering Instructions General (AEIG) Instruction No.11, being **K3/346** and **K3/343** (which are added below).

#### AIRCRAFT ENGINEERING INSTRUCTIONS GENERAL (AEIG) PART 2, SECTION 1 INSTRUCTION No. 11, JAN 1951

- 3 -

AIRCRAFT ENGINEERING INSTRUCTIONS  
GENERAL PART 2, SECTION 1

INSTRUCTION NO. 11

(d) National markings - National markings, i.e., roundels, tail fin flashes and aircraft serial numbers will be applied to all Service aircraft regardless of any other special markings required. Roundels and tail fin flashes will be finished in colours Identification Glossy Red, White and Blue, (Ident. Nos. K3/346, K3/342 and K3/343 respectively). Aircraft serial numbers are to be finished in Identification Glossy Black, (Ident. No. K3/344).

For the position and dimensions of the roundels, tail fin flashes and aircraft serial number markings, refer to R.A.A.F. Diagram A5524, Sheets 1 and 2 attached.



Glossy Red K3/346



Glossy Blue K3/343



K3/346 *Glossy Red* was BS381C-538 *Bright Red* or *Post Office Red*.<sup>26</sup> K3/343 *Glossy Blue* was BS381C-105 *Oxford Blue*. Other RAAF 3K5 specification colour identifiers introduced in JUL 1948 were K3/347 *Orange* and *Royal Blue* K3/348,<sup>27</sup> for the hand-brushing of lettering and badges<sup>28</sup> – the latter should not be confused with the National Marking colour K3/343 *Glossy Blue* (*Oxford Blue*). The MAY 1951 AEIG Instruction No.9 (below) provides the identification of the K3/ glossy National Markings against the BSI BS381C Standard.<sup>29</sup>

## AIRCRAFT ENGINEERING INSTRUCTIONS GENERAL (AEIG) PART 2, SECTION 1

### INSTRUCTION No. 9, MAY 1951

A.E.I.G.  
Part 2, Section 1

Sheet 5  
Instruction No.9

#### APPENDIX "D"

#### STANDARD DOPING AND FINISHING MATERIALS

The following dopes, finishes and undercoats to be used on R.A.A.F. aircraft are tabulated hereunder. This list is by no means complete, and only purports to cover major surface requirements.

Ident. No.	Nomenclature	Specification	Description	Applicable Finishing Scheme
	<u>Colours Identification</u>			
K3/344	Glossy Black	R.A.A.F. 3K5	Lettering all aircraft	1-6 inclusive
K3/346	Glossy Red (B.S.I. Colour No. 538)	R.A.A.F. 3K5	National Markings all aircraft	1-6 inclusive
K3/342	Glossy White	R.A.A.F. 3K5	National Markings all aircraft	1-6 inclusive
K3/343	Glossy Blue (B.S.I. Colour No. 105)	R.A.A.F. 3K5	National Markings all aircraft	1-6 inclusive
	<u>Finishes - Aluminium and Camouflage</u>			
K3/168	Aluminium	R.A.A.F. 3K5	Protective Covering	1-5 inclusive
K3/162	Aluminium	D.T.D. 63A	Protective Covering	4-6 alt. to K3/168
K3/185	Yellow (Matching B.S.I. Colour No.356)	R.A.A.F. 3K5	Training Aircraft bands only	1-3 inclusive
K3/324	P.R.U. Blue (Colour B.S.I. No. 103)	R.A.A.F. 3K5	Catalina Radomes	5
K3/323	White	R.A.A.F. 3K5	Catalina Radomes	5
K3/179	Night (Colour Black)	R.A.A.F. 3K5	Catalina Radomes	5



Refuelling a Vampire at Laverton

The JAN 1951 AEIG Instruction No.11 gives a useful explanation of the 1948 Special Instruction Gen/96 and details the glossy National Markings, and the accompanying RAAF Drawing A5524, sheets 1 and 4 (my colouring has been added) issued by the RAAF Directorate of Technical Services (D.T.S.), shows the application of the National Markings for roundels and flashes.<sup>30</sup> Instruction No.11 accorded with the earlier D.T.S. 14 JAN 1948 Special Instruction General/96 directing the introduction of 1:2:3 roundels in the newer glossy colours, although often the marking dimensions varied. And the kangaroo roundel was, of course, introduced to the fuselage from JUL 1956, and to mainplanes in NOV 1965 – see our earlier markings instalment '*The Kangaroo Roundel that We Love*'.<sup>31</sup> These D.T.S. A5524 diagrams from the 1951 Instruction No.11, below, have been coloured for ease of reference. The National Markings follow the SIG/96 colours of glossy K3/346, K3/342 and K3/343. While these exact National Marking colours have continued as the roundel's red and blue, the names changed under the 1975 Australian Defence Standard DEF(AUST) 572 as *Post Office Red* (AS K185-538) and *Oxford Blue* (AS K185-105).<sup>32</sup> More recently in 2011, these same colours are defined in the AAP.7021.004-1(AM1) as Australian Standard (AS) R15 *Crimson* and AS B13 *Navy Blue*, but still accord with the overseas BSI and FS595 standards.<sup>33</sup>

# RAAF D.T.S. DIAGRAM A5524

JAN 1951

AIRCRAFT IDENTIFICATION MARKING.			IDENT. N° OF COLOURS												
<p>IDENTIFICATION MARKINGS TO BE CARRIED ON ALL AIRCRAFT AS FOLLOWS</p> <table border="1"> <thead> <tr> <th>TYPE OF MARKING</th> <th>DETAIL</th> <th>POSITION</th> </tr> </thead> <tbody> <tr> <td>NATIONAL MARKING I</td> <td>ROUNDEL</td> <td>FUSELAGE AND MAINPLANES SEE SHEETS 2 AND 3</td> </tr> <tr> <td>NATIONAL MARKING II</td> <td>FLASH</td> <td>BOTH SIDES OF TAIL FIN SEE SHEET N° 4</td> </tr> <tr> <td>CODE MARKING "A"</td> <td>THE LETTER AND NUMBER ALLOCATED TO THE AIRCRAFT</td> <td>ON BOTH SIDES OF FUSELAGE SEE SHEETS 2 AND 3</td> </tr> </tbody> </table>			TYPE OF MARKING	DETAIL	POSITION	NATIONAL MARKING I	ROUNDEL	FUSELAGE AND MAINPLANES SEE SHEETS 2 AND 3	NATIONAL MARKING II	FLASH	BOTH SIDES OF TAIL FIN SEE SHEET N° 4	CODE MARKING "A"	THE LETTER AND NUMBER ALLOCATED TO THE AIRCRAFT	ON BOTH SIDES OF FUSELAGE SEE SHEETS 2 AND 3	<div style="display: inline-block; width: 15px; height: 15px; background-color: red; border: 1px solid black;"></div> RED K3/346
			TYPE OF MARKING	DETAIL	POSITION										
			NATIONAL MARKING I	ROUNDEL	FUSELAGE AND MAINPLANES SEE SHEETS 2 AND 3										
			NATIONAL MARKING II	FLASH	BOTH SIDES OF TAIL FIN SEE SHEET N° 4										
CODE MARKING "A"	THE LETTER AND NUMBER ALLOCATED TO THE AIRCRAFT	ON BOTH SIDES OF FUSELAGE SEE SHEETS 2 AND 3													
<div style="display: inline-block; width: 15px; height: 15px; background-color: white; border: 1px solid black;"></div> WHITE K3/342															
<div style="display: inline-block; width: 15px; height: 15px; background-color: blue; border: 1px solid black;"></div> BLUE K3/343															
			<div style="display: inline-block; width: 15px; height: 15px; background-color: black; border: 1px solid black;"></div> BLACK K3/344												

SIZE OF FUSELAGE ROUNDELS				
TYPE OF FUSELAGE		APPROXIMATE OUTSIDE DIAM. OF COLOUR BAND IN INCHES		
		RED	WHITE	BLUE
SMALL	TRAINER OR BOOM TYPE FUSELAGE	5½"	11"	16½"
MEDIUM	AND FIGHTER A/C	11"	22"	33"
LARGE	TRANSPORT AND HEAVY BOMBERS	16"	32"	48"

SIZE OF MAINPLANE ROUNDELS. REFER TO SHEETS 2 AND 3.

NATIONAL MARKING I

EXAMPLE OF STENCIL MARKINGS ONE INCH LETTERS AND FIGURES

R.A.D. R 106 INSPECTION STAMP  
SCH. AE 16 N° 1  
DATE 9-5-50

CODE MARKING "A"  
COLOUR :- BLACK

AIRCRAFT SERIAL NUMBER **A17-57**

NATIONAL MARKING II - TAIL FIN FLASH - SEE SHEET 4.

A.E.I.G. PART 2, SECTION 1, INSTRUCTION N° 11

DIRECTORATE OF TECHNICAL SERVICES		
R.A.A.F. DIAGRAM A5524		
ISSUE	DATE	SHEET N° 1
4 E8	19 1 51	N° OF SHEETS 4

Sheet No.1 showing 1951 National Marking I (Roundel)

NATIONAL MARKING II  
TAIL FIN FLASH

DIMENSIONS OF NATIONAL MARKING II

OVER ALL SIZE OF TAIL FIN FLASH	HEIGHT	WIDTH
SMALL TRAINING AIRCRAFT	18"	16"
MEDIUM AND FIGHTER AIRCRAFT	24"	22"
LARGE TRANSPORT AND HEAVY BOMBER	24"	34"

NATIONAL MARKING COLOURS TO BE RED, WHITE, AND BLUE FROM FORE AND AFT.  
COLOURS TO BE OF EQUAL SPACING.

THE BASE OF THE MARKING IS TO BE EITHER THE TOP OF THE TAIL PLANE OR THE CONTINUATION OF THE TOP FUSELAGE LINE WHICH EVER GIVES THE BEST VERTICAL SURFACE.

EXAMPLES OF MARKINGS

- 1 TIGER MOTH
- 2 BEAUFIGHTER
- 3 DAKOTA
- 4 OXFORD
- 5 LINCOLN

NATIONAL MARKING II

IDENT. N° OF COLOURS

RED K3/346  
WHITE K3/342  
BLUE K3/343

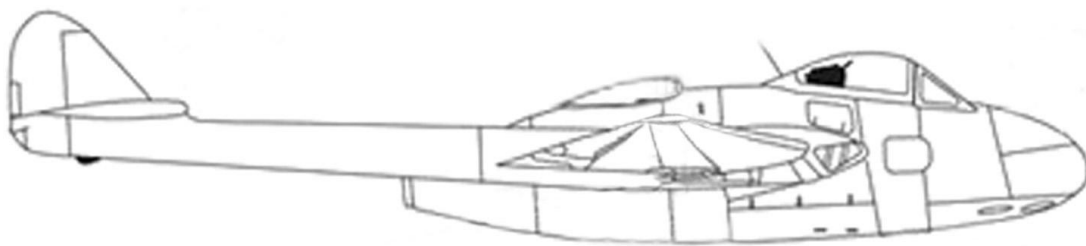
AIRCRAFT WITH TWIN RUDDERS AND FINS ARE TO BE MARKED ON BOTH SIDES OF EACH FIN

DIRECTORATE OF TECHNICAL SERVICES  
R.A.A.F. DIAG. N° A5524  
ISSUE DATE SHEET 4  
24 31 1 51 N° OF SHEETS 4

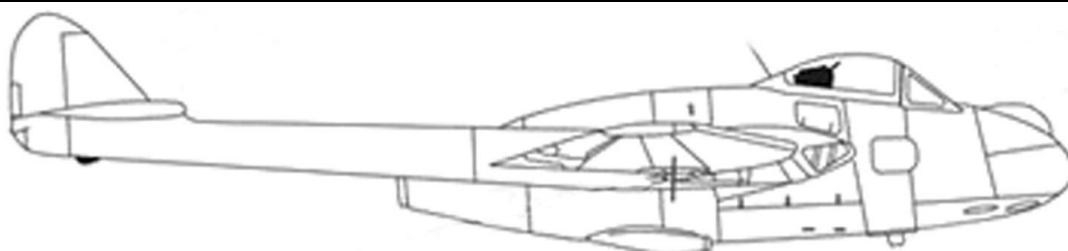
A.E.I.G. PART 2, SECT. 1, INSTRUCTION N° 11

Sheet No.4 showing National Marking II (Tail Fin Flash)

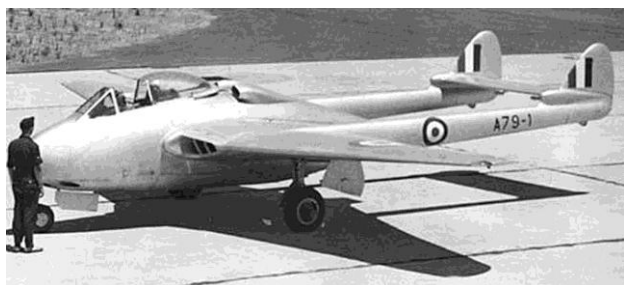
## AUSTRALIAN VAMPIRE FIGHTER VARIANTS



**Vampire F.30** original specification: auxiliary “elephant ear” intakes on the upper fuselage (which would be repositioned to a ventral position), curved wingtips, and no radio compass housing yet above the nose.



**Vampire FB.31** upgrade: auxiliary intakes on the lower fuselage, clipped wingtips, two weapon hardpoints under each wing, and the later installation of the radio compass (or ADF) antenna above the nose.



A79-1 the first Australian-built Vampire with “elephant ear” auxiliary intakes, required for the Nene’s additional airflow. These created elevator blanking and were moved beneath the fuselage.



FB.31 A79-609, later reserialled A79-409, with underwing hardpoint-mounted light series bomb carriers with 25-lb practice bombs.



The major difference between the Mk.30 and Mk.31 was the wing planform. These two 1956 21SQN Vampires both have ventral intakes, but not yet fitted with the radio compass antenna above the nose: F.30 A79-215 with original tapered wing (near), and FB.31 A79-467 with strengthened clipped wing. Mk.31 production was delivered from the Bankstown line over JUL 1952-MAR 1953. Upgrades of Mk.30 to Mk.31 standard took place 1956-1957.<sup>34</sup>



## Vampire Single-seater – RAAF's Trainer for the Jet Age

What the RAAF's experience with the Meteor in Korea showed was, like 1939, unpreparedness for war with an obsolete aircraft. When the Korean War began in JUN 1950, 77SQN in Japan, equipped with Mustangs, was packing up from its commitment to BCOF, and was about to return to Australia. As the Mustang was soon found to be deficient against the likely use of enemy jet fighters, an immediate replacement was hurriedly acquired, this in the form of the Meteor, as no US F-86 Sabres were then available.<sup>35</sup>

Britain was able to quickly respond to meet our hurried request, with first deliveries of Meteors from FEB 1951. Then 77SQN again entered the fray in JUL 1951 with the new jet – but this only highlighted many deficiencies in the aircraft, and in RAAF training and logistics. Firstly, the Meteor was not suitable for 77SQN air combat operations in Korea, and the unit went through humiliating role changes because of the aircraft deficiencies – eventually proving the Meteor suitable as a stable rocket platform for hazardous ground attack interdiction missions.

The training of pilots was a constant problem during 77SQN's wartime operations up to JUL 1953. This was because initially new pilots reached Iwakuni in Japan – the RAAF's support base – often having only flown Mustangs. There were few jet aircraft in Australia in squadrons or available for training. Even for the whole of the Korean War, 77SQN training continued in Japan. Initially the new pilots would do a couple of trainer Meteor T.7 checks, then some rides in the single-seater F.8 to build up to about 8 hours on type, before proceeding to Korea. Although this became more formalised with a Qualified Flying Instructor running a Conversion Flight within 91 Wing and flying about 18 hours, this was still inadequate for learning to fly a new aircraft, flying different roles, tactics, and the complexity of jet warfare.<sup>36</sup>

Finally recognising the inadequacy of its training system, the RAAF formed 2(F)Operational Training Unit at Williamstown on 1 MAR 1952. 2(F)OTU was equipped with Australian-produced Vampire F.30 (by which time 45 had been delivered primarily to CAF squadrons),<sup>37</sup> and then later in the year received the fighter-bomber FB.31 variant. However, there were no dedicated two-seat jet trainer aircraft, either Vampires or Meteors.

A.B.Os. N. 162 — N. 164/1952

### RESTRICTED

ROYAL AUSTRALIAN AIR FORCE

## AIR BOARD ORDERS

### SECTION N — TEMPORARY ORDERS AND NOTICES

Air Force Head-Quarters,  
Victoria Barracks,  
MELBOURNE, S.C.I.

21st April, 1952.

The following Orders are hereby promulgated for information and guidance and necessary action.

By Command of the Air Board,



Secretary.

#### N. 162. Formation No. 2 (Fighter) Operational Training Unit (151/2/319 — 21st April, 1952)

1. No. 2 (Fighter) Operational Training Unit formed at Williamstown, New South Wales, with effect 1st March, 1952, as a separate air force unit under the direct command of the Air Officer Commanding, Eastern Area.

2. A.C.D. 217/52 is to be amended as follows:—

Page 3 — After "Mobile Fighter Control Units" insert "Operational Training Units"  
"No. 2 (Fighter) Operational Training Unit—Williamstown—32"

Page 32. After School of Land/Air Warfare, &c. insert in column:—

- (a) "No. 2 (Fighter) Operational Training Unit"
- (b) "HQEA"
- (c) "do."
- (d) "do."
- (e) "2 OTRANU"
- (f) "do."
- (g) "—"

3. This order is to be listed in the current quarterly list of Air Board Orders, Section N.

Having a formal jet training unit at Williamstown from 1952 went a long way to alleviate pilot inexperience, but pilots still required the Meteor conversion in Japan, where training had become more intensive, from the handful of Meteor trips to a more credible syllabus at 91WG Conversion Flight, before trainees proceeded onto operations. Someone who recognised these problems early had been SQNLDR Dick Cresswell, who in 1951 had been CO 77SQN for the changeover from Mustangs to Meteors. He revisited Korean operations, and again flew combat missions, and finally as CO 2(F)OTU he initiated the revolutionary change of tactical training for fighter combat. In 1954, under his

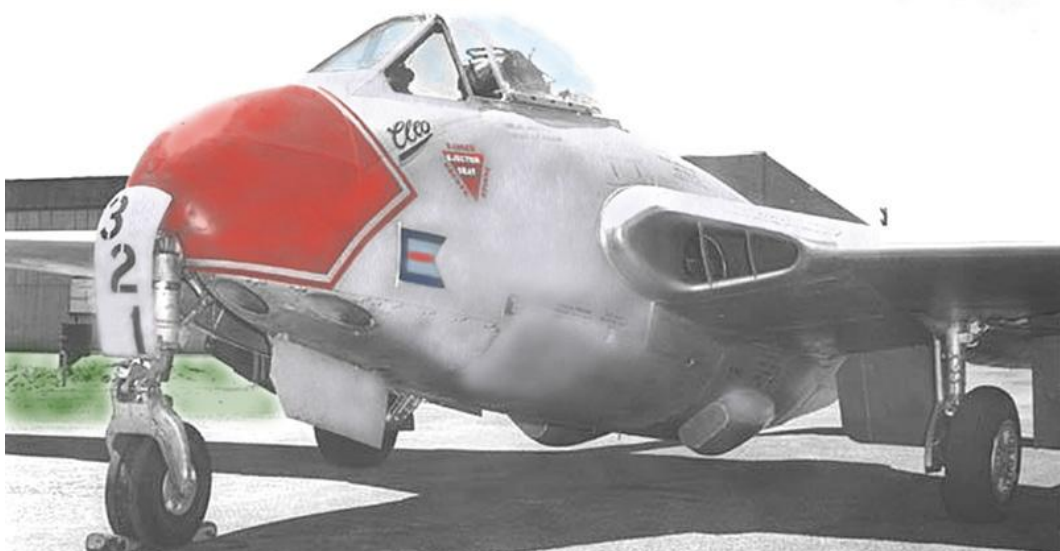
aggressive leadership, he established the Sabre Trials Flight within 2(F)OTU and also developed the post-graduate training for fighter leaders in air combat, which in 1955 became the Fighter Combat Instructor (FCI) course.<sup>38</sup>

But adding to our shortage of combat pilots in 1952 had been the Government's commitment of a wing of jet fighters to the RAF for Middle East defence, based in Malta. 78 Wing flew RAF-supplied Vampire fighters on this deployment from JUL 1952 until DEC 1954, and this comprised two 'half squadrons' (75 and 76SQNs) manned by 77SQN Korean veteran pilots, further exacerbating the RAAF's lack of combat pilots and experienced instructors at home. It was not until 77SQN arrived back at Williamstown in JAN 1955 that the RAAF had Meteor F.8 fighters and T.7 trainers available to the home fighter force.



**Acceptance of Bankstown's first Australian-built Vampire, A79-1**

Thus the Vampire *fighter* had entered RAAF service with 2(F)OTU in 1952 as a *trainer* for Korea, and from 1955 with the availability of Meteors, the Vampire was not required to equip permanent fighter squadrons. It equipped CAF squadrons – primarily 21SQN at Laverton and 25SQN at Pearce (and 22 and 23SQNs which soon received Meteors from 1955, while 24SQN operated Mustangs)<sup>39</sup> – and remained in these training and CAF roles until its retirement over 1960-61. This ended the Vampire fighter's role as Australia's first jet trainer.



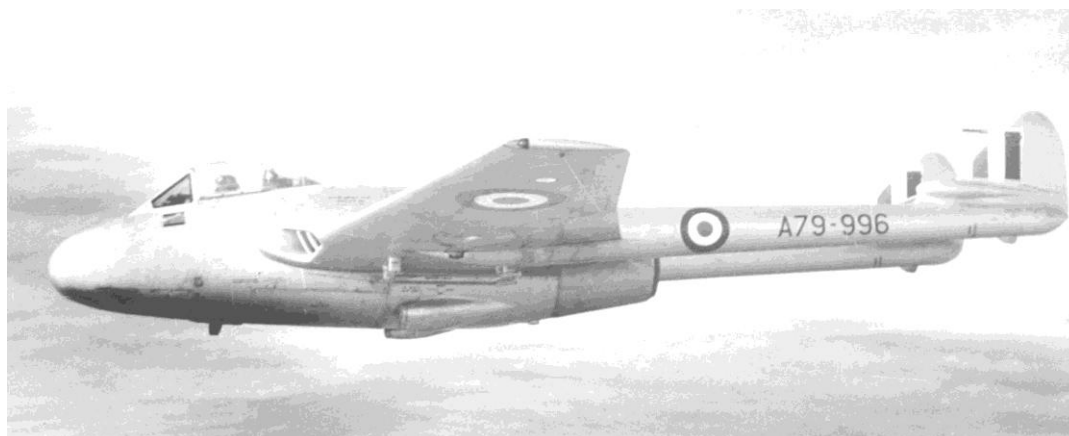
**A79-321 after serving with 21SQN, operated at 2(F)OTU in 1956 as the Base Commander's "Cleo"**



**A79-321 at 2AD Richmond before its wheels up landing at Tocumwal in MAY 1959 and its scrapping in 1962<sup>40</sup>**

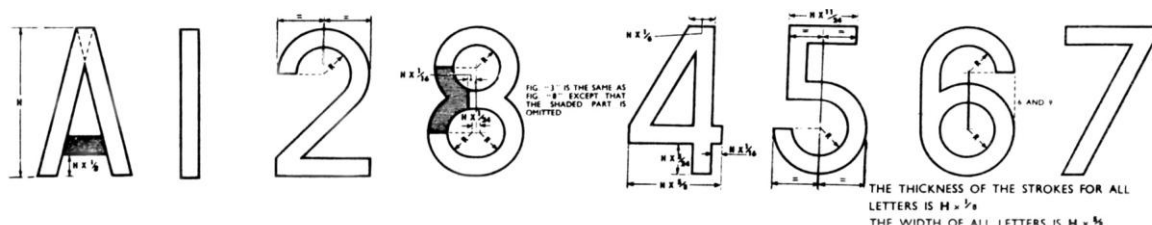
## VAMPIRE FIGHTER MARKINGS

Overall aluminium 'High Speed Silver' Type-D roundels / replaced by kangaroos



**A79-996** 1955-56 (CO 23SQN before receipt of Meteors) after upgrade to FB.31 – ventral auxiliary intakes, clipped wings, underwing hardpoints, the radio compass fairing above the nose still to be added – with Type-D roundels.

Black serial number figures: height 8", width 5", strokes 1" <sup>41</sup>



Roundel sizes, diameter inches (cm): fuselage 18" (45.72) <sup>42</sup>, mainplanes 36" (91.44)

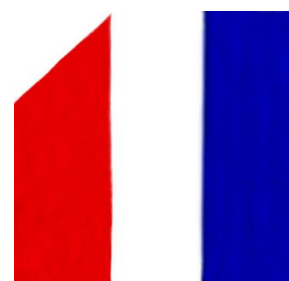
Fin flash: 18" high, 18" wide (6" each colour)



Type-D Roundel



Kangaroo roundel



Type-D Vampire Fin Flash

The RAAF's Australian-made fighter variants (F.30 and FB.31) were delivered from 1949 to match *High Speed Silver*,<sup>43</sup> with 1947 RAF 1:2:3 Type-D national markings in the normal six roundel positions. In Australia, the finishes used were K3/162 *Enamel Aluminium* and K3/168 *Dope Aluminium*. From 1956, 18" kangaroo roundels replaced the Type-D 'target' roundels on the tailbooms. The fin flash on the fin was cut-off on the red leading edge to be 12" (30.48cm) high increasing to 18" high blue trailing edge, and 18" wide (with 6" each colour).



**A79-942** at the F.30 dorsal 'elephant ears' configuration with Type-D roundels



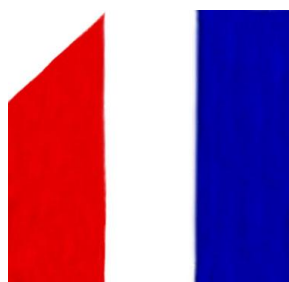
## 2(F)OTU "RED DEVILS" A79-153



F.30 **A79-153** 2(F)OTU "Red Devils" aerobatic team at Williamtown c1955. Standard single-seat Vampire National Markings were 18" Type-D roundels on the booms and 36" on the wings, with a 18" square Type-D fin flash with red leading edge cut-out. Red nose and fuselage band, red wingtip panels, and the Red Devil markings were retained until after 1956, as by then some Red Devil aircraft carried the kangaroo fuselage roundel.



Type-D Roundel



Type-D Vampire Fin Flash



The red devil's shield was inscribed with "2(F)OTU" in white. Vampires to carry the red devil marking (and some also with red noses retaining these markings until being scrapped in 1962) included: A79-2, 18, 91, 111, 151, 153, 235, 263, 282, 390, 409/609, 433/633, 444/844, 550, 796, 901, 942.



Vampire F.30s **A79-263** and **A79-91** (above), and the base commander's **A79-321 "Cleo"** and **A79-91** (below) – 2(F)OTU Red Devils in the early 1950s, all with Type-D fuselage roundels before the introduction of the kangaroo in 1956, and before modification with the radio compass loop antenna bulge above the nose.



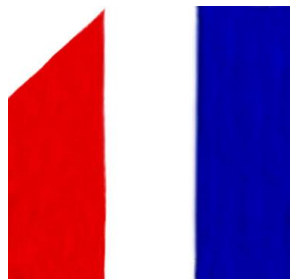
## 2(F)OTU "RED DEVILS" A79-111



FB.31 **A79-111** 2(F)OTU "Red Devils" at Williamstown c1960. Standard single-seat Vampire national markings after 1956 were 18" kangaroo roundels on the tail booms and 36" Type-D diameter on the wings, with a 18" square Type-D fin. The 30" (76.2cm) long Red Devil markings were retained by some aircraft until being scrapped in 1961. While having red wing and horizontal stabiliser panels, A79-111 appears unique (differing from the more standard A79-153's red markings) with a non-standard black nose and fuselage engine panels, and a 22" black and yellow band around the booms – possibly indicating the team leader's aircraft.



Kangaroo Roundel

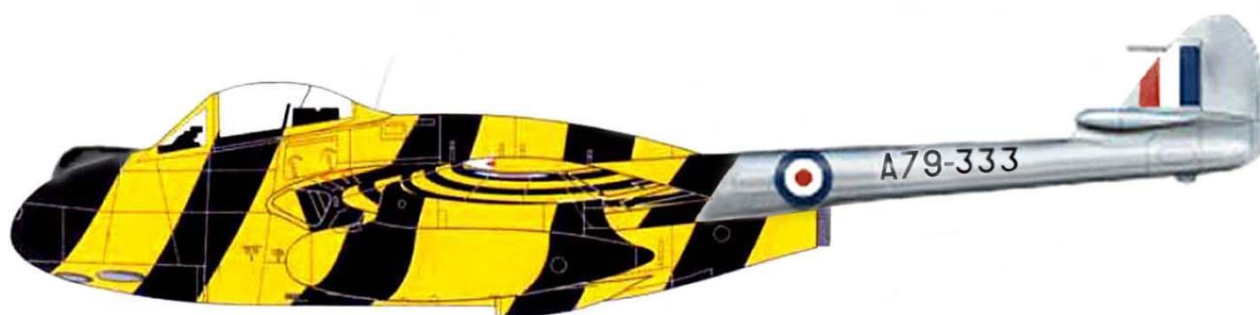


Type-D Vampire Fin Flash



The red devil's shield was inscribed with "2(F)OTU" in white. Vampires to carry the *red devil* marking included: A79-2, 18, 91, 111, 151, 153, 235, 263, 282, 390, 409/609, 433/633, 444/844, 550, 796, 901 and 942.<sup>44</sup>

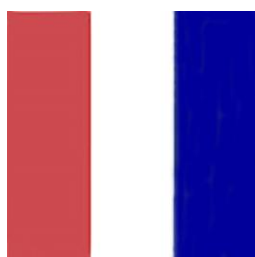
## 2(F)OTU TARGET TOWING VAMPIRES



FB.31 **A79-333** 2(F)OTU mid-1950s. Two known yellow/black stripe target towers at 2OTU were A79-333 and A79-876. On Vampire single-seat aircraft, the Type-D roundels were 18" (45.72cm) diameter on the tail booms and 36" (91.44cm) diameter on the wings. Note below, that the RAAF Museum "A79-876" has been restored with 18" square Type-D fin flash, with three equal height and width colours. Overall colours were *Yellow* (K3/185 which equated to the British Standard BS381C-356) and *Black* (K3/344) TT stripes on the fuselage pod, horizontal stabiliser and wings, with aluminium booms and tail.



Type-D Roundel



"A79-876" Type-D Fin Flash



*Golden (Trainer) Yellow*  
K3/185 or BS381C-356



A79-375 is displayed as target tower A79-876 at the RAAF Museum, Point Cook.





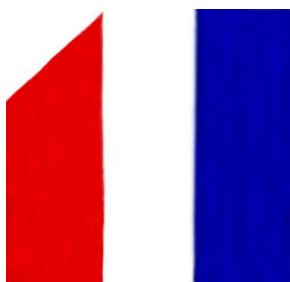
## 21 SQUADRON VAMPIRE FIGHTERS



**A79-704** 21SQN FB.31 showing one of the features of the F.30 to FB.31 upgrade – underwing bomb or rocket pylons for the fighter-bomber role. National markings were 18” Type-D roundels on tail booms, 36” Type-D on the wings, 18” square Type-D fin flash with red cut-out on the leading edge. On both sides of the nose was the 21SQN emblem (see below). This 21SQN badge incorporated the CAF 3-colour patch, which itself had been the shoulder patch for the Australian Flying Corps in WWI. 21SQN fighters and trainers had the serial number ‘last three’ marked on the nosewheel door in **red** thinly outlined in black. Known 21SQN Vampire fighters included A79-153, 160, 165, 175, **178**, **202**, **915** (three COs’ aircraft), 215, 321, 333, 422, 467, 564, 567, 704, 901, 942.



Type-D Roundel



Type-D Vampire Fin Flash



Sqn Ldr Pennant  
CO 21 SQN



**A79-178**, colourised image of 21SQN CO's aircraft

## 21 SQUADRON RED-NOSED VAMPIRES



**A79-321** 21SQN F.30 c1952, prior to the radio compass antenna bulge on top of the nose and before relocation of the upper elephant ear auxiliary intakes underneath the fuselage. National markings were 18" and 36" Type-D roundels, and 18" square type-D fin flash with red cut-out on the leading edge. Nose cone was glossy *Post Office Red* (K3/346, or BS381C-538) thinly outlined in black, tapering aft (replaced by 21SQN logo c1953).



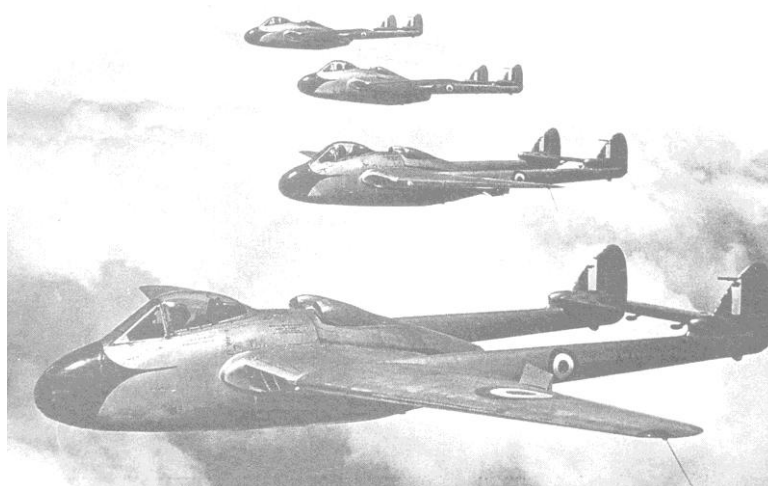
Type-D Roundel



21SQN nose 1951-52



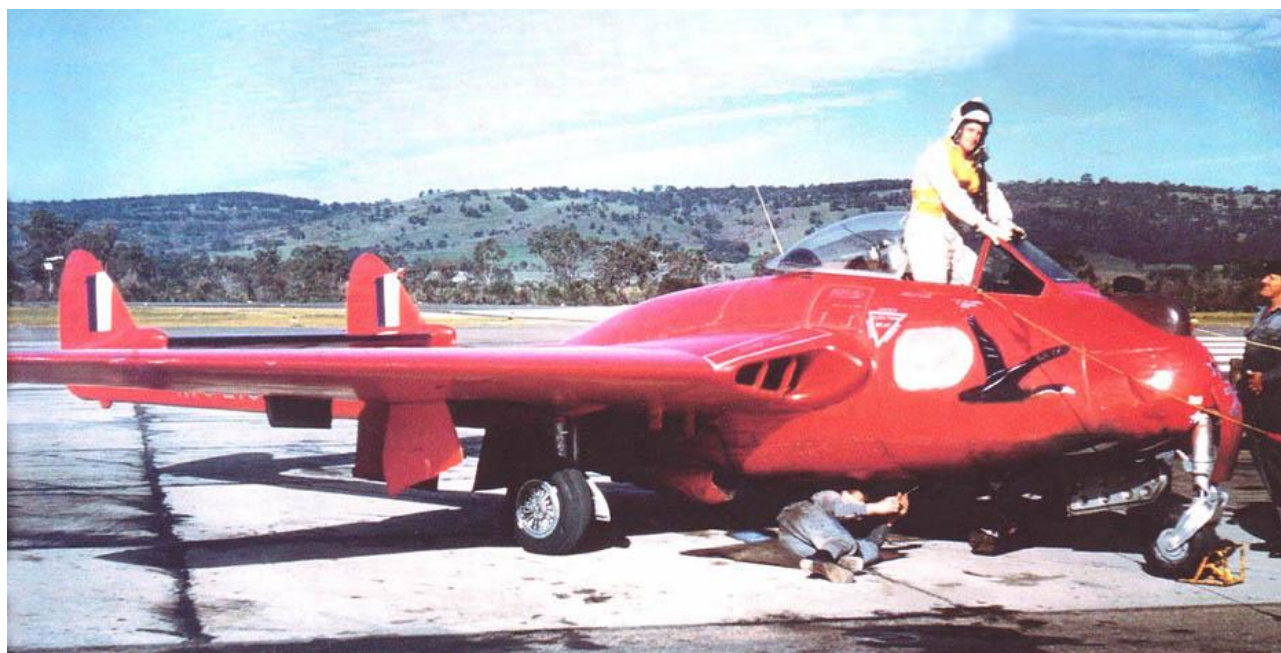
First 21SQN marking from 1953



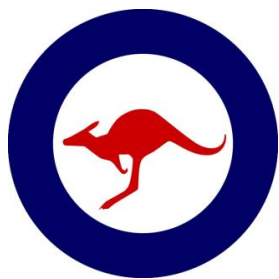
21SQN red nosed Vampire F.30s, c1952: A79-321, 942, 567 and 165. All were delivered in 1951 and still have the original dorsal "elephant ears" intakes required for the Nene engine. A79-321 had an unusual last trip – being ferried from Richmond to Tocumwal on 28MAY59, the gear wouldn't lower, so landed wheels-up.<sup>45</sup>



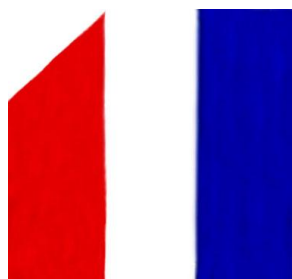
## 25 SQUADRON RED VAMPIRE A79-215



**A79-215** 25SQN CO's FB.31 early 1960 in glossy *Post Office Red* (K3/346, BS381C-538). National Markings were 18" kangaroo roundels on the booms, 36" Type-D on upper wings, no underside roundels, 18" square Type-D fin flash with leading edge cut-out. Black swan on both sides, approximately 30" (76.2cm) long. Serial numbers standard 8" format, but in non-standard light blue on booms and nosewheel door. A79-215 served on 25SQN from NOV 1956 until cessation of CAF flying in early 1960 – highlighted by this farewell scheme. SQNLDR Fivash was CO from MAY 1959, and chose this flamboyant statement to mark the end of 25SQN flying on 3APR60.<sup>46</sup>



Kangaroo Roundel



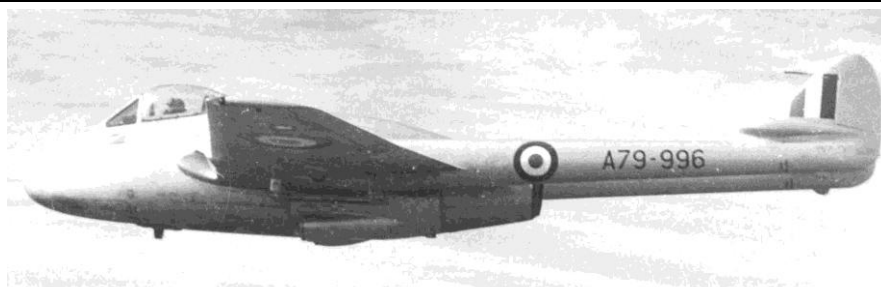
Type-D Vampire Fin Flash





## MORE FLAGSHIP VAMPIRES

**A79-777** 'BAE' initials of **OC 78WG** WGCDR Brian Eaton, F.30 at Williamtown in 1952, prior to 78WG's departure for the Malta deployment. **BAE** was also used on his earlier Mustangs – KH745 (239WG) and A68-803 (81WG).<sup>47</sup>



**A79-996** FB.31 **CO 23SQN** 1955-56, ventral intakes, clipped wings, no radio compass, SQNLDR pennant



**A79-915** FB.31 **CO 21SQN** c1957, ejection seat and radio compass upgrades, 21SQN marking, SQNLDR pennant



## Vampire Trainer in Service

The T.33, T.34 and T.35 used by the RAAF and the RAN were manufactured at de Havilland Australia's facilities at Bankstown in Sydney. As mentioned, the T.35W designation was applied to T.35 aircraft with fatigued/stressed wings and fitted with spare under-fatigued T.35A wings to achieve service life – probably “W” for wings! Vampire trainer production in Australia amounted to 110 aircraft:

- the initial T.33 order was 36 (A79-801 to A79-836), the last of which was upgraded to T.35 standard in late 1955 (and became A79-600) on the de Havilland Bankstown production line, delivered over 1952-55);
- added to A79-600 were 68 production T.35s (A79-601 to A79-668), which had ejection seats, upgraded canopies and aerodynamic dorsal fillets ahead of the fin (these 69 T.35 delivered 1957-60), and the previous T.33s later incorporated these T.35 modifications to become T.35A;
- five T.34s for the RAN delivered in 1954, (A79-837 to A79-841) basically the T.33 but later with similar upgrades to become the T.34A, and a later additional T.34A (A79-842) from the production line in 1957 (total six for the Navy).
- As well, over 1957-59 the RAN received four ex-Royal Navy T.22s from the UK.

In addition to the CAF squadrons, the main users of the T.33/T.35 were the jet training schools – 1 AFTS at Pearce and CFS at East Sale. Also the fighter units such as 20TU/20CU and 50TU used large numbers of Vampire trainers, as well as 78WG at Butterworth over 1959-1966, and 76SQN 1960-1961. Vampire trainers remained in service in the RAAF until 1970 when replaced by the Macchi MB.326H. RAN Vampires, operated by 724SQN at HMAS Albatross, Nowra, were retired in 1971.

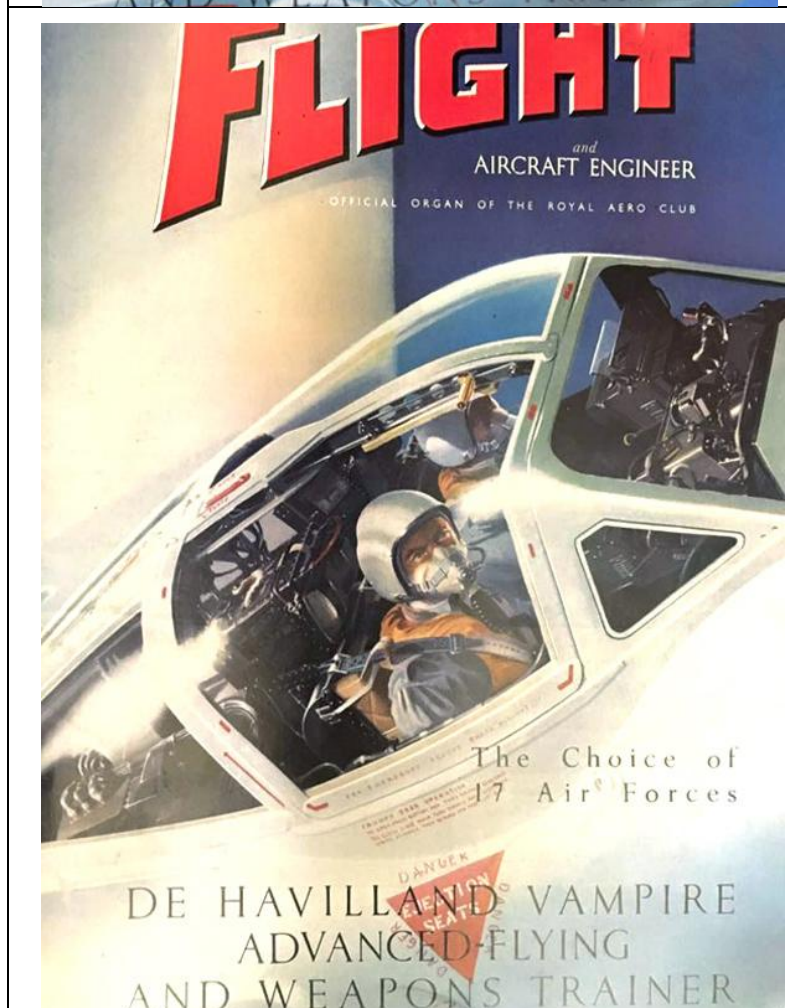
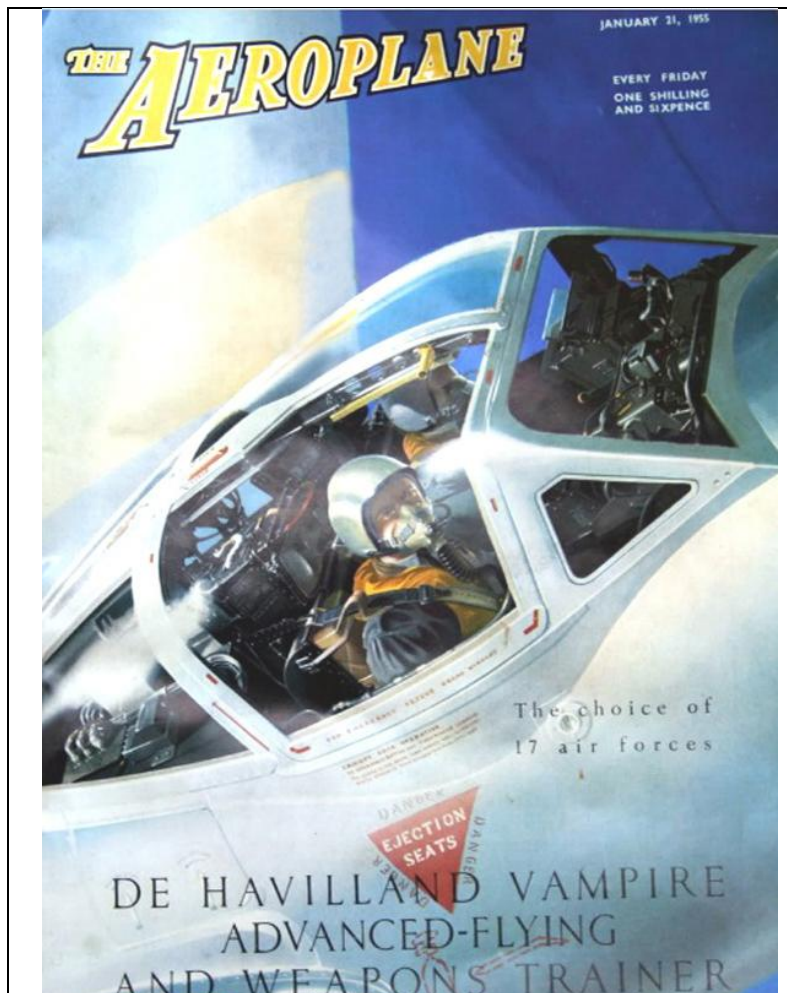


**T.33 A79-832, at Essendon c1957, served with 23SQN then 78WG before upgrade to T.35A over 1958-59**



**T.35 A79-661 at CFS East Sale, with the definitive dayglo scheme – nose hood, wingtips, fin and outer tailplane**





Contemporary de Havilland advertisements for the Vampire on magazine covers, JAN 1955



## Trainer Markings – Pearce and East Sale

By the late 1950s, when 18" kangaroo roundels were carried on the tailboom, all T.33s had been upgraded to T.35 standard, designated T.35A. This upgrade included the addition of ejection seats (indicated by the red triangle warning marking), a clearer canopy without the rails, and an aerodynamic dorsal fin fillet. From the late 1950s, RAAF secondline aircraft were beginning to be marked with bright fluorescent 'dayglo' (FS595a semi-gloss FS28913 *Blaze Orange*) on the nose, fin, tailplane and wingtips. With the Vampire trainers, there were some variations to this, with some aircraft being marked with larger dayglo panels on the upper and lower wings. In 1965, the RAAF introduced the kangaroo roundel to mainplanes too, and for the Vampire trainer the size for both upper and lower size was 36" diameter. With dayglo on the fin, the flash was moved aft to the rudder – the flash was made narrower from 18"x18" to 18" x 15".

**Serial Numbers.** Standard black serial number figures were 8" high, 5" wide, in 1" strokes:

A79-1 2 3 4 5 6 7 8 9 0

This was the general form of RAAF serial characters up to the early 1960s, which were the 'circular solid' style (which took the RAF form<sup>48</sup>), but there were slight variations such as the 'rectangular solid' serials shown below on A79-629.<sup>49</sup>



**Dayglo.** A79-629, above, of Central Flying School (CFS) at East Sale in NOV 1961, shows freshly applied dayglo to the whole nose, mainplane, fin and outer tailplane. Details of note with the application of dayglo to the Vampire:

- A79-629 has the early dayglo applied to the whole nose, not just the hood,<sup>50</sup> which was the later practice;
- when dayglo was applied to the fin, the fin flash was moved rearwards to the rudder, reducing the width of the flash from 18" to 15";
- dayglo has been applied to the wingtips and to underwing and overwing panels, this varied as later only wingtips were painted – if mainplane panels were painted, the wing roundel was moved inboard; and
- the 'last two' of the serial number were repeated either side of the nose, which varied in style and size for East Sale (CFS) and Pearce (1 Applied Flying Training School - 1AFTS) aircraft.

CFS Vampires appear initially had dayglo applied by the manufacturer, de Havillands at Bankstown from JUN 1961, this complex process taking two weeks.<sup>51</sup> CFS Winjeels had dayglo applied APR-JUN 1961 by CAC at Point Cook.<sup>52</sup>



**A79-636** and **A79-602** in 1968 at 1AFTS Pearce show the different styles of nose numbers. A79-636 has the large 24" rectangular nose 'last two' (in a stencil font), while A79-602 has '02' in the standard 1AFTS 18" circular style numbers.

## Trainer Markings – Williamtown

Before the fourth Sabre squadron was raised, 76SQN was re-activated at Williamtown in JAN 1960 with Vampire trainers, and operated the aircraft in a fighter lead-in role until enough Sabres were available over mid-1961. Most of the 76SQN aircraft were T.35A variants (800-series aircraft) – 15 identified with only five identified T.35s. Most 81WG Vampire trainers (again, T.35As in the main) received dayglo in 1961 – but this was not maintained, being retired earlier than the Pearce and East Sale schemes, and the Williamtown Vampires adopted fighter type unit markings. The T.35s (600-series aircraft) were primarily based with 1AFTS in Pearce and CFS at East Sale.



**A79-811 of 76SQN at RAAF Richmond in SEP 1960**



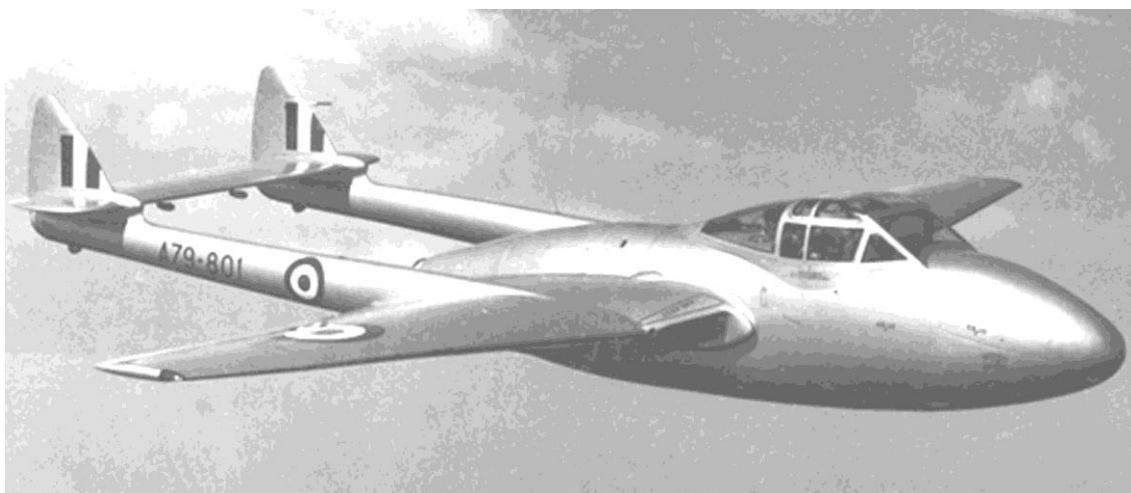
**T.35A A79-828 with a 76SQN line-up during a mobility exercise in Townsville, JUL 1960**

Another Williamtown unit was 2(F)OCU, which flew Vampire trainers (primarily T.35As) for dual checks and weapons training for lead-in to the Sabre, and later Mirage. Vampires transferred for a short period to 50TU in 1970.



**The last RAAF user of the Vampire was 50TU at Williamtown, retiring with the arrival of the Macchi in 1970**

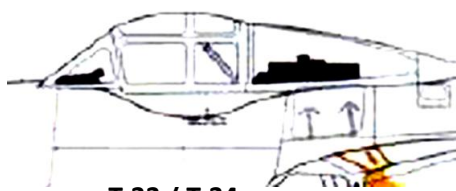
## AUSTRALIAN VAMPIRE TRAINER VARIANTS



**The first Vampire T.33 trainer A79-801.** The original heavily-framed canopy without ejection seats, and the early Vampire fighter tail, which would have dorsal aerodynamic fairings added.



These **T.33s c1955** show the original RAAF trainer specification: fighter-style tail without the dorsal aerodynamic fillet, no ejection seats with heavily-framed canopy, and no yellow trainer bands. The final T.33 A79-836 was modified on the production line over 1955-56 with the new enhancements and reserialled T.35 A79-600. T.33s as they were upgraded were redesignated the T.35A. Similarly, the RAN's T.34s were upgraded to the T.34A, but without the dorsal fin fillet.



**T.33 / T.34 canopy**



**T.35 / T.35A / T.34A / T.22 canopy**



**Temora's Vampire T.35 A79-617, registered as VH-VAM**



## VAMPIRE YELLOW TRAINER BAND MARKINGS

Overall aluminium 'High Speed Silver' Type-D roundels / replaced by kangaroos



**Vampire T.35 A79-631 c1966**, carrying an unusual mix of trainer yellow bands on the wings, and more normal 'dayglo' fluorescent panels on the fin, tailplane, nose and wingtips. While UK RAF and RN trainer Vampires carried trainer bands in *Golden Yellow* (BS381C-356), this was not the case for Australian T.33/T.35 production, but naval T.34s did have trainer bands like the UK-supplied T.22s. Temora's T.35 A79-619 also carries mainplane yellow trainer bands.

**Roundel sizes diameter inches (cm): fuselage 18" (45.72cm), mainplanes 36" (91.44cm)**

**Flash on rudder: 18" (45.72 cm) high, 15" wide (5" each colour)**



Both models of RAN Vampires – the T.22 from UK and the local T.34A – carried UK-style trainer bands. The 36" (91.44cm) *Golden Yellow* trainer bands were carried around the fuselage tail boom and the mainplanes. Tailboom kangaroo roundels were 18" in diameter, 36" on the upper wings, and 24" on the undersides (see RAN Air Maintenance Order General/A8, at the end of this article). RAN aircraft are not marked with a fin flash, and from 1956 carried the kangaroo on both the fuselage and mainplanes. As a unit marking, 724SQN (later VC 724) aircraft were marked with yellow/black vertical striped rudders.



**Aluminium**



**Golden (Trainer) Yellow**  
K3/185 or BS381C-356



**Kangaroo Roundel**

## VAMPIRE TRAINER 'DAYGLO' MARKINGS

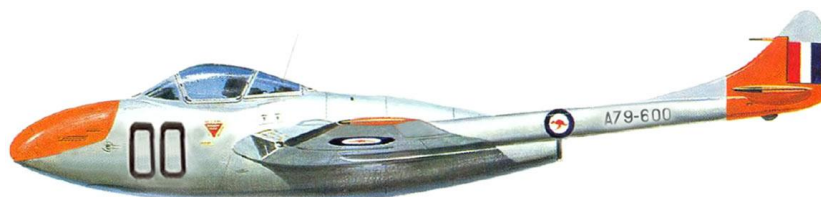
During the 1960s, 'dayglo' orange was a prevalent high visibility colour for RAAF second line aircraft and transports. Beaver A95-202 and Dakota A65-81 of the Antarctic Flight were the first RAAF aircraft to have dayglo applied over 1958/59, followed by the C-130A, Bristol 170, CV440 transports – with Winjeels and Vampires from early 1961. The dayglo was sourced from the US as FS595a-28913 'Blaze Orange'. (UK RAF and RN trainers were also using 'Blaze Orange' 33B-2202312.) Dayglo was resource intensive, two coats of a deep white primer, three fluorescent coats, then three clear coats. But it faded quickly and in patches – the silver/dayglo Vampires were retired in 1969.



Freshly applied dayglo, East Sale in late 1961 – the whole nose is dayglo, same as the Canberra T.4 at the rear.



**A79-600**, the first T.35 trainer, shows essentially the basic dayglo Vampire marking – fin, tailplane, nose hood and wingtips – but with variations. The 'last two' of the serial was also normally repeated on the nose, again varying.



**A79-824** in 1963 of CFS shows dayglo wing panels (trainers later had just dayglo wingtips) and the 'last two' of the serial number – a small '8' was only for T.35A aircraft as when there was a conflict between the nose serials with T.35 aircraft, the '8' in front of this 'last two' distinguished between, for example, '624' and '824'.



Aluminium



Dayglo *Blaze Orange* FS28913



Kangaroo Roundel



**VAMPIRE TRAINER MARKINGS - 1AFTS PEARCE**  
Overall aluminium with dayglo panels and kangaroo roundels



**Roundel sizes diameter inches (cm): fuselage 18" (45.72cm), mainplanes 36" (91.44cm)**  
**Flash on rudder: 18" (45.72cm) high, 15" wide (5" each colour)**

**A79-657** was painted with dayglo in JUL 1961,<sup>53</sup> one of the first RAAF Vampires treated, and in 1968 was transferred to 1AFTS, here showing typical markings during the 1960s applied to Pearce aircraft. Common with the Vampire trainers of the eastern states (primarily CFS at East Sale) are the fuselage 18" kangaroo roundels on the tailboom, bright orange dayglo (FS595a semi-gloss FS28913 *Blaze Orange*) panels on the nose hood, fin, tailplane and wingtips (although some aircraft were marked with larger dayglo panels on the upper and lower wings), and kangaroo roundels on the mainplanes from 1956 (both upper and lower size was 36"). With dayglo on the fin, the flash was moved aft to the rudder –reduced to 18" x 15". The difference for distinguishing 1AFTS Vampires was the smaller form of the 'last two' on both sides of the nose in 18" figures – CFS aircraft had larger 24" rectangular figures.



**A79-603 and A79-623 with a line-up of 1AFTS Vampire T.35s at 1AFTS Pearce in 1968**

**Large nose 'last two' serials were the small 'circular rounded' form: height 18", width 10", strokes 2"**

1 2 3 4 5 6 7 8 9 0

In the 1960s, this was the style of nose number marking on 1AFTS Vampires at Pearce, while eastern state Vampire trainers (e.g. primarily CFS), used a larger 'last two' in a rectangular font.



## VAMPIRE TRAINER DAYGLO MARKINGS – CFS EAST SALE

Overall aluminium with dayglo panels and kangaroo roundels



**A79-650**, a CFS "Red Sales" formation team T.35 aircraft at East Sale in 1961-62, with the mid-1961 dayglo standard nose, fin, tailplane and wing panels, which extended beyond the tips forcing the roundel inboard. Similarly marked were A79-607, -622, -628, -629, -664 and -667.<sup>54</sup> This initial form of dayglo wrap-around was convenient, as the team's aerobatics took them upside down, and perhaps provided a better view of the aircraft display for the public. Note that A79-650 also has the tail flash marked higher on the rudder, giving it a taller appearance.



Aluminium



Dayglo Blaze Orange  
FS28913



Kangaroo Roundel

### Serial numbering on dayglo aircraft

Standard black serial number figures: height 8", width 5", strokes 1"

**A79-1 2 3 4 5 6 7 8 9 0**

General RAAF serial number character styles up to the early 1960s took the RAF form.<sup>55</sup> However, there were local variations of characters "1" and "3", and several versions of "8". Later standardised figures became "1" and "3".<sup>56</sup>

**Large nose 'last two' numbers** – 'rectangular solid', proportionally taller: height 24", width 12", strokes 3"

**1 2 3 4 5 6 7 8 9 0**

In the 1960s, this was the style of nose number marking across any 'eastern Australia' Vampires (e.g. primarily CFS), while 1AFTS at RAAF Pearce used a smaller two-number style in a rounded, 18" 'circular solid' font.

## CFS "TELSTARS" VAMPIRE TRAINER MARKINGS

Overall aluminium, kangaroo roundels, dayglo panels, TELSTARS markings



**Roundel sizes diameter inches (cm): fuselage 18" (45.72cm), mainplanes 36" (91.44cm)**  
**Fin flash on rudder: 18" high, 15" wide (5" each colour)**

After the tragic loss of the four Vampires of the CFS "Red Sales" aerobatic team in 1962, CFS formed the "Telstars" in 1963. A four-aircraft team with T.35s, the "Telstars" had minimal special markings as shown on the nose of the RAAF Museum's A79-616 (below). Aircraft had 18" kangaroo roundels on the tailboom, and 36" kangaroo roundels on the mainplanes after 1965. The fin 18"x15" national tail flash (each colour 5" wide) was on the rudder, as dayglo was on the fin. Telstar 'flying star' marking 36" long, and 'TELSTARS' marked in 6" letters. Known Telstar Vampires included A79-616, 626, 637, 654 and 657, marked in standard black 8" figures on the nose. In 1968 the "Telstars" re-equipped with the Macchi MB.326H, which then transferred to the "Roulettes" in 1970.





## 21 SQUADRON VAMPIRE T.33 A79-813

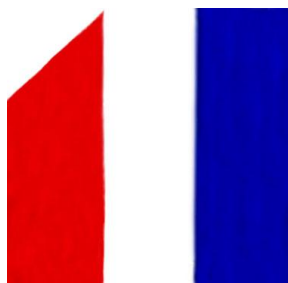


**21SQN Vampire fighters and T.33 trainer A79-813 at Laverton c1954**

**A79-813 T.33** served on 21SQN at Laverton from late 1953 until early 1958. It then went to de Havillands at Bankstown for upgrade to T.35A standard, and served with 76SQN at Williamstown. The other 21SQN T.33 was A79-825 (1955 to 1958), which too was upgraded to T.35A and served with 76SQN. National markings were 18" Type-D roundels on tail booms (replaced by kangaroos in 1956), 36" Type-D on the wings, 18" square Type-D fin flash with red cut-out on the leading edge. On both sides of the nose is the 21SQN emblem (see below, in its original form as shown in this image above, then the later version incorporating the CAF triangular patch). 21SQN fighters and trainers had the serial number 'last three' marked on the nosewheel door in red thinly outlined in black, as shown below.



**Type-D Roundel**



**Type-D Vampire Fin Flash**



**T.33 A79-813, probably c1955**, with 21SQN 'last three' marked in red on the nosewheel door, and the later style 21SQN marking below the cockpit – the original canopy style is very reminiscent of the Mosquito fighter.



## 76 SQUADRON VAMPIRE TRAINER MARKINGS

Overall aluminium, kangaroo roundels, and squadron rudder and wingtank markings



Roundel sizes diameter inches (cm): fuselage 18" (45.72cm), mainplanes 36" (91.44cm)

Flash on fin: 18" high, 18" wide (6" each colour)

76SQN was re-formed in JAN 1960<sup>57</sup> in preparation for Sabres, operating both T.35 and T.35A trainers. As such, it was considered an 'operational' unit, and not a training unit which would require dayglo marking. 18" kangaroo roundels were carried on the tailboom, and 36" Type-D roundels on upper and lower wings. The fin 18" wide national tail flash (each colour 6" wide) was trimmed to fit the fin – it had the leading edge cut-off so that the red was 12" (30.48cm) high increasing to 18" high. The 76SQN checkered marking on the rudder also was 18" square comprising 3" red and black squares, centred with the profile of a black panther's head in a white disc. There was a similar red/black checkered marking on the droptanks (below), approximately 50" (127cm) long. Known 76SQN Vampires: A79-615, 658, 659, 660, 661, 802, 806, 808, 811, 812, 813, 817, 819, 820, 823, 825, 827, 828, 830 and 832. 76SQN then operated Vampires and Sabres from MAY 1961, being declared a Sabre unit on 17JUL61.<sup>58</sup>



Fuselage Kangaroo Roundel



76SQN Tail Markings



Ejection Seat Warning

Black serial number figures: height 8", width 5", strokes 1"

A79-1 2 3 4 5 6 7 8 9 0

General RAAF 8" serial number character styles up to the early 1960s, which took the RAF form

## 2(F)OCU VAMPIRE TRAINER MARKINGS

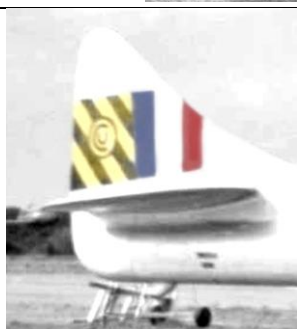
Overall aluminium, kangaroo roundels, and yellow OCU rudder markings



Roundel sizes diameter inches (cm): fuselage 18" (45.72cm), mainplanes 36" (91.44cm)

Flash on fin: 18" high, 18" wide (6" each colour)

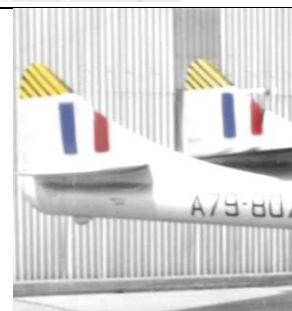
2(F)OTU, re-formed in 1952, became 2(F)OCU in 1958 – Vampire trainer tail markings from 1958 to 1970 are shown below. 2OCU operated both the T.35 and T.35A, some in dayglo, with 18" kangaroo roundels on the tailboom, and 36" Type-D roundels on upper and lower wings (until changed in 1965 to kangaroo roundels). The fin 18" wide national tail flash (each colour 6" wide) was trimmed on the leading edge to fit the fin. The picture above shows the 1960 tiger's head rudder marking on T.35 A79-637, with a yellow-tipped nose. In the mid-1960s, T.35A A79-808 (below) still with Type-D wing roundels, has 2OCU striped markings on the tail tips and droptanks. At the bottom, in early 1970 the final 2OCU yellow rudder – and rudder flash – just prior to the Vampires passing to 50TU.



c 1958-59



c 1959-61



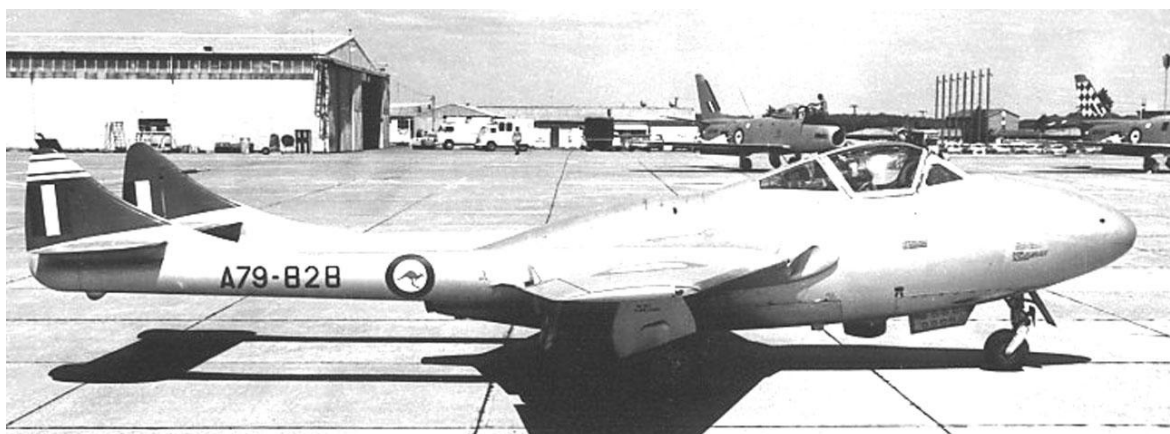
c 1964-69



and 1970

## 50TU VAMPIRE TRAINER MARKINGS

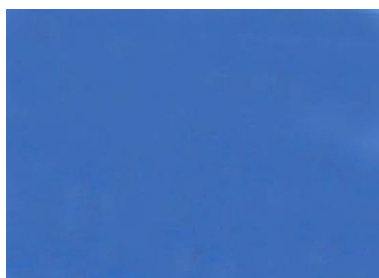
Overall aluminium, kangaroo roundels, and 50TU blue tails



**Roundel sizes diameter inches (cm): fuselage 18" (45.72cm), mainplanes 36" (91.44cm)**

**Flash on rudder: 18" high, 15" wide (5" each colour)**

50TU was formed out of 20CU in 1970 to transition trainee pilots to the Mirage conversion course. Primarily equipped with Sabres, the Vampires were very short-lived, being replaced later in the year by the Macchi. 50TU Vampires were then put out to pasture on the grass at the northern end of the 20CU tarmac, until being scrapped in the early 70s. Aircraft had 18" kangaroo roundels on the tailboom, and 36" kangaroo roundels on the mainplanes, and like the final 20CU tail, had the national flash 18"x15" (each colour 5" wide) on the rudder. 50TU adopted blue for marking Vampires, Sabres and Macchis – possibly mixed locally, which matched BS381C-175 *Light French Blue*.



***Light French Blue***  
**BS381C-175**



**50TU Tail**



**Kangaroo Roundel**



**A79-807 off to the wreckers – this is 1971, so possibly still into saucepans!**



## NAVY VAMPIRE TRAINERS

Overall aluminium, kangaroo roundels in all positions from 1956, yellow trainer bands



Roundel diameter inches (cm): fuselage 18" (45.72cm), mainplanes 36" upper, 24" under<sup>59</sup>

Trainer bands: 36" (91.44cm) NAVY on nose: 12" high Side code: 10" high NW on fin: 8" high

RAN followed the UK policy of yellow trainer bands, which were maintained throughout the Vampire's service with the 'three digit' side codes on the booms. **NAVY** was carried on the nose, and the **NW** (Nowra) code on the fin. Sometimes the yellow/black striping of 724SQN was marked on the rudder. The image above is informative: it shows A79-840 NW/804 as an upgraded T.34A, noting that no previous T.34s were upgraded with the fin fillet modification (but A79-842 was delivered with it). Navy Vampire T.34s entered service from 1954 with the then current Type-D roundels, but updated in 1956 with 18" kangaroo roundels on the tailboom, 36" kangaroo roundels on upper wings, 24" on the undersides as **NAVY** was marked in 20" characters below the starboard wing. (In the RAAF, mainplane kangaroos were not adopted until late 1965.) The naval serial group 'N6' was allocated to the Vampire, but in service it appears that only XG766 may have worn this, as N6-766. Below is XA101 marked as NW/875.



### Naval Vampires Code Numbers

Nowra (NW) 900-series side codes (926 or 956) were changed in 1958 to 870-series codes, which in turn in 1963 changed again to 800-series codes.<sup>60</sup>

926 – 928	723 Squadron	1954-56
956 – 960	724 Squadron	1956-58
871 – 875	724 Squadron	1958-63
802 – 809	724 Squadron	1963-68
808 – 809	VC 724	1968-70

RAN Vampires were withdrawn from HMAS *Albatross* in 1970 as Macchi MB.326Hs were delivered.



723 Squadron



724 Squadron / VC 724

## NAVY VAMPIRE TRAINERS – RAN AMO GENERAL/A8

Overall aluminium, kangaroo roundels in all positions from 1956, yellow trainer bands

### ROYAL AUSTRALIAN NAVAL AIR MAINTENANCE ORDERS

R.A.N.A.M.O.  
GENERAL/A8

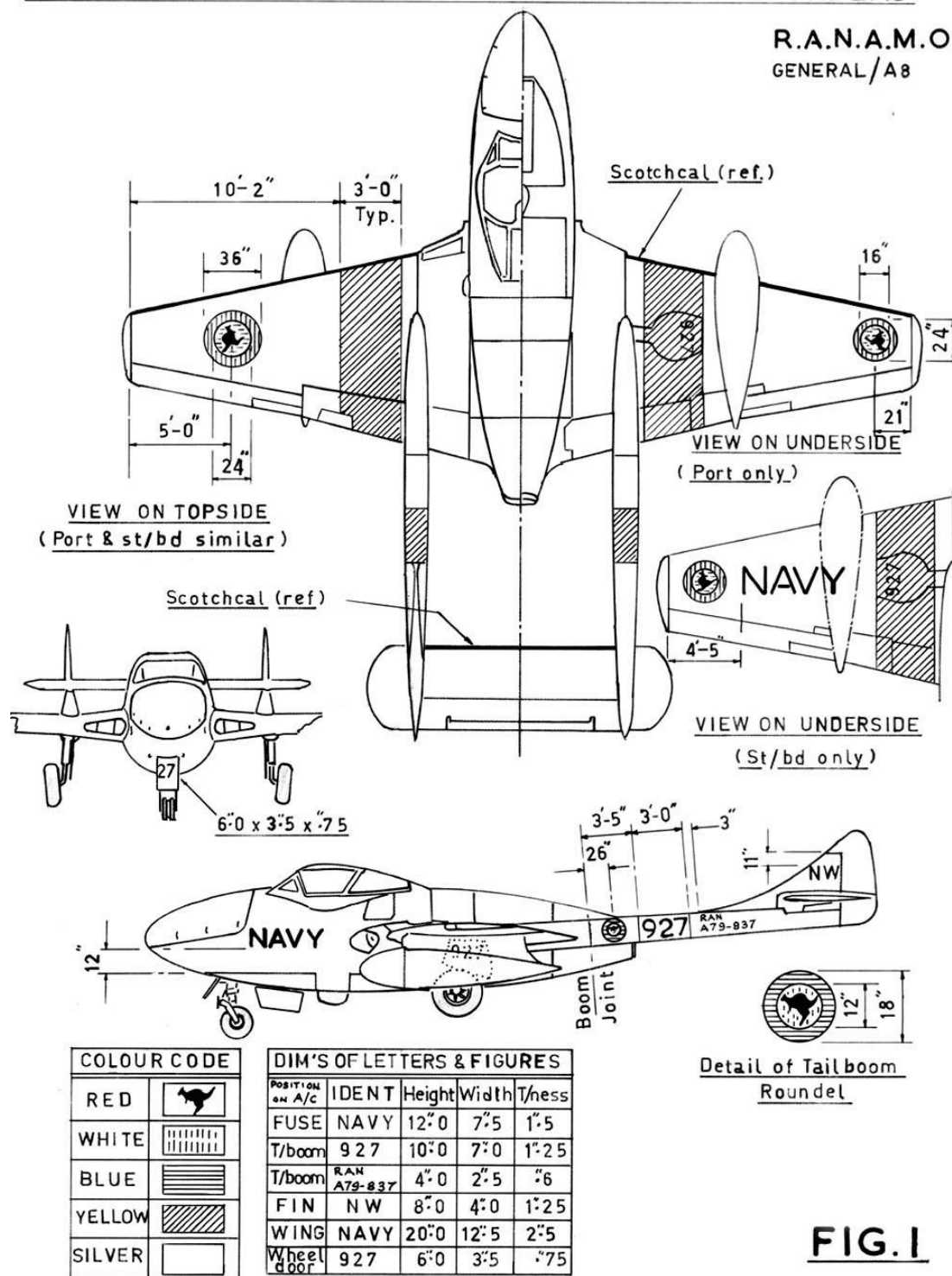


FIG. I

RAN AMO General/A8 must be dated 1956 as it shows kangaroo roundels and a 723 Squadron side code. Originally the side code was on the nose, and the 'NAVY' titling on the boom trainer band.



**NAVY** – figures 12" on fuselage side and 20" starboard wing underside, hence 36" roundels reduced to 24" on undersides.

**NW** – the Nowra code, 8" figures on fin.

**Code** – 10" 927 on boom, 6" wheel door, 723 SQN code 1954-56. Serial number A79-837 was 4". (Later here 724SQN, A79-842 NW/805.)

## NAVY VAMPIRE TRAINERS – through the years



**1954-56** – T.34 A79-837 NW/927 723SQN, delivered JUN 1954, pre-1956 kangaroo roundels, with large 24" code number on nose, which later would move to the Yellow (K3/185) 36" training band on the boom.



**1956** – all five Bankstown-produced T.34s, A79-837 to A79-841 coded NW/956 to NW/960 724SQN pre-kangaroos – these aircraft were delivered over the second half of 1955; A79-839 was lost AUG 1956 and A79-841 OCT 1956.



**1963** – T.22 XA167 NW/807 724SQN, with newly applied code number and unit yellow/black rudder stripes.



## NAVY U.K. DH.115 VAMPIRE T.22



The four imported DH.115 Vampire T.22s (XA101, XA167, XG766, XG770) were delivered from RN production blocks XA100/XA172 and XG742/XG777 on the Christchurch and Hatfield production lines,<sup>61</sup> as no attrition aircraft were available from Banstown production. The first (XG770) was delivered in AUG 1957, the remaining three in AUG 1959, and all survived until withdrawn from service over 1967-1970. These differed from the Australian-produced T.34 by having the dorsal fin fillet installed (see both XA101 NW/873 above, and XG766 NW/808 below), as this had been the current RN build standard when received from UK.



724SQN rudder markings, HMAS *Albatross* mid-1960s



Vampire **KEEP OFF** warnings above the intakes – warnings were also above the trailing edge flaps



1968 – T.22 XG766 NW/808 probably the only Vampire with a N6-serial – but is this photo N6 766, or XG766?

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## Amazing escape from behind enemy lines: F/O Ray Graetz M.C.

**Serv#417175.** Gordon R Birkett @2017



### Background:

*No 100 Squadron RAAF was formed at RAAF Station Richmond on the 25th February 1942 out of the aircraft and crews of No 100 Squadron RAF then employed as an operational training squadron on loan to the RAAF from its base in Singapore. When reformed as a RAAF Squadron, it was still commanded by Wing Commander A W D Miller (RAF) and was manned by RAF and some RAAF Officers and supported by thirty-eight RAF Airman.*

*Aircraft strength was twelve aircraft, but that lack of sufficient maintenance Personnel and the scarcity of spares prevented it from being used operationally, other than a training Unit. An attempt to reinforce their parent unit, equipped with Wildebeests Biplanes, having failed in December 1941 after six DAP Beauforts were sent up on the 6th December 1941. Due to their lack of operational equipment, all were returned.*

*Morale was low, given the events in Malaya and Singapore and the relentless onslaught by the Japanese on fellow RAF Squadrons based there.*

*All RAF Officers and airmen were slowly withdrawn and returned home to the UK as some of them had been out in the Far East for more than four years. Wing Commander J R Balmer (RAAF) assumed command and by the 31st March 1942, had a strength of thirty Officers, two hundred and sixteen Airman, and seventeen aircraft.*

*The first operational Sorties were commenced on the 4th March 1942 in Beaufort T9556 (A9-17).....from there until the end of the war, No 100 Squadron RAAF served with distinction in the air.....with a single crew member serving with distinction on the ground, and,...in one case behind enemy lines....*

### The loss of 100 Squadron RAAF's A9-571 G for George

On the 20th May 1944, 100 Squadron RAAF was detailed (NAD75) to attack troop concentrations and stores dumps from Wom Point to Suain Village (Position 03245N/14317E, halfway between Atiape and Wewak PNG) with nine aircraft, under command of Wg Cdr Plenty.

On reaching the area, each aircraft was then to attack separately from 1040Hrs to 1105hrs, between 1200 and 3000 feet.

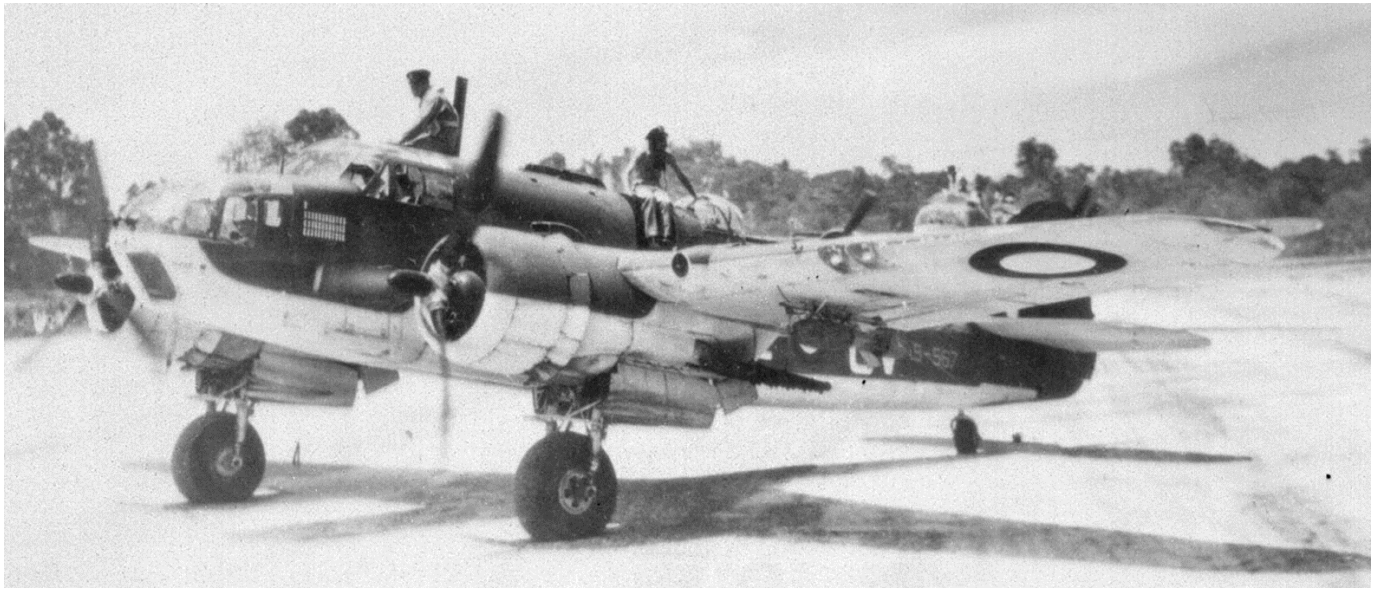
One of those aircraft, A9-571 QH-G, was crewed by F/O Lyle McLaren Serv#416874 (Pilot), F/O Sydney Anderson Serv#410192 (Nav), F/O Ray Graetz Serv#417175 (WAG), and F/Sgt Francis Maloney Serv#410995 (WAG).

The attack was supported and conducted with another eight Beauforts from No 8 Squadron RAAF on Duty NAD76, on a reverse course, attacking from But Aerodrome and Suain Village to Wom Point Area. Top cover was provided by Kittyhawk's of 75 Sqn RAAF.

On completion of dropping bombs, 1114hrs, at a height of 500 feet and flying east along the coast some 150 yards inland in the vicinity of But Point Jetty, Suain Village, a stream of red tracer was observed from a 1/4 of a mile east of But Jetty, coming up towards the aircraft, by two nearby 8 Squadron Beauforts (Alexander A9-453 and Morgan A9-468\*).

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The aircraft was observed to swerve badly and the port engine caught fire. The pilot failed to gain any height, and was ditched two minutes later at 1116Hrs. The aircraft broke in half, and became half submerged some 30-50 yards from shore.



*100 Sqn RAAF Beaufort A9-567 UV-E taxiing Tadjil Strip in late October 1944.*

F/Sgt Alexander circled at 500 feet around the shore and Suain Village over the scene. They observed an aircraft dingy along side of the aircraft with two men inside, another man on the starboard wing, with the fourth member of the crew swimming some 30 yards to the rear of the aircraft wreck. Machinegun fire from shore was seen directed near the Dingy and aircraft.

After the second circle, the dingy was now 100 yards further out with two men in it. The Beaufort then left the scene.

The WAG during these circles took photographs of the site which later revealed that two men were in a dingy close by the Beaufort, with another in the water nearby a few yards away. Other photographs taken on the flight showed; in a position of 700 yards west of Suain, a printed fabric sign made up of strips, on the ground; letters black, 4 feet in height, on a white background which read "PRS- O-W."/"SOS" . Another showed a tail of a previous shot down USAAF P-38 tail fin 1/2 mile east from Suain Village.

There could have been three reasons for that sign:

- That the Japanese in the area had responded to propaganda appeals and were signifying their willingness to become Prisoners of War, or
- That so few enemy troops were in the area, that it was safe for captives to indicate their position with relative safety or
- That it was a trap.

The following day, on Duty NAD 77, on the same target, three 100Sqn RAAF Beauforts carried out a search at 2000 feet after the raid for the survivors of A9-571. Photographs showed that the Japanese had drawn up the wreckage of A9-571 to the shore. Kittyhawk's of 75 Sqn RAAF were also directed to search the area, however the wrong position was given to the flight as of its location.

On the 20th May 1944, they returned to the exact location and strafed, burned and destroyed the wreck of A9-571 with some 2200 rounds of 0.50cal ammunition expended. It was noted that one of the crew was rescued days later by a USN PT Boat, after spending his time wandering amongst the Japanese and carrying out sabotage.



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F/O Ray Graetz had served in 100 Sqn RAAF since the 8th November 1943 as a commissioned Wireless Air Gunner.

Now the story of his survival and deeds had resulted in a rare award of a Army Medal, the Military Cross, to a RAAF Serving Officer in WW2.



Ray as a trainee WAG 1942, and a 100 Sqn RAAF Beaufort, A9-638 QH-O with Radar.

### Ray Graetz's Military Cross Story

Being the sole survivor left alive after the abandoning of A9-571, wounded, exhausted and suffering from a loss of blood from a ear wound, swam ashore without the enemy noticing. He fainted soon after on the beaches' edge in scrub. The following day he found a bomb crater that contained water and rested there until dark. Taking stock of his predicament, he decided that he would walk out to Allied Lines, now situated some sixty miles away near Atiape.

On the morning of the 22nd May 1944, he set off carefully skirting Japanese troops and installations. After making his way towards But Aerodrome, he found the aerodrome under attack and tried to signal allied aircraft, but failed. Having stolen some empty Japanese fuel drums, he tried to construct a raft but realised he needed some form of wire to do so. He made his way back to a camouflaged enemy gun emplacement which he found unmanned. Thinking maybe this was the gun that shot his aircraft down, he sabotaged it by placing sand and gravel into the barrel and breech block to destroy it. *This position may have been a medium inactive gun position previously sighted by a 8 Sqn Beaufort at the mouth of the Brandi river on the eastern side of Cape Boram.*

After finding some wire, he returned to his hidden raft to complete it before floating it in the sea. After a failed attempt in sailing it, it capsized. Disgruntled in making this escape possible by sea, he abandoned it and returned to the aerodrome where he camped under a dispersed unmanned Japanese bomber after making a rudimentary shelter to sleep in.

The following morning, he was awoken by three Japanese soldiers coming nearby to install machine guns into the aircraft for a mission. He left the area and came across a washing hut that had clean uniforms and towels hanging on a nearby line. He took a set, some medicine and water, along with some towels to dress his wounds.

That evening he escaped being found when four lantern carry Japanese were searching the area, presuming for him. He decided to move away from the area the following morning, whereupon whilst crossing a stream came across a single Japanese who ignored him and passed him by.

Even worse was to follow when he came across several group of Japanese. He feigned insanity by poking out his tongue, rolling his eyes and waving which proved to work. This ruse worked throughout the day. He spent the night near others until he woke up the next day and continued on. He had walked into the middle of a enemy camp full of Japanese. A timely attack by RAAF Kittyhawks on the area at that time broke the moment and he evaded. Being without boots or shoes, his feet were getting badly injured day by day.

By the sixth day of his ordeal, with his appearance now accepted by the passing Japanese, soiled hair and beard heavily matted in dark mud, he found some unattended enemy trucks parked. He again sabotaged these by disconnecting the Distributor wires and hiding them.

He returned to 100 Squadron at Nadzab via Tadjì on the 30th May 1944 . He was evacuated to the mainland shortly after.



AUSTRALIAN WAR MEMORIAL

OG0293

L-R :416874 Pilot Officer (PO, later Flying Officer [FO]) Lyle Manhire McLaren, of Largs Bay, SA: 410192 PO (later FO) Sydney Louis Anderson of Canterbury, Vic; 410995 Flight Sergeant Francis Maloney of Coolamon, NSW; **417175 PO (later FO) Raymond Arnold Graetz** of Springton, SA. The RAAF made a mass raid on Lakunai Aerodrome, Rabaul,13th December 1943, with Beaufort Bomber aircraft. Source: AWM Collection ID OG0293

On the seventh day, he saw the approach of four 82nd TRS USAAF P-39N Airacobras and waved at them with his flare parachute he was using as a sleeping bag.



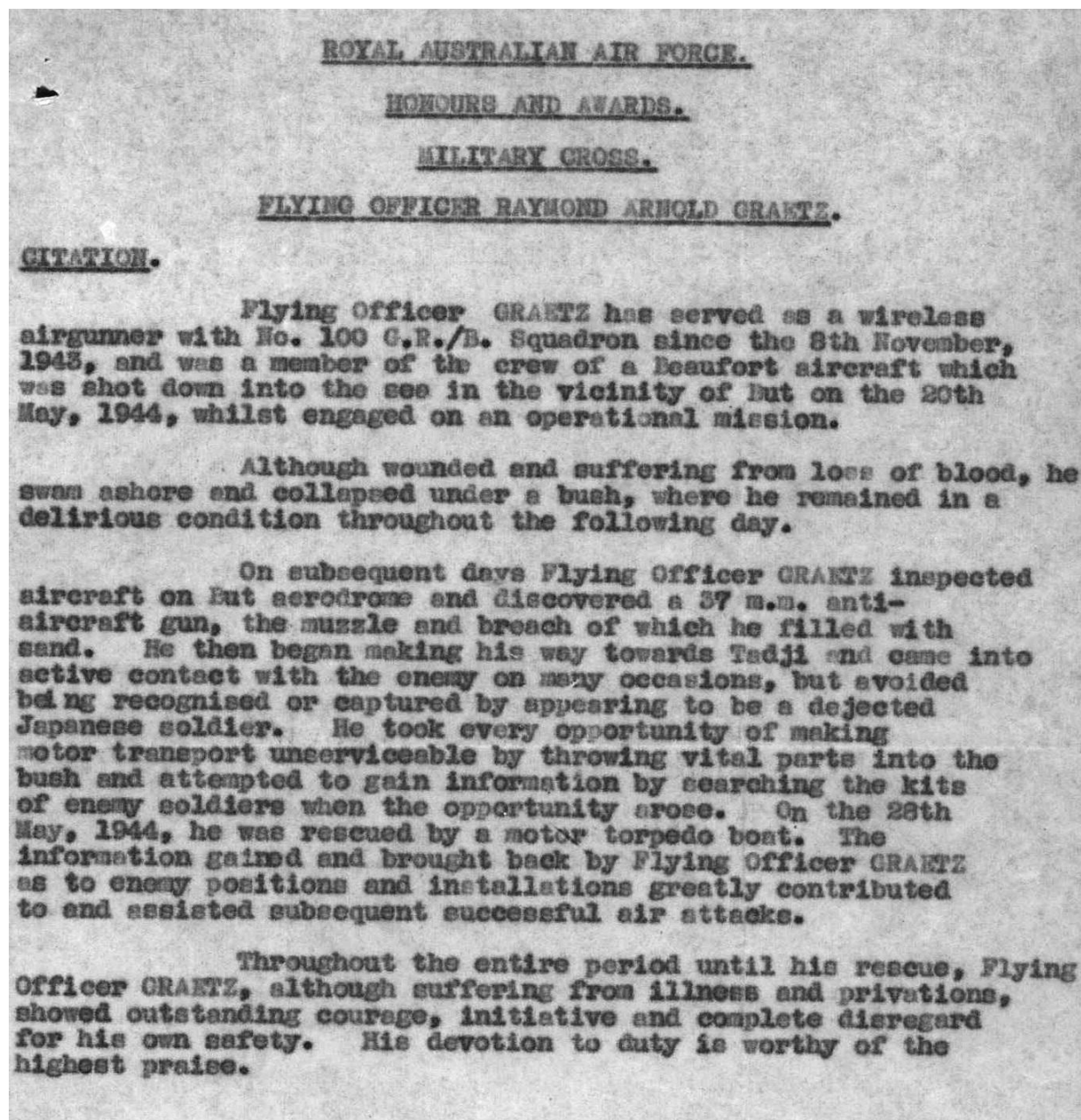
One of the Airacobras dived, and was setting up a strafe run, saw his large scribed "SOS" on the sand, and flew over him. The pilot pinpointed his position and informed base of his position.

Later that night he was picked up by a US Navy PT Boat.

After three hours of first aid on his feet and body, he was heading back to allied lines at last after some eight days of escape and evasion without food. He was transferred to the 3rd Hospital Unit.

He would then be transferred back to Australia to the Central Gunnery School where he finished out the war. Following a thorough debrief, his record of details and action whilst on the ground resulted in an Australian Army endorsed recommendation and subsequent award of a Military Cross.

#### The Citation:



#### Crew File References:

A705 166/16/342 GRAETZ, Raymond Arnold - (Flying Officer); Service Number - 417175; File type - Casualty - Repatriation; Aircraft - Beaufort A9-571; Place - Wewak, Dutch New Guinea; Date - 20 May 1944  
A705 166/26/461 McLaren, Lyle Manhire - (Flying Officer); Service Number - 416874; File type - Casualty - Repatriation; Aircraft - Beaufort A9-571; Place - Wewak, Dutch New Guinea; Date - 20 May 1944  
A705 166/27/431 MALONEY, Francis - (Flight Sergeant); Service Number - 410995; File type - Casualty - Repatriation; Aircraft - Beaufort A9-571; Place - Wewak, Dutch New Guinea; Date - 20 May 1944  
F/O ANDERSON Sydney Louis - 410192 RAAF; Year of Death - 1944; Cemetery - Lae War, PNG  
Squadron Records: A50 History 100 Squadron RAAF

\*This Aircraft itself was shot down the following day in the sea , north west of Muschu Island, with a different crew





## Curtiss Corner:

# USAAF Repossessed RAAF P-40N-20-CUs and Ex-A29-674's Fate

**Background:** The USAAF P-40E-1 DA-3 Contract Paybacks.

On the 1st February 1942, the Australian Government obtained an agreement from both the United Kingdom and the United States, whereupon the supply of one hundred and twenty-five Kittyhawks (from an original request of two hundred and fifty aircraft, split even between UK and USA) would be shipped to Australia during February, March and April 1942 from the United States, diverted from existing RAF Contracts.

This total was out of a total of four hundred and thirty-two P-40E-1 Kittyhawk Mk1As allocated by Lend-lease to the UK.

These were RAF lend-lease Defence Aid #3 Contracts (DA3) P-40E-1 Kittyhawk Mk1A aircraft that were paid by the United Kingdom after the war, at no cost to Australia, (as in the case of all of the A58 Spitfires sent) to equip three RAAF Fighter(interceptor) Squadrons.

With our first actual contracted 126 Kittyhawk Mk1A yet to be delivered, we accepted the transfer of an initial seventy-five USAAF P-40s in March 1942. The first accepted actual RAAF DA3 re-directed RAF Kittyhawk was A29-82. Eventually by July 1942 some 86 P-40E-1s of the DA3 order would be handed back to the USAAF in Australia for use by the 49th Fighter Group and also by the 68th Fighter Sqn in Fiji.

By the end of September 1942, some 119 USAAF P-40E/E-1s had been charged to the RAAF, with a further two aircraft crashing before delivery to the RAAF, along with 42 DA3 P-40E-1s, making 163 in total, exclusive of another 14 P-40E-1s sent that were sunk on consignment to the RAAF ex RAF in July 1942.

*A further three P-40E-1s were administratively lost to and used by the USAAF, but the RAF was in 1945, finally credited for the cost of those three.*

### **Transfer of twenty ex RAAF P-40N-20-CUs to 5th Air Force August 1944.**

Following on from the 1942 period of paying back the USAAF, we were in effect, still owing in paying back P-40s to balance the ledger some .

By 1944, the 8th Fighter Group and the 49th Fighter Group had still two Squadrons of Curtiss P-40Ns on strength, along with a third Squadron in each Group equipped with Lockheed P-38 Lightning's. The 8th Fighter Group gave up their P-40Ns in March 1944 for P-38s, with the 49th Fighter Group trading their P-40Ns in September 1944.

*It should be noted that from March 1944, the P-40N and its pre-series, were deemed as fit for training only (RP-40Ns) and were being replaced in front line units throughout all fronts by more modern types such as P-38/P-47/P-51s. Hence no deliveries of USAAF P-40Ns were to be issued ex stateside from this March 1944 period to USAAF Units.*

On the 27th July 1944, following a request from the Fifth Fighter Command, via the 5th Air Force HQ, for replacement P-40Ns to be issued to the 49th Fighter Group to replace losses and through general reduction in serviceability, a direction from the RAAF Headquarters was issued to 5 Air Depot Stores Wagga to select

suitable stored RAAF P-40N-20-CUs for supply against the request for a twenty aircraft attrition requirement.

Tabled is the seventeen ex RAAF Ordered P-40N-20-CU's selected by 5AD held in storage at Wagga.

ADF.Serial	CW Sq#	Const#	Mac Air A29	A/c.Type	USAF.Serial	Delivd
A29-672	2486	31178	A29-1270	P-40N-20	43-23239	01-Dec-43
A29-673	2488	31180	A29-1271	P-40N-20	43-23241	01-Dec-43
A29-674	2490	31182	A29-1272	P-40N-20	43-23243	01-Dec-43
A29-678	2499	31281	A29-1276	P-40N-20	43-23342	01-Dec-43
A29-682	2507	31289	A29-1280	P-40N-20	43-23350	01-Dec-43
A29-685	2509	31291	A29-1283	P-40N-20	43-23352	01-Dec-43
A29-686	2511	31293	A29-1284	P-40N-20	43-23354	01-Dec-43
A29-687	2429	31120	A29-1253	P-40N-20	43-23181	01-Feb-44
A29-689	2435	31126	A29-1256	P-40N-20	43-23187	01-Feb-44
A29-692	2438	31129	A29-1259	P-40N-20	43-23190	01-Feb-44
A29-693	2440	31131	A29-1260	P-40N-20	43-23192	01-Feb-44
A29-694	2442	31133	A29-1261	P-40N-20	43-23194	01-Feb-44
A29-695	2446	31137	A29-1264	P-40N-20	43-23198	01-Feb-44
A29-696	2452	31143	A29-1262	P-40N-20	43-23204	01-Feb-44
A29-697	3470	32160	A29-1285	P-40N-20	43-24221	01-Apr-44
A29-699*	3478	32168	A29-1287	P-40N-20	43-24229	01-Apr-44
A29-703*	3494	32184	A29-1291	P-40N-20	43-24245	01-Apr-44

\*Due to five P-40N-20's included in BSC Release# Diversion 700-A RAAF Aircraft: Aus 38 of P-40N-25 shipment, these aircraft renumbered A29-67\* to 703 to fit in P-40N-20 A29 Serial Blocks Refer A29-812 to A29-818.

Of the total, inclusive of supply of twenty, were a further three ex Netherland East Indies P-40N-20-CU's absorbed by the RAAF that were supplied to complete the request

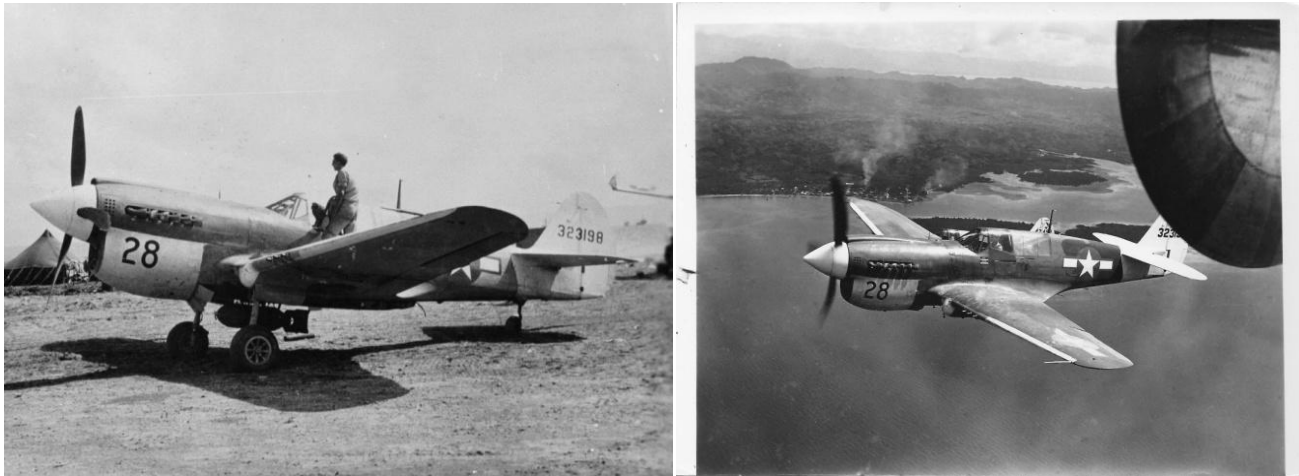
ADF.Serial	CW Sq#	Const#	Mac Air A29	A/c.Type	USAF.Serial	Delivd
A29-637	2462	31152	Ex -NEI	P-40N-20	43-23213	01-Dec-43
A29-640	2467	31157	Ex -NEI	P-40N-20	43-23218	01-Dec-43
A29-643	2471	31161	Ex -NEI	P-40N-20	43-23222	01-Dec-43

The aircraft had been assembled at three locations which resulted in the differing finishes. These were RAAF Depot finishes as the Serial was still present on fuselage in known USAAF photos or reports. Underline are confirmed stripped to natural metal with White SWPAC Tail and black serials. Bold Italic confirms being O/Drab with White SWPAC Tail.

- 13ARD then finished at 3AD: Ex RAAF A29-687/689/692/693/694/**695**/696
- 3AD: Ex-RAAF A29-697/699/703
- 2AD: Ex-NEI A29-637/640/643....Ex RAAF A29-672/673/674/**678**/682/685/686

They were delivered from August 1944 to the 5th Fighter Command with at least three going to the 7th and 8th Fighter Squadrons before they themselves were replaced by P-38s in Late September 1944. The balance and a few of the 49th FG survivors would equip the 110 Tactical Reconnaissance Squadron, 71st Tactical Reconnaissance Group, 61st Photo Reconnaissance Wing. These P-40Ns would eventually fly in the Philippines where nearly three years prior, the last surviving three P-40Es were surrendered to the Japanese in May 1942.

Pictorial of seven out of twenty ex RAAF P-40N-20-CUs in USAAF Service



Ex A29-695 43-23198 #28 in and over Leyte PI



Ex A29-672 43-23239 following a crash landing Biak.





Ex A29-678 #20 White 7thFS following an wheels up accident at Biak



Ex A29-695 43-23198 and ex-A29-692 43-23190 left 4th and 8th airframes in row respectively



Ex A29-694 43-23194 #34 did serve in the 8th FS /49thFG in September 1944.



Ex-A29-696 P-40N-20 43-23204 #16 White with 110TRS



Ex-A29-686 43-23354 #20 Black 110TRS

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## **Loss of a USAAF P-40N-20-CU, FY43-23243, ex A29-674**

On the 1st December 1944, at 1100hrs, a flight of four P-40Ns of the 110th Tactical Reconnaissance Squadron ( Soggy Blue Flight) were over North Central Leyte (Philippines ), south of Carigara Bay, heading east towards Ormac Bay on a local Area Patrol from their coded base, "Cheeky".

The pilots of the four P-40Ns (Captain A.A. Kasper O-661105; F/O M J Alnlov T62121, 1st Lt George R Marman O-682665 and 2nd Lt C J Fagerland O-692146) were in two element formation (Lead and wingman) at a height of between 8000-9000 feet and fast approaching a storm front on their course. Radio advice of the storm was transmitted, and they were advised by "Austere" to return to base. Despite this the Leader of the Flight, 1st Lt Marman, pressed on. They attempted to climb over the dense cloud layer for two minutes. Though very dense, there was little turbulence.

The leader of the second element, Capt Kaspar, lost the rest of the flight by this time and stalled his aircraft, recovering after spinning down to 3500 feet. He headed back to base after heading north to Carigara Bay and through the San Juanica Straits.

Capt Kaspar's Wingman, Flight Officer Aimlov, had actually heard the recall transmission, and after various attempt to contact the Flight Leader, succeeded in contacting 1st Lt Marman, on another channel. 1st Lt Marman advised that he was hunting for a place to get through. He turned on to a westerly heading for a few minutes and then finally on a southern heading, where he continued to climb straight ahead.

At this time, Flight Officer Aimlov lost sight of the lead element whereupon he went on instruments for about two minutes hoping to come out somewhere.

His aircraft finally stalled, he too entered into a spin of which he recovered from over Carigara Bay under the overcast on the deck. Through heavy rains he headed east over Nabatas Point and then changed course and headed south over Juanica Strait to safely land at their base.

1st Lt Marman's wingman, 2nd Lt Fagerland, also heard the recall from "Austere". He pulled up on his leader's wing and give him the landing signal. He was ignored. After losing the second element on climbing into the cloud, both he and 2nd Lt Fagerland came out of the cloud and started circling looking for the now missing second element for a few minutes.

1st Lt Marman continued to fly around changing course, keeping a general heading of south and west, when he started to dive steeply and turn left for the deck. At 3000 feet, his wingman who was never more than 15-20 feet off his wing during this time, called and told him to pull up as they were somewhere near mountains around, by his dead reckoning.

Before he knew it, at 2000 feet, 2nd Lt Fagerland, had his aircraft on its back in cloud. He righted, and flew on for about two minutes coming out of cloud over Ormoc Bay. He turned north and flew over Ormoc Town , then straight to Carigara Bay, then east to his base, "Cheeky".

As soon as it was determined that 1st Lt Marman was missing, the Squadron's Operations Officer notified Air Sea Rescue of the 308th Bomb Group with the details and course of the missing aircraft.

Two further 110th Tactical Reconnaissance Squadron P-40Ns were dispatched later that day to recce the valley between Carigara Bay and Ormoc Bay to see whether they could locate the missing aircraft and pilot.

Again the following day a four P-40N aircraft flight was also sent out, again with nil results.

On the 3rd of December 1944, 0905hrs, a four P-40N aircraft flight that were dispatched as fighter cover for a C-47 drop mission, spotted the missing silver P-40N of 1st Lt Marman. It appeared at first sighting that it made a belly landing near the vicinity of Kagangon.





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## **Odd Shots: Walkaway Wirraway Prangs**



A20-81



A20-175



A20-202





A20-256



A20-377



A20-403



A20-469

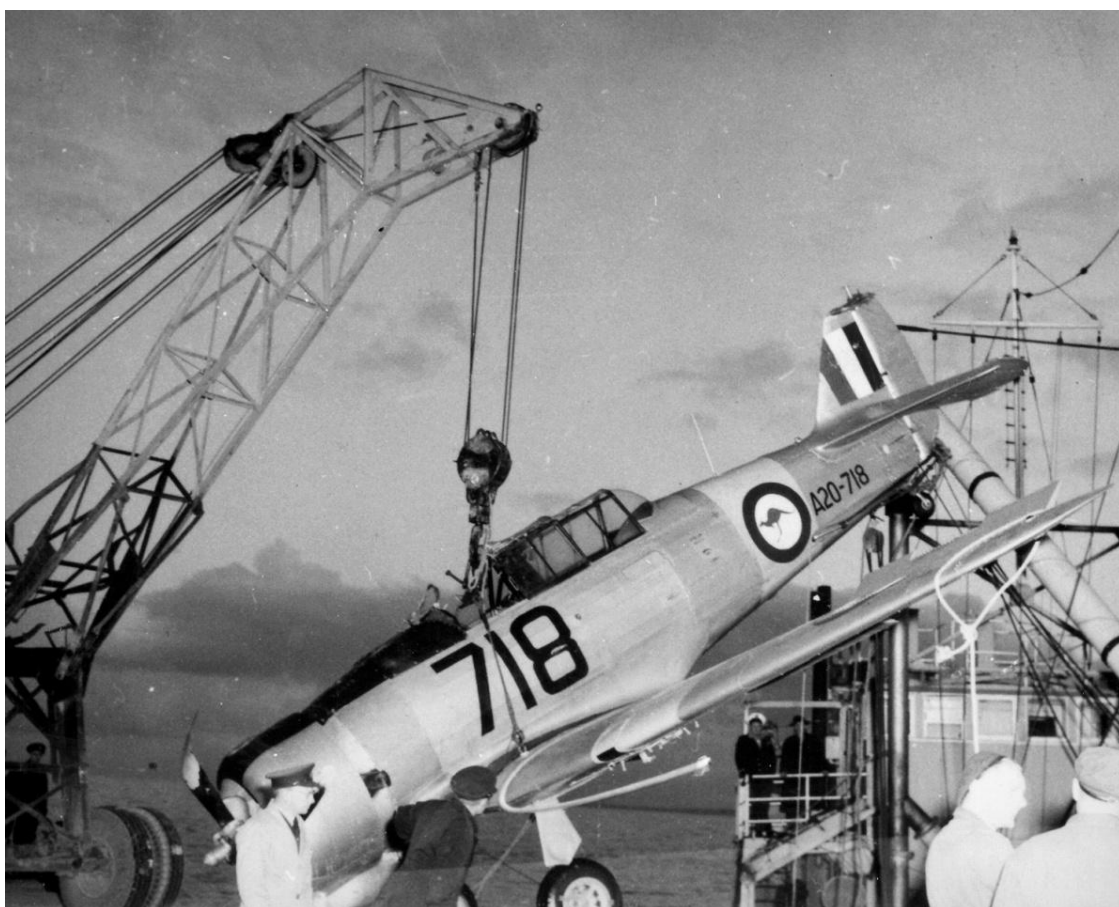


A20-517





A20-652



A20-718

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## Editor's Notes: Contributors are most welcome to provide written articles or even topics to be covered by others.

Next Quarter Edition out circa late November 2017

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## End Notes :

### RAAF AIRCRAFT MARKINGS SINCE 1950 SQUADRON MARKINGS – PART 4 Vampire by John Bennett @2017

<sup>1</sup> RAF Air Publication (A.P.) 4099 E&G, *Vampire FB.5FB.9 Pilot's Notes*, 2nd Edn, Air Ministry, JUL 1952, p.48

<sup>2</sup> NAA CRS A705, file 109/3/2302 Pt.1, Minute Sheet pg.6, para.7, 5SEP1952. Fitment of ADF-14 equipment (made by Lear) was RAAF Vampire Modification 226, NAA CRS A705 150/4/9330 refers. This was very similar to the ARN-6 ADF already fitted in Korea to the Meteor, and the ARN-6 in the Vampire is covered by a further NAA file, AWM342 TS/1443 in 1963.

<sup>3</sup> Air Board Order (ABO) N.162 of 21 APR 1952.

<sup>4</sup> DH factory ejection seat and target towing modifications to F.30 aircraft carried out over 1955-57 are annotated on the E.E/88 Aircraft Status Cards as, for example, "Restrospective mods M.C.1522 and servicing M.C.1523" – these MC numbers changed for every aircraft. The mods typically took five months.

<sup>5</sup> DEPAIR 9/86/406 (19A) of 1JUN61 approved all Vampire fighters for disposal and conversion to components.

<sup>6</sup> 25SQN had commenced replacing its Mustangs with Vampire fighters in SEP 1951, and this Vampire deployment from 24SEP55 to 12OCT55 for *Operation "Comax Kestrel"* staged from Pearce to Forrest, Alice Springs, Daly Waters to Darwin. This involved both 25SQN dual T.33s, A79-810 and A79-816, and five F.30 single seaters A79-282, -514, -762, -915 and -934. 25SQN A.50 Unit History 1951-1955, and RAAF E/E.88 A79 Aircraft Status Cards.

<sup>7</sup> The RAAF E/E.88 Aircraft Status Cards record each T.33/T.35A upgrade under a separate maintenance control number as, for example, "Retro Mods and Conversion Mk35A (class 2) MC4435".

<sup>8</sup> 78 Wing A.50 Unit History 1959, and RAAF E/E.88 A79 Aircraft Status Cards.

<sup>9</sup> RAAF E/E.88 Aircraft Status Cards for A79-646 and A79-667; *Adf-serials* also has images of A79-667 in dayglo at Changi, Singapore, in DEC 1962. Like other T.35s, both these aircraft had been painted with dayglo in 1961.

<sup>10</sup> Re 'scrambled', 'consecutive', and 'century' serials, see *ADF Serials Telegraph* Vol.5 Issue 3, Spring 2015:

<http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202015%20Spring%20Vers%20Fin.pdf>

<sup>11</sup> RAAF E/E.88 A79 Aircraft Status Cards state the change of serials to -400 numbers were to be renumbered from 24 APR 1956.

<sup>12</sup> For instance, A79-650 was renumbered to A79-450, and A79-876 to A79-476. E/E.88 cards are annotated "24 APR 1956 to be renumbered A79-450", as an example.

<sup>13</sup> A.P. 1086 'Vocabulary of RAF Equipment' Part 13B, Section 33B of 1948 numerically identified stores reference numbers for colours: these included *Ocean Grey* 33B/681, *Dark Green* 33B/677 and *Medium Sea Grey* 33B/679. P Lucas, *Scale Aircraft Monographs Camouflage and Markings, RAF Fighters 1945-1950 UK Based*, Guideline Publications Ltd, Luton UK, 2000, pp.16, 70, 92.

<sup>14</sup> Vampire F.1 standard colours were "Day Fighter (High Flying)" scheme of *Medium Sea Grey* and *PRU Blue* undersides, designated as A.P.1086 33B/679 and 33B/683. Lucas, p.60.

<sup>15</sup> Air Maintenance Order (AMO) A.413/47 of 15 MAY 1947 para.18 specified these as 1:2:3 proportion roundels.

<sup>16</sup> RAAF HQ DTS Special Instruction Gen/96, TS.1840, File 9/1/1595, 14 JAN 1948.

<sup>17</sup> Type-D roundel colours were designated at this stage as *Bright Red* 33B/912 and *Bright Blue* 33B/914, until the UK A.P.1086 'Vocabulary of RAF Equipment' Part 13B, Section 33B *Aircraft Finishes and Paints* integrated the British Standard BS381C for colours. Lucas, p.92.

<sup>18</sup> RAF A.P.119A-0601-1E p.22 addresses roundel colours *Post Office Red* or *Bright Red* (BS381C-538) and *Roundel Blue* (BS381C-110). These colours can be approximated to the later US Federal Standard FS595a as gloss FS11140 and FS15056. Lucas, p.92. However, in 1948 the RAAF adopted K3/346 *Glossy Red* and K3/343 *Glossy Blue*; RAAF HQ DTS Special Instruction Gen/96, TS.1840, File 9/1/1595, para.D(8a), 14 Jan 1948. These RAAF colours were equivalent to the UK *Bright Red* (BS381C-538) and *Royal Blue* (BS381C-106).

<sup>19</sup> A Stephens, *Going Solo*, AGPS, Canberra, 1995, pp.203-7.

<sup>20</sup> *Adf-serials*, A79 listings. Also 78WG in Malta flew two Meteor T.7s (later a third as a replacement) for dual checks.

<sup>21</sup> The RAAF replaced C, D and E servicings during the 1970s with a schedule very roughly translated across as R3, R4 and R5 Routine servicings – but because of a different maintenance philosophy, levels of servicing for inspection, overhauls, preservation and repairs cannot be read directly across. As a Routine servicing example for the F-111, an R3 was every 525 flying hours (i.e. by 500 plus 25 leeway, or every 2 years), and every second R3 became an R4 (i.e. by 1025 hours). Every second R4 became an R5, which was 2025 flying hours (or 8-10 years); *ANAO Audit Report No.27 2006-07*, Management of Air Combat Fleet in-Service Support, ANAO, Canberra, 2009, pp.91-2.

<sup>22</sup> RAF A.P.119A-0601-1D A/L.9, 'Application' para.5, MAR 1972.

<sup>23</sup> RAAF E/E.88 A79 Aircraft Status Cards. Mod.332 would be wrapped into other major servicing or technical activity if possible, otherwise the aircraft were flown to Bankstown and be painted and ready for acceptance two weeks later as the next aircraft were delivered.

- <sup>24</sup> A listing of RAAF K3 colours up to K3/324 is provided by P Malone & G Byk, *Understanding RAAF Aircraft Colours*, Red Roo, Melbourne, 1996, pp.38-9.
- <sup>25</sup> RAAF HQ DTS Special Instruction Gen/96, TS.1840, File 9/1/1595, para.D(8a), 14 JAN 1948.
- <sup>26</sup> *Bright Red* was also *Post Office Red* BS381C-538, which later became *Cherry*. Lucas, p.88.
- <sup>27</sup> RAAF HQ File TS1(D) note of action 9/1/1539(30A) of 30 JUL 1948.
- <sup>28</sup> This is similar to the colours specified in 1947 in RAAF HQ Postagram TS.1831 File 1/501/329(55A) of 24 NOV 1947, which specified "Insignias and Lettering" hand-brushing colours of K3/231 *Black*, K3/232 *Azure Blue*, K3/235 *Signal Red*, K3/236 *White*, and the requirement to mix 'K3/232 with a dash of K3/231' to achieve *Royal Blue* (later added in 1948 as K3/348). While red and blue were identified as K3/235 and K3/232 respectively, the colours were not considered to be *red* and *blue* for *National Markings* but for "marking of auxiliary exits and break-in panels" (which could also be used for hand-painted insignia, such as badges and lettering); AGI 3(c) Instruction No.19, of 30 AUG 1946. The identifiers used by DAP Parafield for these brush-painted enamels were Dulux *Bright Red* 388-5302, Dulux *Royal Blue* 388-041, and Dulux *White* 388-026. RAAF HQ File 1/501/329(54A), c1947-48.
- <sup>29</sup> AEI Gen Pt 2, Sect 1, Instruction No. 9, 31 MAY 1951, App D, Sheet 5.
- <sup>30</sup> AEI Gen Pt 2, Sect 1, Instruction No. 11, Drawings A5524 Sheets 1 and 4, JAN 1951.
- <sup>31</sup> For details of the RAAF roundel changes, see *ADF Serials Telegraph* Vol.6 Issue 5, Spring 2016: <http://www.adf-gallery.com.au/newsletter/ADF%20Telegraph%202016%20Spring.pdf>
- <sup>32</sup> DEF(AUST)572 '*Insignia (Defence Aircraft)*', MAR 1975, A/L 1 JUL 1977, Fig.1.
- <sup>33</sup> Australian Air Publication (AAP) 7021.004-1(AM1) Sect 2, Chap 1, Ann G diagram p.1G-1, dated 4 JUL 2011. This authority lists the following equivalents standards for our roundel colours – AS R15 *Crimson*, BS381C-538 *Cherry Red*, FS595-11136; AS B13 *Navy Blue*, BS381C-105 *Oxford Blue*, FS595-15048.
- <sup>34</sup> RAAF E/E.88 A79 Aircraft Status Cards.
- <sup>35</sup> See *ADF Serials Telegraph* Vol.7 Issue 3, Winter 2017: <http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202017%20Winter%20Final%20Edition.pdf>
- <sup>36</sup> Meteor training deficiencies addressed in *ADF Serials Telegraph* Vol.7 Issue 3, Winter 2017: <http://www.adf-serials.com.au/newsletter/ADF%20Telegraph%202017%20Winter%20Final%20Edition.pdf>
- <sup>37</sup> Early Vampire F.30 deliveries were: 1949 1 aircraft, 1950 12, 1951 28, and 4 in 1952 by the stage 2OTU formed.
- <sup>38</sup> Stephens, p.348.
- <sup>39</sup> 25SQN too was planned for Meteors, to be re-equipped by the end of 1956, but this did not eventuate and retained Vampires until 1960. N Parnell & T Boughton, *Flypast*, AGPS, Canberra, 1988, p.269.
- <sup>40</sup> A79-321 was ferried from 2AD Richmond to Tocumwal on 28MAY59, where it had a wheels up landing. 2AD A.50 MAY 1959.
- <sup>41</sup> RAF A.P.2656A Vol 1, Sect.4, Chap.2. Also A.P.119A-0601B Chap 9-0-1, para 2, specifies font style of numbering as 'Helvetica Medium'.
- <sup>42</sup> Vampire fuselage roundel 18" diameter, RAAF DEPT AIR HQ Canberra 579/3/264, undated c1960; mainplane roundel 36" diameter. RAAF colours and markings policy at this stage was still closely aligned to RAF policy, where RAF AMO A.413/47 had introduced the Type-D 1:2:3 roundel in MAY 1947. Sizes were specified as 'Medium Aircraft' (including single-seat fighters) to have 36" diameter roundels, with the exception being the Vampire fuselage with its narrow booms, to be marked with 18" diameter roundels, Lucas, p.66. AAP7021.004-1 Part 1 Sect 6, of 17 NOV 1971, provides drawing number A12762-3 for 18" kangaroo roundel, and A12762-11 for 36" roundel. For RAF markings, see also W Harrison, *de Havilland Vampire*, Warpaint Book Series No.27, Hall Park Books, Milton Keynes, Bucks, UK.
- <sup>43</sup> UK Air Ministry Directorate of Technical Development (DTD) standardised the application process for *High Speed Silver* in 1949 with specification D.T.D.772. *High Speed Silver*, or *Glossy Aluminium*, was codified 33B/865. Lucas, pp.69-70.
- <sup>44</sup> The red devil marking was noted on most of these aircraft at Tocumwal in NOV 1961 while awaiting scrapping; J Hopton, *Pots, Pans and Meteors*, Melbourne, 1994, pp.33-34.
- <sup>45</sup> 2AD A.50 Unit History, MAY 1959.
- <sup>46</sup> 25SQN flew its last sorties on 3 APR 1960, 25SQN A.50 Unit History APR 1960. A79-215 passed from 25SQN to Base SQN Pearce on 21 MAR 1960, E/E.88 for A79-215.
- <sup>47</sup> D Muir, *Southern Cross Mustangs*, Red Roo, Melbourne, 2009, pp.154, 156.
- <sup>48</sup> RAF A.P.119A-0601B Chap 9-0-1, para.2 specifies serial number font as 'Helvetica Medium'.
- <sup>49</sup> A full explanation of different serialing styles is provided in D Muir, *Southern Cross Mustangs*, Red Roo, Melbourne, 2009, pp.105-110.
- <sup>50</sup> The hood was a lifted cover for the 'avionics bay' – not that there was much in the way of electronics: radios, gun camera, batteries, and oxygen bottles. *Vampire T.11 Pilot's Notes*, RAF A.P.4099J 4th Edn, JAN1960.
- <sup>51</sup> It appears that RAAF Vampires had dayglo applied under Vampire Mod.332 (Purchase Order 764962) at DH Bankstown, the application typically taking two weeks. A79-629 was one of the first over AUG-SEP 1961; RAAF E/E.88 A79 cards.
- <sup>52</sup> Like the Vampire, Winjeel application of daygo took about two weeks, and was carried out by "CAC team at 1BFTS", over APR to JUN 1961 as Winjeel Mod.52 (annotated as Purchase Order 751229); RAAF E/E.88 A85 cards.
- <sup>53</sup> The first dayglo CFS Vampire was A79-617, painted by DH Bankstown as Vampire Mod.332 in JUN 1961, virtually the whole RAAF Vampire fleet (CFS, 1AFTS, 81WG, ARDU and 34SQN) was completed by the end of 1961; RAAF E/E.88 A79 Aircraft Status



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Cards. In 1963 DH became Hawker de Havilland (HDH), and when awarded the major servicing contract for Vampires and Macchis at Pearce in 1966, opened a new HDH hangar at Perth/Guildford airport.

<sup>54</sup> 'Red Sales' aircraft lost in the fatal accident near Sale on 15 AUG 1962 were A79-607, -628, -629 and -650. NAA CRS A703 427/2/9, HQSC file 704/827/P1(3) of 19OCT1962.

<sup>55</sup> RAF A.P.119A-0601B Chap 9-0-1, para.2 specifies serial number font as 'Helvetica Medium'.

<sup>56</sup> With our conversion to metric, serial numbers characters of 8"x5"x1" were converted as 200x130x25mm; AAP7021.004-1 (AM1) *Aircraft Finishing Schemes, Material and Processes*, para.47, of 4 JUL 2011.

<sup>57</sup> 76SQN formed at Williamtown on 11JAN60, Air Board Order N.20/1960 of 19 FEB 1960.

<sup>58</sup> 76SQN A.50 Unit History, JAN 1960-JUL 1961.

<sup>59</sup> RAN Air Maintenance Orders RAN AMO General/A8 Figure 1, File AN128-51-2, which gives dimensions of all markings.

<sup>60</sup> J Bennett, 'Aircraft of the ADF - N6 Vampire', in *Australian Aviation*, DEC 1995, p.38.

<sup>61</sup> B Robertson, *British Military Aircraft Serials 1878-1987*, Midland Counties, Leicester, 1987, pp.214-216.