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ASIAN AIR ARMS NEWSLETTER 18
December 2019/January 2020

Asian Air Arms Research Group website and Newsletters support "Asian Air Arms SIG", a Special Interest Group of IPMS (UK)

AEW&C in ASIA

Inside This Issue

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BRIAN'S UPDATES AT ASIAN AIR ARMS RESEARCH GROUP

1

I've been working on creating an Index to the contents of previous Newsletters—
so you can quickly identify where to find articles of interest.
I've attached it to today's e-mail, and I hope it will be of use to you.

2

I've also been busy adding lots more photos to the web-pages covering the former Soviet Asian republics so DO look them up—search under "References"..

3

When you joined, I sent you our standard "Welcome Letter". In this, I gave you a link that enables you to see all historic Newsletters.
I should like to remind you of that link- it is:
https://www.asianairarms.com/newsletters.
This allows you to look at all previous Newsletters.
Make a note of this link and then
you'll never lose another Newsletter!

4

Jim Sanders, the moving force behind that great magazine "Small Air Forces Observer",
has now retired but as a parting gift he's loaded
ALL of these great magazines
(issues 1-164 over 43 years!) onto a thumb drive
available for just US$20 in the US and $28 elsewhere
(please add 7% if paying by PayPal).
Order from safo@redshift.com.
Grab one whilst you can!

5

Click the image for an hilarious video of Kim Jong-Un keenly "respecting" two female NKAF pilots for their skills—accompanied by a frantic, Korean commentary!
Thanks to Gary Markham.

6

Click this image to access the 2020 edition of Flight Global's definitive guide to "World Air Forces"
This is a "must have" for all aviation enthusiasts!

7

Click for another of Eric Moya's walk-arounds—
this time the PLAAF P-51 Mustang.

8

And here's Eric's work again giving us a splendid walk-around of the Xian H-6.

9

Member Dave Carmichael has finally managed to track down a JMSDF LCAC. but has made a rather strange discovery - somebody had "magic-markered" out all evidence of the rising sun flag: from boxtop illustrations, instruction illustrations & most importantly the actual decals. They've all been obliterated with the magic marker. As a result he needs 2 Rising Sun flag decals - 12mm high by 17 mm long. Contact me—Brian Griffin—if you can help Dave with these decals.

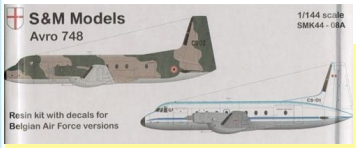
Airborne Early Warning & Control in Asia

There has been a steady increase in the use of AEW&C aircraft in Asia in recent years, with no fewer than eight air arms now using such systems. Dramatic improvements in technology have enabled a considerable reduction in size and cost of both the radar devices and the carrying aircraft, bringing them within reach of smaller air arms. This brief survey will cover all eight air arms, starting with India, Pakistan, Singapore and Thailand and will suggest how best to model these aircraft.

INDIA

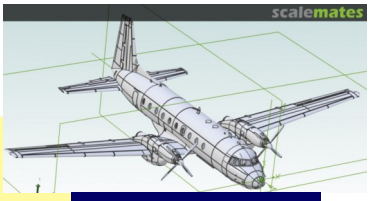
HAL/HS.748: Several HS.748swere fitted with rotodome radars, the first flight in being in 1988. Following several years of development problems, the crash of one of the test aircraft in 1999 led to the termination of the project.


HAL/HS.748 AEW



1/144 S&M

1/72 Rug Rat Resin



1/48 One Man Model

Boeing 707: The Indian Air Force took over at least 2 ex Air-India 707s in 1987 and by 2006 had been modified into special mission aircraft. They were used by the aviation wing of the Indian intelligence agency RAW. They have RC-135 like side looking radars and SIGINT gathering equipment.


Boeing 707 –337C Phalcon

1/144 Minicraft


1/144 AVM conversion, but omit the nose radar!

1/72 Heller

Beriev A-50EI: After the abandonment of the Avro 748 AEW project, a single A-50 was loaned by Russia for testing. This resulted in a contract for three examples equipped with the IAI Phalcon radar, the first being handed over in 2009. Difficulties in integrating the Israeli and Russian technology resulted in India opting for IAI's ELW-290 radar (with three antennae, each scanning a 120 degree arc inside a fixed radome) for the other two examples, delivered in 2010 and 2011.


Beriev A-50EI

1/144 Trumpeter

1/144 Zvezda

1/72 A-Model

Embraer EMB-145I AEW&C: Three examples, equipped with an Active Array Antenna Unit (AAAU) were planned to be developed by India's Defence Research & Development Organisation's "Centre for Airborne Systems". The S-band AESA radar provides 270 degree coverage of the airspace and has a detection range of around 350km. It operates with a crew of 12, and can fly non-stop for 10-12 hours with mid-air refuelling. The first example was handed over in 2012 and the second not until 2019. The IAF currently operates just these two aircraft and consideration is now being given to instead developing different types (such as the A.330 and C.295) for AEW&C duties.


EMB-145I AEW&C

1/144 Duarte

1/72 RVHP

Kamov Ka-31

The Indian Navy ordered 4 examples in 1999, with the first being delivered in 2003. Five further examples were ordered and the IN is now negotiating for an additional five. The Ka-31 in IN service operates an indigenous electronics suite.


Click here to see the radar rotation in action!

1/72 A-Model

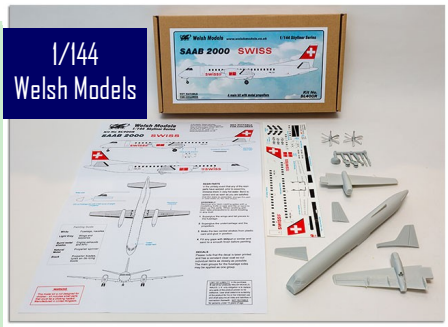
Airborne Early Warning & Control In Asia

PAKISTAN

Saab 2000AEW&C: In 2005 Pakistan signed for 6 AEW&Cs (reduced to 5 in 2007). It started entering service from 2009. At least one aircraft was destroyed by terrorists at Kamra Air Base in Aug 2012. The PS-890 Erieye radar provides 360 degree coverage.

Saab 2000 AEW&C

Click here to watch Saab's own video explaining their AEW&C systems.



Shaanxi ZDK-03: China developed an AEW version of the Y-8F-600 intended for the export market. Pakistan received the first of four in 2011. The AESA radar is reported to have a greater range than that of the Saab 2000 AEW&C

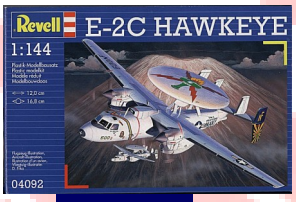
Shaanxi ZDK-03

1/144 HobbyBoss

SINGAPORE

Grumman Hawkeye E-2C: Singapore received four E-2Cs in 1987, serving with 111 "Jaeger" Squadron at Tengah Air Base. In the early 2000s a substantial upgrade was undertaken, improving the entire computer and software systems. Now retired.

Grumman E-2C Hawkeye



1/144 Revell

1/72 Hasegawa

1/48 Kinetic

Gulfstream G550 CAEW: Four G.550 CAEW (Compact Airborne Early Warning) were bought from Israel in 2009 and have supplanted the E-2Cs in 111 Squadron. They've significantly upgraded the RSAF's capacity, offering a loiter time of nine hours (compared to the four hours of the Hawkeyes) and able to track up to 100 targets simultaneously.

Gulfstream G.550 CAEW

1/72 Broplan

Fingers crossed!
Will Modelsvit
re-work these moulds to
give us a G.550 CAEW?

AEW&C IN ASIA

THAILAND

Saab 340 AEW&C—S-100B

Saab 340 AEW&C—S-100B: The first S100 B AEW aircraft was delivered to the RTAF in 2010. The second aircraft, fitted with Erieye radar, was delivered in 2012.The Erieye radar provides 360° coverage with optimum performance of the radar over the 150° azimuthal sectors on each side of the aircraft. The radar can detect fighter aircraft at a range of 350km in a dense hostile electronic warfare environment, in heavy radar clutter and at low target altitudes. The radar has a sea surveillance mode. The main cabin is equipped with a suite of multifunction workstations for up to three operators for radar, fighter control and functions associated with the land-based operations.

1/144 Fox One

1/72 Broplan

1/72 RVHP

Indian Naval Sea Harriers—IN DETAIL!

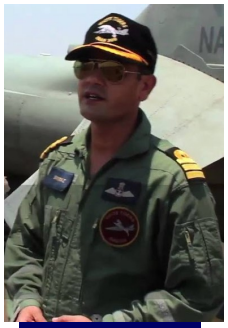
DELIVERIES OF SEA HARRIERS TO INDIAN NAVY

From www.bharat-rakshak.com

Aircraft delivered to date: IN601 - Mk.51 (05 Oct 1984) - air accident on 04 May 1988
IN602 - Mk.51 (12 July 1984)
IN603 - Mk.51 (13 Dec 1983)
IN604 - Mk.51 (13 Dec 1983)
IN605 - Mk.51 (13 Dec 1983)
IN606 - Mk.51 (12 July 1984)
IN607 - Mk.51 (24 July 1990)
IN608 - Mk.51 (14 Dec 1989)
IN609 - Mk.51 (10 Apr 1990)
IN610 - Mk.51 (14 Dec 1989)
IN611 - Mk.51 (14 Dec 1989) - air accident on 30 September 1997
IN612 - Mk.51 (10 Apr 1990) - air accident on 09 December 1992
IN613 - Mk.51 (24 July 1990)
IN614 - Mk.51 (24 July 1990)
IN615 - Mk.51 (23 Apr 1991)
IN616 - Mk.51 (17 Sept 1991)
IN617 - Mk.51 (17 Sept 1991)
IN618 - Mk.51 (23 Apr 1991)
IN619 - Mk.51 (23 Apr 1991) - air accident on 09 June 1992
IN620 - Mk.51 (17 Sept 1991) - air accident on 08 February 1996
IN621 - Mk.51 (17 Sept 1991) - beyond economical repair
IN622 - Mk.51 (14 Jan 1992)
IN623 - Mk.51 (07 Apr 1992)
IN651 - T Mk.60 (15 Mar 1984)
IN652 - T Mk.60 (16 Mar 1984) - air accident on 27 June 1988
IN653 - T Mk.60 (10 Apr 1990)
IN654 - T Mk.60 (14 Jan 1992)
IN655 - T Mk.60 (2003) - T Mk.4(I) upgraded to T Mk.60 standard
IN656 - T Mk.60 (2003) - T Mk.4(I) upgraded to T Mk.60 standard

May 2016 Sea Harrier retired from Indian Navy.

INAS 300—THE WHITE TIGERS



Click this image and Commander Shiraz Azad will take you for a walk around an INAS 300 Sea Harrier.

INAS 552—THE BRAVES

Sea Harrier FRS-51 in Indian Naval Service—In Detail

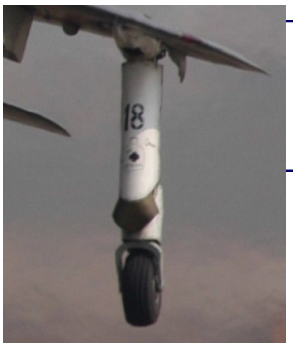
Pilot & Ground Crew names below cockpit

Hard demarcation of top & bottom paints.

White Tiger insignia of INAS300

INAS552 insignia (L) & INAS300 insignia (R)

All stencilling was in English



Last two digits of code on undercarriage doors

Dark grey leading edges of wings and empennage.

NAVY in English on port side and

नौसेना

in Hindi on the starboard side.

IN608 "Cougar"

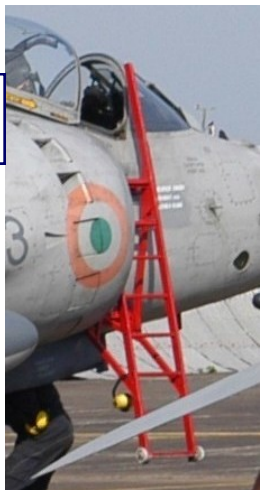
IN613 "Lion"

Sea Harrier FRS-51 in Indian Naval Service—In Detail

Note roundel colours: #603—Green, White & Saffron; #606 - Green, Transparent (airframe grey) & Saffron.
The roundels of most "all grey" FRS.51s appear to feature white rather than Airframe Grey (transparent).

No visible de-icing strips on wing or empennage.

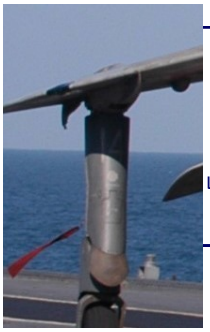
Ladder hook-up



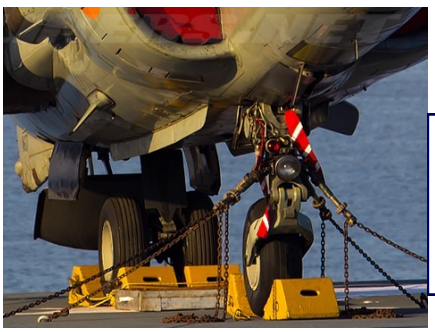
IFR attachment & Medium Grey radome on IN609 of 522 Sqdn.

Lo-Vis "White Tiger" insignia

Names of pilot and ground crew.



Last two digits of code barely visible at top of undercarriage doors



Close up of undercarriage and attachment ties.

IN603 with a White Tiger tail logo —not normally carried on FRS.51s.

Light grey number 14 inside airbrake of IN614.

Striped markings on tail "puffer"

Harrier T Mk.60 & T Mk.4(I) in Indian Naval Service

Sea Harrier T Mk. 60

The original T.Mk.60 trainer variant acquired by the Indian Navy, had no LRMTS thimble; a shorter fuselage; and was similar to the T.Mk.4N variant used by the Royal Navy. Due to the larger length of both trainer variants, they had to be placed diagonally on the hangar elevator of INS Viraat.

Sea Harrier T Mk. 60. Note early nose and black trim to intakes.

The two digit code on the undercarriage doors appeared much lower than on FRS-51.

Open canopy and detail of forward fuselage of T Mk.60.

Sea Harrier T Mk. 4(I)

The Cessna L-19/O-1 Bird Dog—South Vietnamese Air Force (VNAF) 1962-1975

By Mark Attrill

VNAF L-19s at Tay Ninh airfield

The diminutive Cessna L-19/O-1 Bird Dog liaison and observation aircraft had the distinction of being the first all-metal fixed-wing aircraft to be ordered and operated by the US Army following the Army Air Forces' separation and re-creation as the United States Air Force in 1947. At the time the US Army was looking for an aircraft to fulfil aerial liaison and artillery direction duties, and Cessna responded to the request with the Cessna Model 305A, a development of their civilian Cessna 170 two-seat high-wing monoplane. The US Army awarded an initial contract for 400+ aircraft, re-designated the L-19A Bird Dog, with first deliveries taking place in December 1950, in time for the aircraft to deploy to Korea as part of the US-led UN Force engaged in a war with the communist backed North Koreans. The basic design was improved over time and culminated in the L-19E, with a higher gross weight. The United States Department of Defence ultimately ordered 3,200 L-19s, built between 1950-1959, to equip both the US Army and the US Marine Corps with some aircraft also going to the USAF.

The Cessna O-1 Bird Dog was one of the first US types delivered directly to Vietnam under the Mutual Defence Assistance Programme (MDAP) rather than as a result of a handover from the departing French Armed Forces. Sixty Cessna L-19 (O-1) Bird Dogs were supplied in January 1956, although some aircraft may have been delivered the year before via other channels since some official documentation related to the official creation of the South Vietnamese Air Force on 31 January 1955 indicate that the re-named 1st and 2nd Liaison Squadron at Bien Hoa and Nha Trang respectively had received the aircraft to replace remaining examples of the obsolete MS.500 Criquet previously donated by the Armee de l'Air. The O-1s were initially flown by US pilots under the Military Assistance Scheme, with Vietnamese observers on board to gain experience and satisfy the legal requirements for operating VNAF-marked aircraft over South Vietnamese territory. Some of the VNAF O-1 observers first went into action, and initially honed their skills in the Forward Air Controller role, with the Grumman F-8F Bearcats of the 1st Fighter Squadron. As combat operations between the various antagonists escalated, so did the demands placed on the VNAF and one of the major problems that emerged was the lack of coordination and communication between air and ground units of the VNAF and ARVN respectively. To compound problems, the VNAF assigned their best pilots to the fighter and transport squadrons and imposed severe constraints on FAC operations to the point where they became largely ineffective in their primary role. In spite of the handicaps, there were often occasions where the presence of a L-19 FAC over a convoy or troop concentration was sufficient to deter a Viet Cong attack, particularly as the O-1 became the most visible fixed-wing VNAF asset over large swathes of Southern Vietnam. As further deliveries of US aircraft were accelerated, the VNAF stood up a third Observation Squadron, which was quickly joined by a fourth, so that by 1964, each ARVN Corps area had its own allocated Liaison and Forward Observation Squadron. The inventory of O-1s was further supplemented by aircraft donated by the US Army and USAF Units as US Forces withdrew from the country. By 1969 over 170 aircraft had been delivered to the VNAF although attrition had been high with over 90 lost to enemy action or as a result of accidents.

These photos courtesy of Lance V.Nix

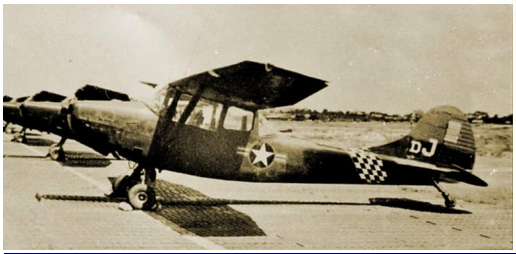
The Cessna L-19/O-1 Bird Dog -South Vietnamese Air Force (VNAF) 1962-1975

The further build up of VNAF assets included new aircraft types such as the four-seat Cessna U-17A Skywagon, which initially equipped training units but was eventually used in a variety of other roles including liaison and observation to complement the smaller O-1 Bird Dogs and the aircraft were duly incorporated into some joint Units, such as the 110th and 116th Observation Squadrons. Over time, the VNAF O-1 pilots and Forward Air Controllers gained experience through their continuity of service, since many remained with their units for several years, compared with their US compatriots who normally completed a one year tour of duty. Such was the demand for effective command and coordination of air and ground operations as the Vietnam War escalated that, by the early 1970s, the VNAF had doubled the number of Observation Squadron to eight, deployed across five main bases and a large number of rudimentary Forward Operating Bases, close to the ground forces they supported. In spite of a drive towards the introduction to service of more capable types, such as the twin-engined Cessna O-2 Skymaster, the quieter noise footprint, short runway capability and better manoeuvrability and visibility offered by the O-1 Bird Dog ensured its popularity among commanders both in the air and on the ground. As a result of the inheritance of former US operated aircraft, the VNAF operated no less than three variants of the O-1; the most visible difference between each was the aerial fit. Some sported single or twin whip aerials on the upper wing surfaces, with some also fitted with dipole aerials on the leading edge of the tailplane. Aerial arrangements on the upper fuselage surfaces could also vary, with some aircraft featuring a DF loop while others were equipped with a large blade antenna.

MAJ Boung used this VNAF O-1A to escape from South Vietnam with his wife and five children. MAJ Boung made the first landing by an O-1 on an aircraft carrier, landing on USS MIDWAY on 30 April 1975.

Cessna 0-1E Bird Dog of the 112th Liaison Squadron, 23rd Tactical Wing, Bien Hoa during 1966. The Light Gray on the upper wing allowed strike aircraft to easily spot the FAC.

The Cessna O-1 served the VNAF right up until the very end of the conflict, with at least one aircraft being shot down after the official surrender of the ARVN/VNAF had been accepted. In spite of their diminutive size and lack of effective range, several heavily laden O-1 Bird Dogs joined the mass exodus of VNAF aircraft fleeing the country as North Vietnamese forces moved into Saigon, including one notable example which conducted the first ever landing on an aircraft carrier, when it landed on the USS Midway, engaged in Operation FREQUENT WIND, before disgorging its 'crew', a VNAF pilot and his family of six! By the time the VNAF had ceased to be a fighting force, it was estimated that the air arm had received over 400 examples of the O-1 Bird Dog and although approximately 65% of all aircraft had been lost to attrition, a considerable number of aircraft also fell into the hands of the victorious North Vietnamese. It is reported that some twenty aircraft were pressed into service with the VPAF and operated during the regional conflicts with Cambodia and China before surviving examples were finally retired in 1991.



The Cessna L-19/O-1 Bird Dog -South Vietnamese Air Force (VNAF) 1962-1975

Cessna O-1 Bird Dog Colours and Markings

As previously stated, the O-1 Bird Dog was among the earliest American-supplied equipment for the VNAF and initial deliveries almost certainly arrived in the standard U.S. Army Olive Drab (FS34087) colour scheme although, as time passed, examples were observed in a broader range of Dark Green shades. Many of these aircraft later appeared in colours darker and greener than the US Army OD and also darker than USMC Field Green (FS14097/34097). Contemporary photographs also indicate that the harsh climatic conditions also contributed to the different appearance of individual aircraft so modellers should check references for specific aircraft.
Following a number of air incidents over Forward Areas, some of the O-1 fleet began to see the application of a light colour to the upper wing surfaces, to aid identification over the jungle canopy. The upper surface colour appeared to be White or Light Grey and application was varied; on some aircraft, the light colour carried along the entire surface of the upper wings, excluding the centre section and antenna bases over the cockpit, while on others only the inner sections appeared in the Light Grey/White colour.

The application of standard national markings, serial numbers, and airframe stencilling was also subject to considerable variation suggesting that aircraft were often finished with non-US Standard camouflage colours. There were at least two variations in the style of the traditional VNAF 'Stars and Bars' with some featuring elongated 'bars' and the application of these markings to the wings varied considerably. Some aircraft carried the marking on both upper and lower surfaces on both wings, or alternated as on USAF aircraft. Some aircraft sported the VNAF yellow and red fin flash on the rudder and, again, these could differ in size depending on the time period and overall colour scheme. As the number of VNAF Units operating the O-1 Bird Dog increased, individual Unit or Base Designation Codes were adopted and applied in a variety of positions; some were applied to the rear fuselage, whilst others were placed above or below the aircraft serial number on the fin - having been displaced by the application of Wing specific fuselage bands, as seen on 23rd and 41st Wing examples.

In the late 1960s, the majority of surviving or new Cessna O-1s underwent a colour change, as former-USAF aircraft which had operated in an overall Light Grey (FS36473) colour scheme, were transferred to the VNAF, or Olive Drab machines were repainted. Many of the Light Grey coloured VNAF machines appeared to be almost bordering on a dirty White, although this may have been as a result of severe wear in the climatic conditions. The adoption of individual Unit or Base Designation Codes continued, with most located on the upper fin surfaces above the aircraft serial number and applied in Black or Medium Blue to match the aircraft serial, although it would appear that only four of the eventual eight O-1 units actually adopted the unit designation. Light Grey machines also featured a smaller version of the VNAF fin flash, normally applied to the rudder; on those machines that adopted multi-coloured rudders to indicate Wing or Unit ownership, this fin flash would either be removed or further reduced in size and re-applied to the fin surfaces. Cessna O-1s operated by the 23rd Wing had the traditional black/yellow chequered fuselage band applied from early on in their service and it was regularly observed on their Overall Dark Green and Light Grey aircraft. Some 100th OS aircraft sported the 41st Tactical Wing fuselage band, whilst other Squadrons favoured the application of markings to the fin surfaces, either carrying over the Wing style colours or individual variations of plain or striped colours on the rudder. Although it was not a common practice, in some cases unit insignia were also applied to the engine fairings below the anti-glare panel.

These two "walk-arounds" from Model Talking website will give you the most comprehensive views (inside and out) you'll ever see of the Bird Dog. A brilliantly detailed set of images.

VNAF O-1 Bird Dog Units – 1962-75				
Unit	Wing	Location	Unit Code	Dates
110th Observation Squadron	41st Tactical Wing	Da Nang	B	1963-75
112th Observation Squadron	23rd Tactical Wing	Bien Hoa	D	1963-75
114th Observation Squadron	12th Tactical Wing	Nha Trang		1963-75
114th Observation Squadron	12th Tactical Wing	Pleiku		1963-75
116th Observation Squadron	74th Tactical Wing	Binh Thuy	E	1964-75
118th Observation Squadron	72nd Tactical Wing	Pleiku		1971-75
120th Observation Squadron	41st Tactical Wing	Da Nang		1971-75
122nd Observation Squadron	74th Tactical Wing	Bien Thuy		1971-75
124th Observation Squadron	23rd Tactical Wing	Bien Hoa	FD	1972-75

Modelling the Cessna L-19/O-1 Bird Dog by Mark Attrill

1/72

In relative terms, the Cessna L-19/O-1 Bird Dog has fared well when it comes to the availability of kits although it took some time to gain a foothold. An early (1959) release by Lindberg was marketed as Cessna O-2E Birddog (sic) and designed to fit a box, so worked out roughly to 1:20 scale – a kit for the collectors only! It would be over a decade before another major manufacturer tackled the subject, when Airfix issued their excellent little 1:72 kit in 1973, complete with markings for a VNAF example operated by 112th Observation Squadron and sporting the highly distinctive markings of the 23rd Wing. The kit was typical of the times, with raised panel lines and some basic detail. Most importantly, it was relatively easy to assemble and looked the part when complete.

The kit featured some optional parts including wing mounted smoke marker rockets. Such has been the appeal of the subject—and the kit—that it has been re-released on several occasions over the years and has attracted the attention of more than one aftermarket manufacturer, so there are some resin and photo-etched accessories available to enhance the basic kit. It should also be noted that the kit is not in the current Airfix catalogue so it is not readily available, although given the number of re-releases it is still reasonably easy to source via retail outlets or second-hand traders. Modellers may also be interested to learn that Special Hobby of the Czech Republic are due to release their own kit of the O-1 in 2019 and, given the quality of their most recent products, I imagine this will become the new benchmark in 1:72 scale, since the kit will almost certainly feature fine engraved panel lines and super detailed parts. The aftermarket decal manufacturers have also been quite prolific in their coverage of the O-1 Bird Dog in VNAF service with at least three recent releases that include decals for overall Olive Drab or Light Grey aircraft in a wide variety of VNAF markings.

1/32

In 2015, Roden announced to a somewhat surprised modelling fraternity, their plans to release a brand new kit of the Cessna O-1 Bird Dog in 1:32 scale. In some ways, it was a logical step since the diminutive size of the prototype lends itself to the large scale treatment in model form, although many were surprised with such an esoteric choice until it was realised just how many worldwide air arms have been equipped with the type, particularly in the Middle East, Indian sub-continent and Asia. On opening the rather large box, you're presented with seven grey (and one clear) sprues, which come complete with a separately packaged set of three metal rods of two different gauges to reproduce the aerial fit. The "Asian Air Arms" issue includes decal markings for a light grey VNAF machine, together with Japanese and Thai examples. The only concern I had with the packaging was that the clear sprue was not packaged separately, so running the risk of scratching to the clear surfaces (which make up a significant part of this observation platform). As we've come to expect from Roden, the parts are all crisply moulded with practically no flash.

A large percentage of the kit parts is dedicated to reproducing a very nice, highly detailed, 28-part Continental O-47-O-11 engine and the cockpit/cabin interior. I'm sure the super detailers will go to town on this kit but the 30+ part interior seems to be lacking only some seat belts to complete a busy looking cabin - and the pilot's access door can be posed open if one wishes. In the first issue, the instrument panel was represented by a completely blank panel without even a decal to dress it up, but this has been remedied by the inclusion of a nicely-detailed decal in their "Asian Air Arms" release.

Modelling the Cessna L-19/O-1 Bird Dog

1/32 (continued)

The other minor issue that will need to be dealt with, in regard to the interior is the presence of four, noticeable ejector pin marks that will need to be treated - the kit is noticeably free of this affliction elsewhere, Surface detail is excellent throughout, with the 'corrugated' look of the flying control surfaces being faithfully replicated. The panel lines and other airframe details are very finely rendered and some early dry-fitting suggests there will be few issues with putting this kit together. I particularly like the way the tailplane-mounted aerials are sandwiched between three-part fairings, and the ailerons and flaps, being separately moulded, are able to be positioned according to one's preference. The corrugated flying control surfaces are also nicely rendered and are not overscale.

Another nice feature is the separately moulded engine access covers which also look as if they can be posed open, perhaps with the addition of some scratch-built arms. The kit includes eight wing-mounted target marker rockets on their pylons and separate parts for the different aerial fits appropriate to the two marking options. The decal sheet is reasonable although on closer inspection, some of the larger items appear to be rather opaque and I would personally recommend using the aftermarket sheet from AOA Decals which has been extensively researched and is of higher quality. Care will need to be taken in matching both kit and aftermarket decal options with the variations in aerial fits, between individual aircraft, so a careful check of references will be necessary. This kit has certainly lived up to my expectations in terms of presentation and quality, and I'm sure will build up in to a nice replica. Several reviews have highlighted relatively minor issues with the fit of the glazing and the need to super-detail that exposed cockpit, which does form a major focal point of the aircraft. There is also a suggestion that the main undercarriage struts have a tendency to buckle slightly under the weight of the completed model, so the Scale Aircraft Conversion white metal replacement is likely to be a good investment.

1/48

Fans of 1:48 scale had to wait even longer for a Cessna O-1 Bird Dog in their preferred scale, until a little known company called Model USA released their kit of the type, in 1988. Fortunately, the kit proved to be a very good first (and only) release from this company, featuring engraved panel lines and with some excellent detail (including M-16 rifles for the crew). The initial release included markings for several aircraft including a Vietnam-era USAF and JASDF examples, together with a VNAF machine sporting the overall Light Grey (FS16473) colour scheme and markings for the 124th Observation Squadron aircraft that landed on USS Midway in 1975 (referred to in the text above). Hasegawa subsequently re-issued the kit with new markings in their Limited Edition series and both kits have received the attention of the aftermarket manufacturers with several resin and photo-etched detail sets to enhance the donor kit. Over time, the Model USA kit (and its derivatives) has become quite scarce and commands high prices on the pre-owned market so the announcement by Roden in 2018 that they would follow up their 1:32 scale release of the Bird Dog with one in the smaller scale was greeted with enthusiasm. A quick comparison with online photographs of the larger kit would suggest the 1:48 scale version is, quite literally, a scaled down variant of the same kit. It shares the same seven grey (and one clear) sprues and a small poly bag with several different gauges of plastic dowel for the aerial fit. Decal markings are provided for US Army, USAF and Canadian Armed Forces examples and, once again, a decal for the instrument panel is included. The kit does also suffer from the presence of ejector pin marks and sizeable pegs which will, in some cases, need to be filled or removed to avoid unsightly detail being visible through the extensive glazing. My example of the kit also suffered from some very minor short-shot issues but thankfully this was limited to parts that would be hidden away after construction. Initial reports suggest that this kit is an easier build than its bigger cousin and it certainly seems to look the part when completed.

1/144

At the other end of the scale, quite literally, is the recently released 1:144 scale kit from Miniwing. The company has released the kit with several decal variations including one with VNAF markings (MINI305) for a Light Grey example operated by the 23rd Wing. The fourteen-part kit is moulded in clear plastic which is not always the best medium to work with since it tends to be somewhat brittle but it will certainly aid with the otherwise daunting task of replicating the extensive glazing found on these machines, for which a full set of masks is included.

Modelling the Cessna L-19/O-1 Bird Dog

As with my previous overviews, I have prepared a list of all of the known aftermarket items that have been produced to date (September 2019) to correct or complement the various kits in each of the three main scales. Most of the items listed are currently available and show up in the catalogues of some of the major on-line model shops and vendors. Where possible, I have highlighted items which may now be out of production due to the relative availability of kits.

1:72 Scale – Airfix

Make	Reference #	Item	Notes
Airfix	AX01058	Cessna O-1 Bird Dog	Original Issue – Includes Decals for VNAF O-1E operated by the 23rd Wing **Out of Production**
Special Hobby	SH72139	Cessna O-1 Bird Dog	**Future Release**
Airwaves	AEC72138	Cessna O-1 Bird Dog Detail Set	Photoetched – (For Airfix Kit)
Pavla	PAVC72079	Cessna O-1 Bird Dog Cockpit Detail Set	Photoetched/Resin (For Airfix Kit)
Pavla	PAVU72104	Cessna O-1 Bird Dog Flying Control Surfaces	Photoetched/Resin (For Airfix Kit)
AOA Decals	AOA72-005	Dogs of War – Cessna O-1 Bird Dog	Includes decals for five VNAF O-1A/G Bird Dogs (three in Overall OD and two in Light Grey colour scheme), all featuring variations in national or unit markings.
Blackbird	BMD72033	Air War Over Vietnam Part I	Includes decals for VNAF O-1E Bird Dog
Printscale	PSL72131	Cessna L-19/O-1 Bird Dog	Includes decals for VNAF O-1E Bird Dogs in Overall Olive Drab and Light Grey colour schemes.

1:48 Scale Models USA/Hasegawa/Roden

Make	Reference #	Item	Notes
Models USA	MK48-001	Cessna O-1 Bird Dog	Includes decals for VNAF O-1E Bird Dog (5L-14981/FDD), 124th OS in the overall Light Grey (FS16473) colour scheme
Hasegawa	HASP162	Cessna O-1 Bird Dog	Models USA Re-Box with revised decals
Roden	ROD409	Cessna O-1 Bird Dog	
Eduard	ED48-040	Cessna O-1 Bird Dog Detail Set	Photoetched – (For Model USA Kit) **Out of Production**
True Details	TD48-514	Cessna O-1 Bird Dog Cockpit Detail Set	Resin (For Hasegawa/Model USA Kit)
AOA Decals	AOA48-003	Dogs of War – Cessna O-1 Bird Dog	Includes decals for five VNAF O-1A/G Bird Dogs (three in overall OD and two in Light Grey colour scheme), all featuring variations in national or unit markings. **Out of Print**
New Ware	NWAM559	Cessna O-1 Bird Dog Mask Set	(For Roden Kit)

Modelling the Cessna L-19/O-1 Bird Dog

1:32 Scale – Roden

Make	Reference #	Item	Notes
Roden	ROD619	Cessna O-1 Bird Dog	Includes decal markings for a Vietnam-era USAF O-1E Bird Dog, DaNang AB, 1966.
Roden	ROD627	Cessna O-1 Bird Dog in Asian Service	Includes decals for VNAF O-1E Bird Dog (5L-14981/FDD), 124th OS, 23rd Tactical Wing in the overall Light Grey (FS16473) colour scheme. This kit also includes markings for JASDF & Royal Thai Air Force examples.
Aerobonus	QAB32-106	Cessna O-1 Bird Dog Pilot/Seat	Resin (For Roden Kit)
SAC	SAC32-113	Cessna O-1 Undercarriage Set	White Metal – Includes Engine bearers (For Roden Kit)
Yahu	YAHU3240	Cessna O-1 Instrument Panel	(For Roden Kit)
AOA Decals	AOA32020	Dogs of War Part II	Includes decals for eight VNAF O-1A/G Bird Dogs (four each in overall OD or Light Grey colour scheme), operated by the 110th and 112th Observation Squadrons and all featuring variations in national or unit markings.
New Ware	NWAM091	Cessna O-1 Bird Dog Mask Set	Basic - (For Roden Kit)

Mark Attrill

SOME PHOTOS OF THE EARLY PLAAF

For information on Chinese aircraft prior to the current day, refer to Mark Attrill's review of "Chinese Airpower in the 20th Century" page 24.

Modelling Explosions (1) by Bjorn Jacobsen

Here is another fascinating article by Bjorn from his brilliant book
"The Complete Guide to Military Dioramas and Models"
Please enlarge these pages for easy reading!

1

To make an explosion or a fire

In a military diorama, you often want to make fires and explosions.
The most frequent question I get is how to make a realistic explosion or fire.
I know that many want to try this, but are thinking that this is too difficult.

The common fault I see in diorama explosions is too much cotton, too much colour and too little lights. An explosion is all about lights.

You have seen fire and explosion several places in this book, and here is a summary:

I use the same ingredients in every explosion or fire I have made:

- Chicken wire
- Cotton
- Cellophane (sometimes)
- LED lights
- Airbrush
- Hairspray

Chicken Wire

The chicken wire is to make a cage around the explosion. This cage is to support the explosion fumes/smoke you want to make around the explosion/fire.

It also helps create a space around the light source which is important for reducing the heat effect from the light.
I use chicken wire because it's very easy to form and very cheap to buy.

Cotton

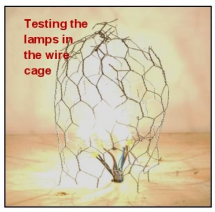
The cotton is used to make the expanding gasses from the explosion/fire. I use plain white cotton which is easy to form and can be made bulky or stretched as thin as you like. It all depends on what kind of effect you want to make.

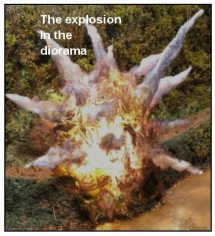
If you want to make the cotton stiff, use a normal hairspray.

The colour from the light will often be white which might be fine in an explosion.
If you, however, are making a fire, you probably want some yellow and red colours as well.

When an explosive is initiated either to burning or detonation, its energy is released in the form of heat. The colours indicate the heat temperature, from the hottest white/blue to yellow/orange to the warm red colour.

This can be obtained by painting (airbrush) the cotton (i.e. the burning gasses) or/and using coloured cellophane inside the "smoke".
If you are making a fire, you will use black/grey/brown colours, all depending on the situation and the cause of the fire.





2

Light sources

If you are making a fire, an explosion or a rocket launch, you need a light. If not, you have to "paint" the explosion, which more often than not will look as paint and not an explosion.

The lightsource will often be hidden behind smoke or gasses, made by cotton or other flammable material. And that creates a problem: Heat

All lights produce heat when they are lit. And heat may cause the material to melt, to be discoloured or in the worst case to start a real fire.

There are ways to prevent, or at least reduce the chances of this to happen.

The most important is to choose a light that produces as little heat as possible. This sounds easy, but the problem is that you often need a strong light to create the effect you are looking for, and a strong light always produces more heat than a weak light.

The best Lightsource to achieve the effect you want would probably be a LED light. The LED light emits far less heat than for example a halogen light.

Of course, it all depends on how long you want the light to burn each time you turn it on.
If you turn it on only a few seconds each time, you can use any Lightsource you like, but if you want the lights to burn a long time, you must consider the heat effect.

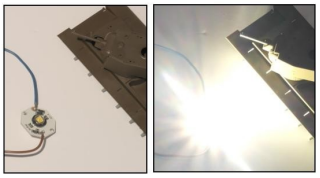
There are large heat differences between different LED lights and you have to try it out before you decide which one to use.

I have used 3W LED lights connected directly to 220V which produces a strong light and very little heat. The most useful LED lights I have used are 12V lights which emit very little heat. I use a 12V transformer connected directly to the outlet (220V or 110V).

One additional advantage with 12V is that you can use very thin wires between the transformer and the lamp(s).
And thin wires are easier to hide than thick wires.

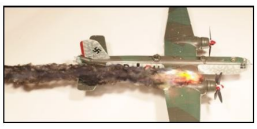
Airbrush

To paint the cotton, you need an airbrush. Painting by hand is almost impossible. The cotton will be very wet and loose the fluffy texture you need to make smoke.

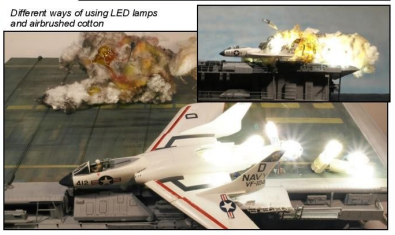


A 220V 3W LED lamp that emitts very little heat, but gives a bright hvite light

Another example of using LED light. The wires are hidden in the smoke



Different ways of using LED lamps and airbrushed cotton



3

You will have noticed that when I make explosions or fires in a military diorama,
I use LED because it gives a lot of brightness and produces very little heat.
I get a lot of questions about building dioramas, and the theme I get most questions about is the use of LED.
Let me first emphasise: I am in no way an expert on LED lights. For all those who want to know more about LEDs, they have to seek information elsewhere. There are tons of LED stuff on the internet. I am just an amateur in this field, but I have used LED's for quite a while, and I would like to share with you some of my experience with

LED LIGHTS in Dioramas

Let's first look at the different LED's

LED lights are improving all the time, and it might be difficult to grasp all the new LED inventions which are appearing these days.
When people think about LED, they often mean DIP (Dual In-Line Package) LEDs which are the traditional LED lights, The LED DIP look like a conventional light with the chip encased in hard plastic generally and are used with two straight parallel connecting pins. The DIP chips have a much lower efficiency than the newer LED chips and will only produce around 4 lumens per LED, much less than the newer chips.

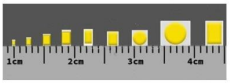
The traditional LED (DIP)

Today, the LED lights come in a variety of models depending on your need for energy efficiency and versatility. Some of the latest variations are COB and SMD LSD.

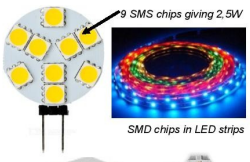
The question for a model builder is obvious: What are these new LED lights, and which should I choose?

SMD

SMD, or "Surface Mounted Device" LEDs, are the most common LEDs in the market. The LED chip is permanently fused to a printed circuit board, and it's highly popular due to its versatility. You can find it in light bulbs and string lights, and even in the notification light on your mobile phone. The SMD LED chips come in a variety of sizes, like the SMD 5050, which is 5mm wide or the SMD 3528, which is 3.5mm wide. SMD LED chips can have more than just two contacts (which makes it different from the classic DIP LED). There can be up to 3 diodes on a single chip, with each diode having an individual circuit.
The chip can include a red, green, and blue diode. With these three diodes, you can already create virtually any colour simply by adjusting the output level.
They are also standalone chips or used in LED strips.
SMD chips are also known to be bright. They can produce 50 to 100 lumens per watt, which is significantly better than the DIP chip.



SMD LED come in many different sizes



SMD chips in LED strips

COB

One of the most recent developments in LED is COB or "Chip on Board". This technology is a step forward to more efficient energy use. Like the SMD, COP chips also have multiple diodes on the same surface. But the difference between LED light COB and SMD is that COB LEDs have more diodes.
COB chips typically have 9 or more diodes. COB chips also only have 1 circuit and 2 contacts, regardless of the number of the diodes. This simple circuit design is the reason for the panel-like appearance of COB LED light (SMD light, on the other hand, appears like a collection of smaller lights).
Another aspect of the COB is in the use of energy. COB is known for better lumen-per-watt ratios and heat efficiency. This has a lot to do with the design of COB LEDs, and the cooling ceramic substrate of the chips.
Although there are different forms of the COB chip, they can offer a much higher number of lumens per watt, often be well over 100.
COB allows you to pack more light/heat/power in a smaller area.

If you need to pack the light in a small emitting area, then use COB (but make sure this small little area gets the heat pulled away).

COB has a softer light and higher brightness than SMD.

Typical COB 3W lights. These are what I often use in a diorama explosion. You can have these lamps in 12V, 110V or 220V

4

The light's brightness—LUMEN

Up to now, most people have used Watt to measure brightness in a light bulb, but Watt has nothing to do with brightness, Watt measure energy use, not light output.
With LED's we can no longer rely on wattage to indicate how bright a bulb is.
Brightness is measured in Lumen (LM). The chart shows the difference in Lumens for ordinary light bulbs and LED light

LUMENS	INCANDESCENT	LED
2600 lm	150 W	25-28 W
1600 lm	100 W	16-20 W
1100 lm	75 W	9-13 W
800 lm	60 W	8-12 W
450 lm	40 W	6-9 W

When you buy a LED lamp, look at the Lumen (LM) on the package to decide if this is the right lamp for your diorama.
I have many times used a 3W LED lamp which gives enough brightness (Lumen) to light up an explosion (3W LED = 200 Lumen).
A 10 W LED will give you around 800 Lumen which corresponds to a 60 W "old" light bulb.
This will probably be too much for a normal diorama.

There is an enormous variety of LED lamps on the market. If you look at e-bay, you will find that the Chinese are big in this field, and they are offering lights at a very low cost and often free international freight.

The only drawback is the shipping time.

My advice for all who want to try LED in an explosion or a fire is to buy a few LED lamps with different wattage and try out what is the best for your work.

Heat Sinking Module fixed to the LED lamp

Heat Sink

For a modeller, the heating is the #1 enemy when using LED technology.

COB usually generate more heat than SMD because multiple "chips" are packed closely together.

If you have a heat problem, you should always have a good ventilation around the light source.

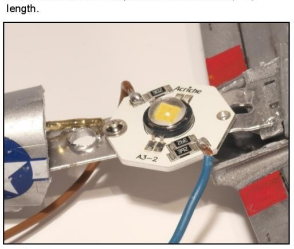
There are heat sinking modules which can be connected to the LED lamp (see picture to the left).

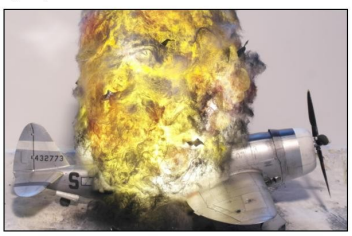
These are very useful if you plan to leave the light on for some time,

LED strips

There are also the LED strips which might be useful in some instances. The strips can be cut in 10cm (4 in) length.

The pictures below show a part of my Bodenplatte-diorama. Here I used one 3W LED / 220V lamp which gave very little heat and a lot of light output.





Modelling Explosions (2) by Bjorn Jacobsen

See other examples of Bjorn's amazing modelling techniques on his Facebook pages.
Please enlarge this page for easy reading.

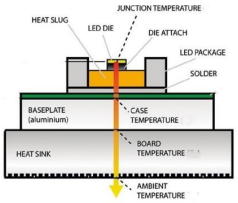
5

How much heat does a LED lamp produce?

Heat is always a potential problem with light in a diorama because all light produces heat, also LEDs.
The good thing is that LED lights produce a small amount of heat.
You will burn yourself within a short time if you hold a normal 25 W incandescent light bulb in your hand while holding a 3 W LED (which produce the same
Lumen) can easily be handled even after a long period of time.

The high wattage LED do get hot, but the heat is dissipated by metal heat sinks that wick away the heat from the light source itself.
Heat sinks on LED light bulbs are designed to get hot, drawing the heat out of the LEDs and transferring the heat into the air.

All LED lamps have a heatsink as part of the construction, but the size and quality might differ.



When light is used in a diorama, it is often placed together with combustible material and often with limited air venting.
You should therefore always test the heat of any light source you use and see how warm it is after a while.

An important rule is: Never leave any lights on unattended.

The colour of the light.

The lights from a bulb will always emit a specific colour, from a warm yellow to a cold blue colour.

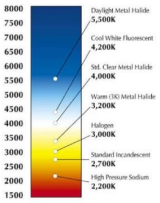
The designation of the colour temperature is Kelvin (K).

The old incandescent bulbs have a colour temperature of about 2.700 Kelvin while normal daylight is about 4.000 Kevin.

Which colour temperature you want on your light in your diorama depends of course of what you are making. If you want more colour in an explosion or a fire, you can use coloured cellophane.

In the picture below, yellow and red cellophane are creating the colours in the explosion.

Look for the colour temperature on the box when you are buying a light bulb.



The pictures:

To create the fire and explosion in my "Cutlass Ramp Strike" diorama, I used a mix of eight LED lamps, some 6W and some 3W.
The only reason for this mix is that this was what I had available at that time.
And why 8 lamps?
Again, there is no reason for this, just a feeling I had that this fire/explosion which was stretched over the flight deck, needed a lot of Lumens, and I knew I could not achieve this without several lamps.

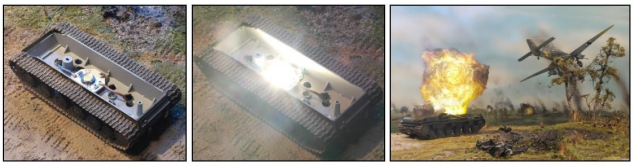
What I am trying to tell you is that there is no blueprint on how to do an explosion or fire in a diorama.
Your own common sense, combined with creativity and a little trying and failing is the best way to get a good result.

6

Here are more examples of LEDs in a diorama:

Lancaster on fire. 4 COB LED's are placed in the wing behind the nacelles. The LED's are inside the chicken wire cage. Cotton and cellophane are fixed to the wires and coloured by airbrush.

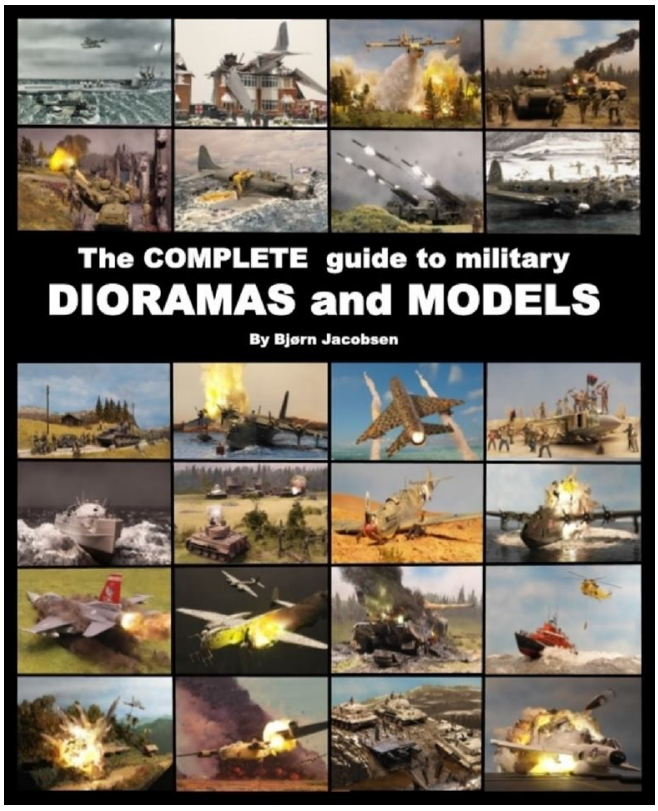
F-100 over Vietnam. Three COB LED's are placed in the chicken wire cage. The building technique is the same as above.



Kanonenvogel and Soviet tanks. A 3W COB LED (220V) is placed inside the Soviet tank. The explosion blows the turret off the tank. Chicken wire, cotton and airbrush as above.

Blowing up the big German flying boat BV 222. Two 3W COB LEDs and four 64-chips SMD LEDs (all 220V) are placed in the chicken wire creating a lot of brightness for the explosion. The heat is no problem. You can read more about these dioramas on www.dioramas-and-models.com

For a full description of many of Bjorn's techniques get his huge book "The Complete Guide to Military Dioramas and Models".



ASIAN MILITARY AVIATION—UPDATE

CHINA

China is mass-producing special mission aircraft, including anti-submarine aircraft, early warning aircraft, surveillance aircraft and electronic warfare aircraft, a genre of warplanes that Chinese experts has said will help create a full information system that allows the Chinese military to recognize every hostile movement and even sabotage enemy communications. In this photo at Shaanxi's manufacturing plant can be seen KJ-500 AWACS and Y-9 tactical transports.

The Chinese People's Liberation Army (PLA) Navy is training jet fighter pilots to sail and command warships(!), a move that aims to create more capable commanding officers for aircraft carriers, according to military experts. Experienced pilots from carrier-borne aircraft units and advanced fighter jet units started learning warship combat and command at an undisclosed naval academy in late November, the PLA Daily reported on Monday.

INDIA

* The HAL Tejas Mkl received Final Operational Clearance (FOC) earlier this year during Aero India 2019. This was just the first part of the FOC process, signifying the finalization of structural design. Software updates to the aircraft are a constant process, e.g. 14 such updates from the FOC standard have already been passed to the Initial Operational Clearance (IOC) standard aircraft which have entered service with No.45 Squadron at the Indian Air Force's (IAF) Sulur Air Force Station (SAFS): therefore, the FOC process will continue over the next 18 months. Along with 16 FOC standard aircraft, which are already under various stages of building, some eight production standard trainer aircraft are also to be manufactured and supplied to the IAF. Drawings for the manufacture of these have were received by HAL in July 2019 and it's intended that they will be capable of aerial refuelling and enter squadron service when ready.

* The Indian Navy has been waiting for years to replace its decades-old multi-role naval Sea King helicopters which it acquired 41 years ago, in 1978. India and the US are likely to sign a $2 billion "Romeo" helicopter deal in the next few weeks after Naval chief Admiral Karambir Singh indicated that a final contract was almost ready. "A Letter of Acceptance from the US for 24 MH-60R multirole helicopters is now with us and the deal is expected to be signed shortly," Singh said.

* Contracts for manufacture of 41 Advanced Light Helicopters for Indian Air Force (IAF) and 32 ALH for Indian Navy (IN) were signed with HAL back in 2017, with a combined value of £1.5 billions This is in addition to an earlier contract to procure 14 Dornier 228 aircraft from HAL, valued at £116 millions signed in February 2015.

* During the air part of the Indra joint Russian-Indian exercise, the joint staff for conducting air exercise will plan air force operations during peacekeeping activities and practice common approaches to air force equipment and procedures at the tactical level. The crews of combat aircraft will conduct combat training between Russian and Indian joint force groupings, formed during the exercise. In particular, during the exercise, the Russian aircrew will perform joint training with the pilots of the Indian Air Force to provide air support to ground units and to organize air defence. The military pilots will take part in group flights during the opening and closing ceremony of the exercise. It's planned that officers of the air force and air defence formation of the Russian Eastern MD and the Indian Air Force will practice the joint use of Russian and Indian combat air forces in cooperation with the ground forces and naval forces. In addition, a mutual demonstration of air traffic control will take place. The joint Russian-Indian exercise Indra-2019 will be held in December 2019 at overland and sea ranges, as well as at one of the military airfields of the Indian Armed Forces.

* The Indian Air Force's last remaining squadron of upgraded MiG-27UPGs will make its final flight from Jodhpur Air Base in Rajasthan, north western India, in late December, India Today has reported, citing an official source. Before their retirement, the planes equipped seven separate squadrons and served as the backbone of the Indian Air Force's ground attack capability throughout much of the 90s and 2000s.

ASIAN AIRCRAFT MARKINGS
A History

GEORGIA

Early

Late

KAZAKHSTAN

Government aircraft - fin only

Kazakh Air Force

Border Guards

KYRGYZSTAN

Source: Military Aircraft Insignia of the World: Cochrane/Elliot

ASIAN MILITARY AVIATION—UPDATE

JAPAN

* Japan's Defense Minister has announced that the Indian Air Force will be sending its Su-30MKIs to Japan for joint training next year.

* The Trump administration is pressurising Japan to choose a US defence company to develop jointly a replacement for its Mitsubishi F-2 fighter jets, because Tokyo is considering a British alternative to cut its reliance on American weapons. Pentagon officials have stepped up talks with Japan amid concerns the US could lose out to BAE Systems, the UK defence contractor developing a sixth generation Tempest stealth fighter, according to people familiar with discussions about the F-3 programme. Tokyo wants to replace its F-2s when they retire from around 2035 and plans to start development next year, in a deal that would be worth tens of billions of dollars. It's considering three options: (i) collaborating with BAE; (ii) working with Lockheed Martin, the US maker of the F-22 and F-35 jets; or (iii) developing a plane domestically. The US air force is worried that choosing a UK fighter would create difficulties in interoperability with both the US military and other US-made aircraft used by Japan, which could complicate joint operations. American officials are also concerned that opting for a British jet would anger President Donald Trump, just as Washington and Tokyo are engaged in tough talks about how much each should pay towards maintaining their alliance.

* Japan intends to continue assembling F-35 stealth fighters domestically, reversing plans to import the finished aircraft from the U.S. Since Tokyo adopted the F-35A fighter jet in fiscal 2011 under the U.S. Foreign Military Sales program, Japan's Mitsubishi Heavy Industries has assembled and conducted final checks on aircraft sold to the country by Lockheed Martin. But the costly process has prompted a decision by Tokyo to import finished F-35s starting with new contracts made in fiscal year 2019, which began last April. Japan's cabinet approved plans at the end of 2018 to buy another 105 F-35s, including 42 F-35Bs, which are capable of short takeoffs and vertical landings. However, Tokyo looks to reverse that decision after Mitsubishi revamped its assembly process to reduce costs. Finishing one F-35 in Japan is now expected to cost 9.37 billion yen ($86.3 million), compared with 9.42 billion yen to ship the plane from the U.S., according to Japan's Defense Ministry. The cabinet is expected to approve the domestic production plan soon.

SINGAPORE

* It has been agreed that a Republic of Singapore Air Force (RSAF) Fighter Training Detachment be temporarily located at Andersen Air Force Base (AAFB), Guam. This agreement lays out the framework for the RSAF's detachment in Guam, covering the deployment of the RSAF's F-15SG and F-16 fighter aircraft and other supporting assets such as the Gulfstream 550 – Airborne Early Warning (G550-AEW) to AAFB for training. This builds on the RSAF's longstanding training in Guam since the 1990s and the periodic deployments of RSAF fighter aircraft to Guam since 2017.

SOUTH KOREA

* South Korea is expected to declare initial operating capability (IOC) for its F-35A on December 17. Media reports say the ceremony will be held at 17th Fighter Wing base. So far, 12 aircraft have been delivered. South Korea has now brought in 10 F-35As, beginning with two in late March, under a plan to deploy a total of 40 fifth-generation jets during 2020 and 2021.

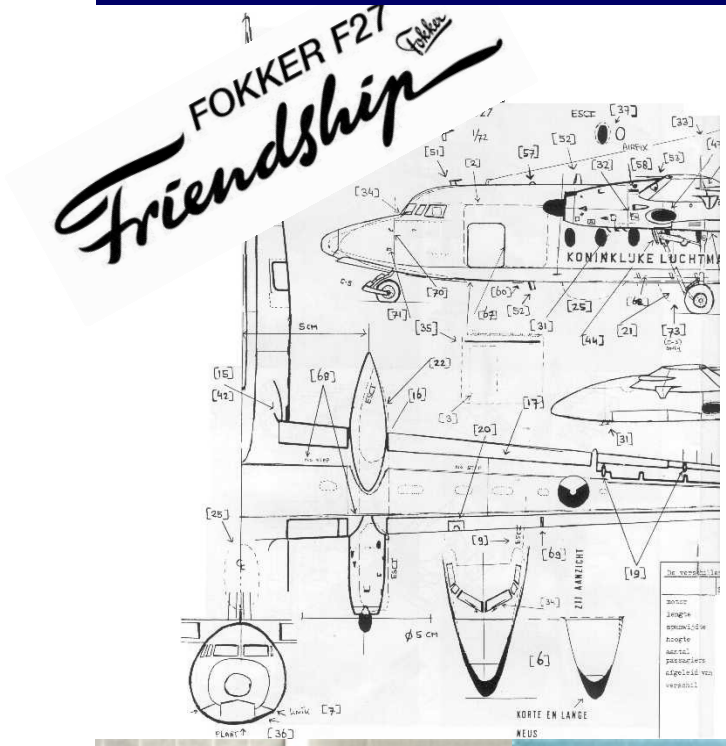
New Members

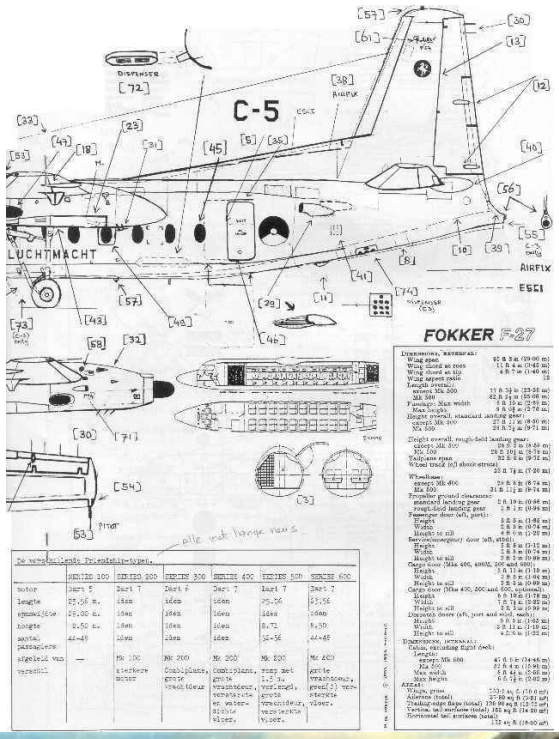
Welcome to Daud Shah and Mehelli Dinshaw from **Pakistan;** Filipe Charana from **Portugal;** Bruce Simard, Kairasp Daruwala, Dick Pawloski and Werner Hartman from the **USA**; Amrith Punja from **India**; Phil Hawks, Khairil Skymmar, Peter Ingman and Kieron Ball from **Australia**; Omar Tipu from **Bangladesh**; Robin Polderman, Willem Bredewoud, Joop Gelauf, Hans Berfelo and Bas Damen from **The Netherlands**; Tomasz Kedzierski from **Poland**; Farouk Tan from **The Philippines**; Giuseppe Castiglia from **Italy**; Mourad Djelloul from **Algeria**; Michael Reid from **Canada**; Nicholas Gerardin from **France;** Yawar Mazhar, Robert Adolphus, Nigel Heath, Mack McCrudden, Mark Webster and Simon Watson from the **UK**.

We now have 341 members from the following 44 countries!

Abu Dhabi, Algeria, Australia, Austria, Bangladesh, Belgium, Canada, China, Croatia, Finland, France, Germany, Greece, Guatemala, Honduras, Hong Kong, India, Indonesia, Ireland, Israel, Italy, Japan, Laos, Latvia, Malaysia, Malta, Myanmar, The Netherlands, New Zealand, Norway, Pakistan, The Philippines, Portugal, Poland, Qatar, Singapore, Slovenia, South Korea, Switzerland, Thailand, Ukraine, UK, USA and Venezuela—Phew!

BUILD THE FOKKER F-27/50 AS USED BY: SINGAPORE, INDONESIA, TAIWAN, PHILIPPINES, THAILAND, PAKISTAN, MYANMAR AND INDIA

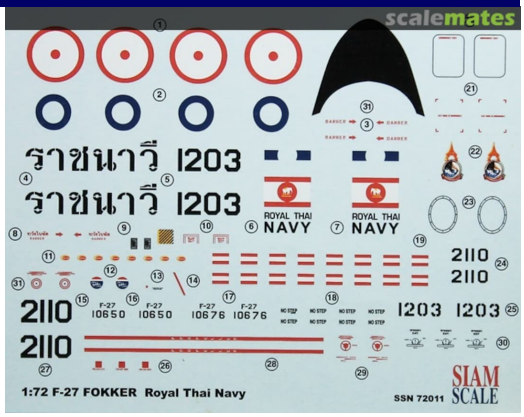




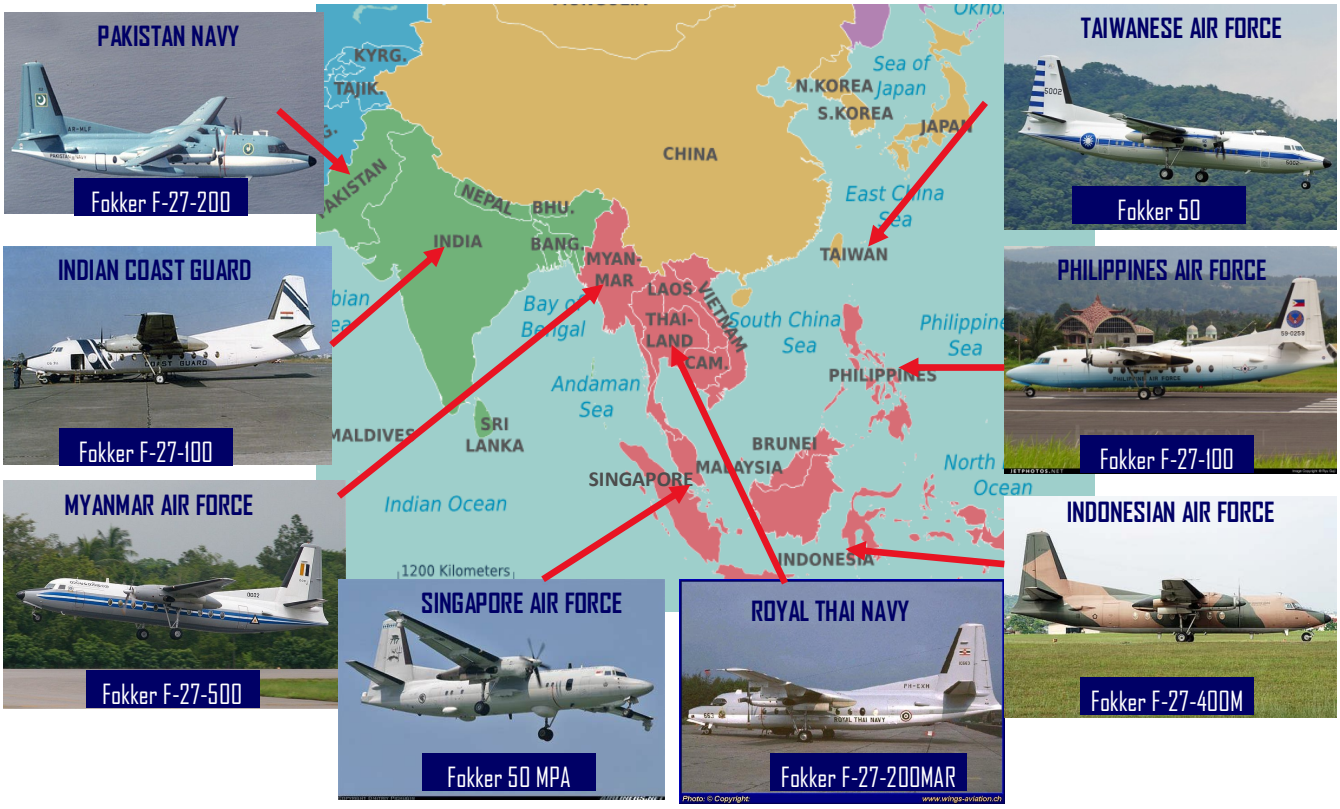
Your guide to modelling the Fokker F-27 and Fokker 50 is **Meindert de Vreeze** from Haarlem in The Netherlands
Click on his picture to visit his brilliant website.

Click the image above for Meindert's build and conversion.

1/72 Fokker F-27-400M and F-27-200MAR decals by Siam Scale.



FOKKER F-27 & 50
Serving eight air arms across Asia



AIR ARM	QUANTITIES/TYPES	IN SERVICE SINCE
PAKISTAN NAVY	4 x F-27-200; 1 x F-27-400M	1979 →
INDIAN COAST GUARD	2 x F-27-100	1999 → ?
MYANMAR AIR FORCE	1 x F-27-500; 1 x F-27-600; 4 x FH-227	1976 → 1978 →
SINGAPORE AIR FORCE	9 x Fokker 50MPA/UTL	1993 →
ROYAL THAI NAVY	3 x F-27-200MAR; 2 x F-27-400M	1970s →
INDONESIAN AIR FORCE	7 x F-27-400M	1979 →
PHILIPPINES AIR FORCE	4 x F-27-100; 1 x F-27-200; 1 x F-27-200MAR; 1 x F-27-500F	Late 1960s →
TAIWANESE AIR FORCE	3 x F.50	1992 →

Fokker F-27 & 50 Variants

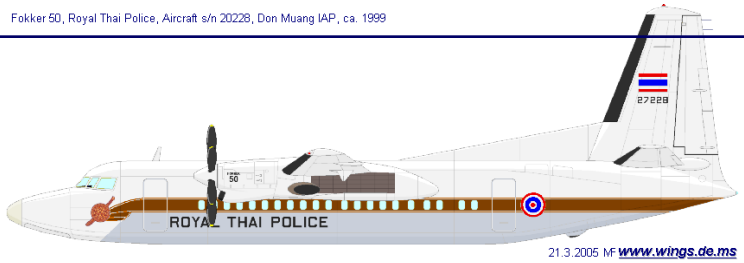
The F-27 Mark 100/ 200/ 300/ 400 were the "standard" F-27s. Developments included the Mk 200/F-27A with more powerful engines, Mk 300/F-27B, and the primarily military Mk 400 Combi versions. The F-27 Mk.500 has a 100 cm extension in front of the wing and a 50 cm extension aft of the wing.

The Fokker F-27 MPA was based on the F27 Mk.200 aircraft. It had 2 pods with searchlight below each wingtip and a radar bulge below the fuselage. Also some additional antenna rails below the fuselage. On each side a bulb/blown window for the observers is located.

The Fairchild F-27s differed from the initial Fokker F-27 Mk 100s in having basic seating for 40, a lengthened nose capable of housing a weather radar, and additional fuel capacity. Fairchild then developed the stretched **FH-227,** which appeared almost two years earlier than the Mk 500: it featured a 1.83m (6ft 0in) stretch over standard length F-27/F-27s, taking standard seating to 52.

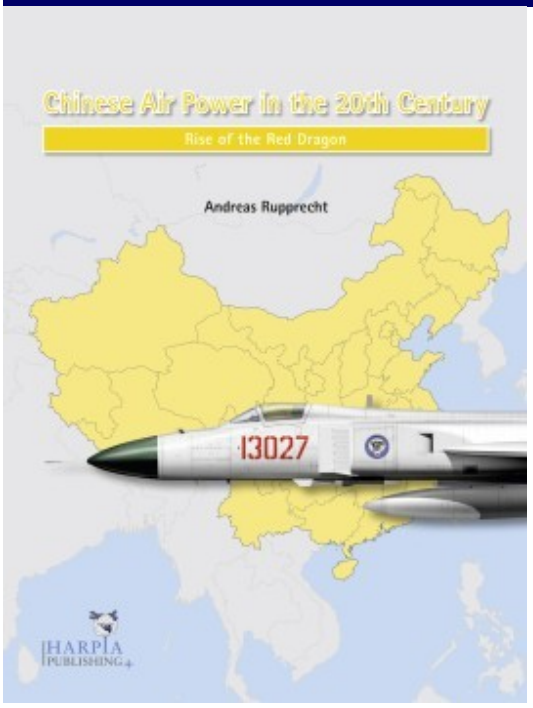
The Fokker 50 was based on the F-27 Friendship but was in fact a completely new aircraft. The replacement Pratt & Whitney PW125 engines needed a new nacelle, particularly in front of the wing LE. The propeller was a six bladed Dowty propeller. A new interior was designed with many smaller fuselage windows and changed doors. The length is derived from the F-27 mark 500. This version was 1.50 m longer than the F-27 mark 100/ 200/ 300/ 400. The wingtips were modified with "foklets": the ailerons got a aerodynamic curve at the tip. The rudder got a trim surface and the starboard horizontal stabilizer also got a trim surface. Nose undercarriage was bolstered with twin wheels. The **F.50 UTA** is a Utility Transport Version.

Fokker 50, Royal Thai Police, Aircraft s/n 20228, Don Muang IAP, ca. 1999



The Fokker 50MPA Enforcer is an extensively modified Maritime Patrol Aircraft with a Texas instruments AN/APS-134 (Plus) 360 degree search radar in a ventral radome and an Israeli ESM suite. It carries 8 hardpoints (6 on wings plus 2 on the fuselage) for its ASW/anti-shipping role.

"Chinese Airpower in the 20th Century—The Rise of the Red Dragon" by Andreas Rupprecht



Reviewed by Mark Attrill

I will freely admit to experiencing some trepidation after Brian had approached me to review this latest book in the Harpia Publishing series of books on modern military aviation. In spite of living and working in relatively close proximity to the People's Republic of China for a number of years and maintaining a lifelong passion for military aviation, I had never shown much interest in the People's Liberation Army Air Force (PLAAF) or any of the aircraft it had operated over the years. I suspect much of this was due to the lack of photographic reference material and the fact that much of what was available showed serried ranks of bland looking machines in natural metal with rather basic national markings giving no hint of individual unit or special markings. This latest title by Chinese military aviation expert (and Asian Air Arms member!) Andreas Rupprecht goes some way to changing this misconception and showing the PLAAF in a completely different light.

This masterful 250+ page tome starts with the origins of military aviation in China during the early years of the 20th Century, with the first two chapters chronicling the multitude of Air Forces and Air Arms that existed to support the various factions that thrived in China during the chaotic period between the early 1920s and 1949.

Chapter 2 provides a fascinating insight into many of these seemingly private Air Arms, each illustrated with the individual insignia, many of which have obviously provided the foundation for the modern day national insignia that adorn aircraft operated by the air arms of the Republic of China (Taiwan).

Chapter 3 deals with the equally intriguing period between 1949 and 1953 when the modern day PLAAF was founded and faced the challenges of trying to operate western types, such as the P-51 Mustang and B-25 Mitchell, that it had 'inherited' from the Nationalist Forces while accepting new equipment from the Soviet Union, including Lavochkin La-9 fighters, Tupolev Tu-2 Bombers and Yakovlev Yak-11/18 trainers. This chapter also, inevitably, deals with the involvement of the PLAAF in China's first intervention in Tibet (1950) and the Korean War, and the entry into the jet age with the arrival of Mikoyan MiG-9 fighters.

Chapter 4 seeks to cover the tumultuous 12-year period between 1954 and 1966, as the People's Republic of China emerged from the Korean War, consolidating its position as a jet-equipped combat air arm before entering into a series of military ventures against Taiwan, India and Tibet, with mixed results. The significant deterioration in the relationship between China and the Soviet Union in 1960 also forced the former to accelerate the development of its own aviation industry and this is also detailed in this chapter.

The penultimate Chapter 5 covers the ten-year period from 1966 to 1976, and includes a deep analysis of the fallout, both politically and organisationally, for the PLAAF and the Chinese aviation industry following the extended Cultural Revolution that enveloped every aspect of Chinese life for most of the decade.

The final chapter deals with the extended period of modernisation, between late-1976 to the present day, starting with the regeneration of the Air Arm following the Cultural Revolution and the development of various industrial relationships to modernise the aviation industry, including ties with France, Israel, the United Kingdom and even the United States. The fall of the Soviet Union in the late 1980s also saw the rejuvenation of industrial ties with Russia and the newly independent Ukraine, with large scale collaboration between Chinese and former Soviet aerospace giants, all of which has had a clear influence on some of the aviation designs now serving with the contemporary PLAAF. Like the ones that precede it, this chapter is rich in delivering interesting insights into little-known topics such as the Sino-Vietnamese border conflict of 1979; the active development of an effective Airborne Force capability; and the major reform of the training organisation to meet the challenges of a truly modern, cutting-edge Air Arm.

"Chinese Airpower in the 20th Century—The Rise of the Red Dragon" by Andreas Rupprecht

Each of the four main chapters that deal with the PLAAF since foundation includes comprehensive tables and maps outlining the units, bases and equipment of the period in question, together with detailed descriptions of the major aircraft types that were operated during the same period. To say that the text is lavishly illustrated with photographs would be an understatement. Apart from the early pre-PLAAF years, where photographic images are understandably rare, those chapters that deal with the embryonic PLAAF from 1949 onwards provide a wealth of photographic references to illustrate the main equipment of the PLAAF and belie the previously held notion that the vast majority of PLAAF types sported rather bland camouflage schemes or markings. The early chapters provide some real gems: the clarity of the image of the Ilyushin Il-10 (albeit in People's Volunteer Army markings during the Korean War) on page 47 is superb, while the Mikoyan MiG-15s sporting political slogans (on page 50), and several in an overall black colour scheme (page 52) are true rarities. My only reservation would be the small size of some of these wonderful images although I appreciate this could have much to do with the quality of the original photographs. However, as the reader works their way through the book so the quality of the photographic images increases and intensifies. Finally, the fact that many of the images have not been previously published lends further value to the volume.

If this was not enough, the three appendices provide even more information, covering the individual histories of the seven Military Region Air Forces, all fifty PLAAF Air Divisions and the highly complex PLAAF serial number system. If anything, the Appendix on the Air Divisions is even more lavishly illustrated than the rest of the book, with some extremely high quality photographic images of both contemporary and historical types all sporting the wide variety of colour schemes, national insignia and (in some cases) unit markings that have come to adorn PLAAF types over recent years.

Have no doubt, this is an extremely impressive book that has captured the birth, development and history of this powerful Air Force in words and pictures. As previously stated, a large proportion of the imagery has been sourced from personal collections and archives and have, therefore, not been seen or published before. My only real, and very minor, criticism of the book is the widespread use of the term 'rare image' in too many of the photographic captions; I suspect most readers will already appreciate that the majority of early images in particular are rare and unusual, so I am not sure this fact needs to be oft repeated throughout the book.

For the modeller, this book offers a wealth of new information on the colour schemes and markings sported by the PLAAF and its immediate forebears over its 70-year history and provides some great inspiration for unusual and attractive subjects. There are some superb, truly evocative, images spread throughout the book; the line-up of Chengdu JJ-5 trainers (page 66), Xian H-6A heavy bomber (page 109) and Shenyang JZ-6 tactical reconnaissance aircraft (page 118) instantly spring to mind and there are many, many others. It is therefore good to see that some of the aftermarket decal manufacturers, including BestFong and Frontpenny Decals—of Taiwan and the PRC respectively—have already started to tap into this rich vein of subjects to complement the high quality models now available on the market.

Mark Attrill

Yesterday's PLAAF

Some other photos from the past

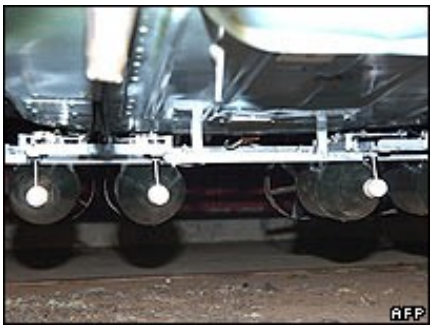
Clockwise, from bottom left: MiG-9; Lavochkin La-9; Tupolev Tu-4; North American P-51; Tupolev Tu-2.

Liberation Tigers of Tamil Eelam (LTTE)

தமிழீழ விடுதலைப் புலிகள் The **Air Tigers** was the air-wing of the Liberation Tigers of Tamil Eelam (LTTE), who used it against the Government of Sri Lanka. Though the existence of the Air Tigers had been the subject of speculation for many years, the existence of the wing was only revealed after an attack in March 2007, during the Sri Lankan civil war.

Pictures released by the Tamil Tigers in Sri Lanka indicate that they operated Czech-built Zlin Z-143 single-engine, four-seater light aircraft modified to carry four bombs mounted on the undercarriage. At around 4am on 9 September 2008, the Sri Lanka Air Force reportedly achieved its first air-to-air kill when a Chengdu F-7G successfully intercepted and brought down an Air Tigers Z-143 over Mullaittivu. The Air Tigers carried out a suicide air raid on Colombo on 20 February 2009 using two of these aircraft. Under heavy anti-aircraft fire one of these aircraft crashed into Sri Lanka Inland Revenue Department building in Colombo and the other craft was shot down near Sri Lanka Air Force Base at Katunayake.It was the ninth aerial attack attempted by the Tamil rebels since 2007. Before this, the small squadron of LTTE planes had tried to strike a variety of targets, with varying results.

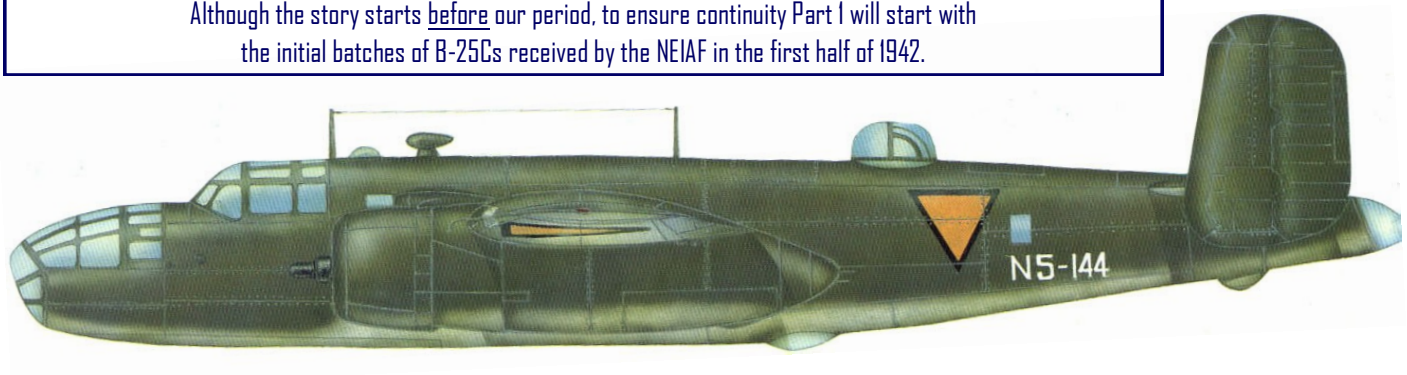
Type	Category	Utilised?
Zlin 143	Light aircraft	Possibly 5
Robinson R44 Astro (TBC)	Helicopters	Possibly 2
Micro Light (TBC)	Powered gliders	Possibly 2



North American B-25s in the Netherlands East Indies AF—Part 1

By Max Schep

In 2020, Max will be writing a series of articles on types, finishes and modifications used, between the acceptance of the first B-25 aircraft for the Netherlands East Indies Air Force (NEIAF) in February 1942, until the handover in 1950 to the Angatan Udara Republik Indonesia (AURI). Although the story starts before our period, to ensure continuity Part 1 will start with the initial batches of B-25Cs received by the NEIAF in the first half of 1942.



NEW BOMBERS

With the fall of the Netherlands, it became impossible to follow the plan of replacing the NEIAF Glenn Martins with Fokker T.IX bombers. Requests to the US government for the delivery of Glenn Martin Model 167s (Maryland) and Lockheed Venturas were rejected. In the end, 162 North American B-25Cs were ordered on 4 April 1941 and approved by the US authorities: delivery would start in October 1942. The aircraft were to be delivered with the four black-outlined orange triangles on the fuselage and under the wings, and the serials (N5-122 to -283) were located at the rear of the fuselage and on the leading edges of both wings, outboard of the engines.

B-25C serial N5-125 photographed behind an RAF Hudson at Dorval near Montreal before delivery. (Author's collection)

N5-149 a B-25D, fiscal year number 41-12499, in ferry finish after arrival in Australia in March 1942. (Collection of Gordon Birkett)

EMERGENCY ASSISTANCE

After Pearl Harbour, emergency assistance was given by accelerating the delivery of 60 B-25 Cs and Ds from US production lines. At the factory the current NEIAF markings of the period (orange triangles) were applied over the US standard finish of Olive Drab No.41 and Neutral Grey No.43. However, to ferry the aircraft to Australia and India - in the first half of 1942 - the orange triangles were over-painted over with the US "stars and bars" (white star on the blue disc with the red centre).

BANGALORE, INDIA

On delivery to Bangalore, the five B-25Cs were re-painted with the Dutch red, white and blue flags and then on 12 April 1942, were transferred to Royal Air Force control, which allocated individual aircraft letters (N5-139 was E; N5-143/D; N5-144/C; N5-145/B; and N5-148/A). In Karachi the aircraft were modified and re-painted for PRU-duties with No.3 Photo Reconnaissance Unit. For their history see "Eyes of the Phoenix-Geoffrey J. Thomas-ISBN 0 9519899 4 4".

N5-144 in RAF service as "C" during instruction for the Dutch pilots in Bangalore, April 1942 (Collection of Tornij)

North American B-25s in the Netherlands East Indies AF—Part 1

By Max Schep

FAIRBAIRN, CANBERRA

Six B-25Cs delivered to Australia went to Fairbairn, Canberra, for the newly-formed 18 Squadron NEIAF (N5-122, N5-132, N5-134, N5-136, N5-151 and N5-161). The new red, white and blue flag insignia replaced the US star. All other arrivals went to the 3rd Bomb Group of the United States Army Air Force in Australia.

PHOTO: N5-136 of the first batch at Fairbairn shows the replacement of the US insignia (with the Dutch flag) and the deletion of the fiscal-year number. (Collection of F.F. Smith)

BASIC SCHEME

The first deliveries in February – March 1942 had a straight division between Olive Drab No.41 and Neutral Grey No.43 as set in US study #42 of July 1942. The aircraft were used for training new crews for the B-25Cs. The standard nose arrangement was as seen on N5-151.

(Photo supplied by J. Koeman)

PHOTO: N5-126 (ex N5-161) made an emergency landing on 21st July near Moruya, New South Wales during a submarine reconnaissance mission and is being put back on its legs. (Collection of Casius)

AN INDEPENDENT NEIAF

On the 6 July 1942, 18 Squadron was taken out of the control of the Royal Australian Air Force and was equipped with the renumbered B-25Cs, namely: N5-132 became N5-122; N5-134 >N5-123; N5-136 > N5-124; N5-15 > N5-125; N5-161 > N5-126; and N5-122 > N5-127.
Note the underwing insignia and the serial on the wing leading edge.

LOOKOUT FOR PART 2 OF THIS ARTICLE IN THE FEBRUARY/ MARCH NEWSLETTER

Here is Max's superb book on the camouflage and markings of the RNEIAF. Click the image for more details.

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