



Serving Asian Air Arm Enthusiasts and Modellers in 60 countries

The MiG-21 in Indian service



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Some introductions, and Asian Air Arms in the News again

Apologies for the late publication of this latest edition of the Asian Air Arms newsletter. I have been very busy with a major work-related project of late, so it is entirely my fault and I am once again very grateful to our illustrious editor, Steve Komor, for putting together another bumper edition of the newsletter, which I hope will be of interest to the readership.

For this edition, I would like to make a few introductions regarding relatively new companies that have come to our attention in recent months. The first is Phoenix Scale Publications, who have now been in existence for just over 6 months but have already established themselves in the UK specialist modelling market. I have little doubt that some of our readership, particularly from the UK, will wonder if there is room for yet another series of modelling titles in a seemingly overcrowded domestic market ?. Well, in my mind the answer is a resounding 'Yes!'. The company currently publishes two monthly titles, Phoenix Aviation Modelling and Phoenix Scale Modelling, although I am only familiar with the former title. I have now seen four editions of the magazine and have been immediately struck by the refreshing approach they have adopted in presentation. Quite apart from the impressive band of experienced and objective kit reviewers that they have assembled in such a short period of time, the company have gone out of their way to deliver quality articles featuring extremely well-made models that should inspire all modellers, whether they are old hands or new to the hobby. These articles, combined with an informative yet not overdone news section, and a healthy dose of 'real aviation' pieces, provide a nice balance and have avoided the monthly becoming yet another glorified new release catalogue. Phoenix have also released the first two titles in their 'Real to Replica' Series, combining real aviation with modelling and focusing on a particular aircraft type. The first two titles cover the ubiquitous F-16 Fighting Falcon with the second title being of particular interest to Asian Air Arms fans since it covers the aircraft in foreign service, so check out the advertorial elsewhere in this newsletter. The second company I would like to highlight is Air Graphics, run by well-known modelling entrepreneur and Asian Air Arms SIG member and donor, Gary Madgwick. We have featured some of Gary's excellent 'World Air Power Update' decal releases in previous editions of the newsletter, so the company will be familiar to at least some of our readership. Air Graphics' main focus is primarily on post-war British and Commonwealth subject matter in 1:72 scale, but they have a growing range of both decals and resin products, many of which will be applicable to aircraft and helicopters operated by Asian Air Arms; the BAe Hawk, Hawker Hunter, SEPECAT Jaguar and Westland Sea King spring instantly to mind, but there are many others that feature in the company's extensive catalogue. Once again, check out the advert in this newsletter for details about the Air Graphics website AND their discount offer to members of the Asian Air Arms SIG!

As the world continues to focus on the tragic events unfolding in Ukraine, we have also witnessed plenty of action in Asia, as tensions between the People's Republic of China and Taiwan have risen once again, with numerous incursions into Taiwan's Air Defence Identification Zone (ADIZ) by elements of the People's Liberation Army Air Force. These events, along with the global impact of Russia's aggression against Ukraine and North Korea's strategic messaging, have also drawn other Asian Air Arms into flexing their military might, with both the Japanese Air Self Defence Force and the Republic of Korea Air Force having been observed conducting large-scale training events and air-orientated exercises in recent weeks.

Until next time, happy reading and Stay Safe !

Hello readers,

While looking for inspiration for my editorial, I came across this recent news article on the Air Recognition website ([Defense News aviation aerospace air force technology equipment - Air Recognition](#)), which meshes nicely with Mark's piece above:

'According to information published by the Ministry of Defense of Taiwan on May 30, 2022, thirty People's Liberation Army Air Force (Chinese Air Force) aircraft (Shaanxi KJ-500, Shaanxi Y-8, Shenyang J-16, Shenyang J-11, Chengdu J-10, Sukhoi Su-35, and Sukhoi Su-30) entered Taiwan's southwest ADIZ.

The Shenyang J-16 is a Chinese tandem-seat, twinjet, multirole strike fighter developed from the Shenyang J-11 (itself derived from the Sukhoi Su-27) and built by Shenyang Aircraft Corporation. It is operated by the People's Liberation Army Air Force (PLAAF).

The aircraft is a 4.5 generation multi-role, two-seat fighter developed from the J-11B series. The most important feature of the J-16 is its long-range, over-the-horizon attack capability and powerful ground and sea combat capabilities.

The J-16 is equipped with an AESA radar and is powered by two Chinese Shenyang WS-10A turbofan engines. Weight is reduced through the greater use of composite materials.

The aircraft is armed with a 30 mm cannon, PL-10, PL-15, and PL-21 air-to-air missiles, KD-88, YJ-83K anti-ship missiles, rockets, guided bombs, anti-radiation missiles, and YINGS-III targeting pod.'

Steve Komor



Announcement

It has come to the attention of the Asian Air Arms Special Interest Group Management Team that MA Publications of the UK (publishers of ***Model Aircraft Monthly*** and ***Scale Aviation Modeller International*** among other modelling titles) may recently have been involved in some dubious business practices which are contrary to the spirit and ethos of this particular Special Interest Group.

As many of you know, we have previously enjoyed an excellent, mutually beneficial, working relationship with MA Publications which provided both entities with excellent publicity and promotional opportunities. In light of recent events, this relationship has now been brought into serious question and we have had to take the difficult decision to sever all ties with the Company, with immediate effect.

Mark Attrill

Leader

Asian Air Arms Special Interest Group

As we all get back to some degree of normality with the reduced impact of the COVID-19 pandemic, it has been particularly gratifying to be able to resume human contact again. For one reason or another I have, until recently, been unable to meet up with anyone from our extensive Special Interest/Research Group since I took over from Brian Griffin way back in late 2020. It was perhaps fitting, therefore, that my first personal contact was with one of our Polish members, given my Baltic connection. I was recently conducting a training event in Warsaw and took the opportunity to meet up with aviation researcher Franek Grabowski, well-known for his extensive research into Polish Airmen that served in the Royal Air Force during World War II and, perhaps even more interestingly, those that carried on serving in the West after the Second World War and during the height of the Cold War. I had no idea, for example, that at least 80 Polish air and groundcrew provided assistance to the newly created Pakistan Air Force and helped form the first Hawker Tempest Mk.II and Sea Fury Squadrons. Franek and I met up at the Polish Military Museum and inevitably ended up in one of Warsaw's many excellent craft beer establishments, where we exchanged many stories on a thoroughly enjoyable Sunday afternoon over a couple of superb ales. I very much hope this will be the first of several personal engagements with SIG members throughout 2022 and I very much look forward to seeing some of you at Telford in November during Scale Model World. In the meantime, I would like to thank Franek for his hospitality in Warsaw and his support for the Asian Air Arms SIG.

Mark Attrill



Phoenix Scale Publications – A New Name in Modelling Magazines and Books

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Can we introduce you to Phoenix Scale Publications? We are a partnership of four people whose combined experience equals over 100 years working in both the aviation and modelling press. After so many years working for others, we have come together as equal partners in this new venture, with each partner bringing their own unique talents.

On the editorial side we have Andy Evans, who, during his career has been at the helm of five aviation and modelling magazines, as well as a contributor to many more. He is also a published author with over 60 aviation and modelling books to his name. David Francis is an IPMS UK and Belgium Nationals Gold winning modeller (though he freely admits there were only 3 models in his class that year at Telford!) and he has edited one of the world's best-selling magazines for six years. His work has featured in numerous aviation and modelling books and magazines.

On the design side we have Andy Folds and Jon Phillips, who have been involved with magazines and books for over 25 years. The core principles of our new business are 'Value', 'Honesty' and 'Service'.

We produce Phoenix Aviation Modeller, a dedicated aviation modelling magazine, with news, reviews, references, and full model builds. We also produce Phoenix Scale Modelling, a multi-genre magazine, with cars, trucks, aircraft, sci-fi and figures all in one place. Added to that we have a new range of 'Real to Replica' books, the first two being F-16 Part 1 'US Versions' and F-16 Part 2 'International Versions', with other titles on the E-2 Hawkeye, and Wild Weasels planned for this year.

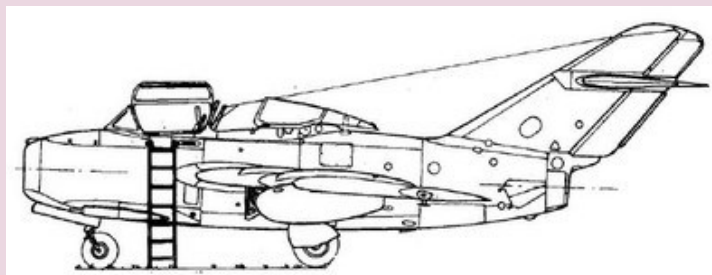
You can find more details about our magazines and books and how to order on our website www.phoenixscalepublications.co.uk, and follow us on Facebook, or we offer digital version with extra content on Pocketmags.



Cambodian 'Midget'

by Meindert de Vreeze

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The MiG-15UTI airframe is basically a MiG-15 single seat aircraft with a dual cockpit for student and instructor seated under a long canopy. When opened, the forward section of the canopy tilts to the right and the aft portion slides to the rear. The UTI has ejection seats and a single cannon with a fairing below the nose. The landing light is situated as for the "bis" in front of the left gear bay. The air brakes are small, and retain the shape of the first MiG-15 version. The NATO code name for the MiG-15UTI trainer was "Midget".



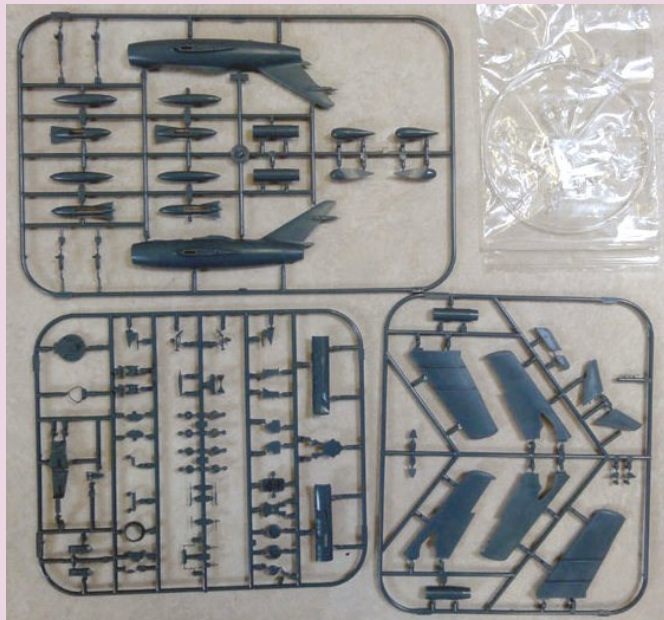
Eduard's range of MiG-15 kits are the most accurate and best detailed 1/72 Fagots available. Eduard have also released a 1/72 scale kit of the MiG-15 UTI trainer. The Eduard kit has many common plastic parts with their single seater kit and is also excellent. The new sprue has the different UTI fuselage. The parts are very nicely moulded with fine engraved panel lines. The UTI kit is very good with nice dual interior with side console details and also decals.

The kit instructions are clear and good. Different main wheel disks are provided but it is not clear which one should be used for which scheme. Probably it varied. Transparent parts are nicely done and include the mid blast shield. There are also 2 types of fuel tanks: on pylon or slipper tanks. The book "Soviet and Russian military aircraft in Asia" of Gordon and Kommissarov shows a photo on page 63 of a grey FT-2.

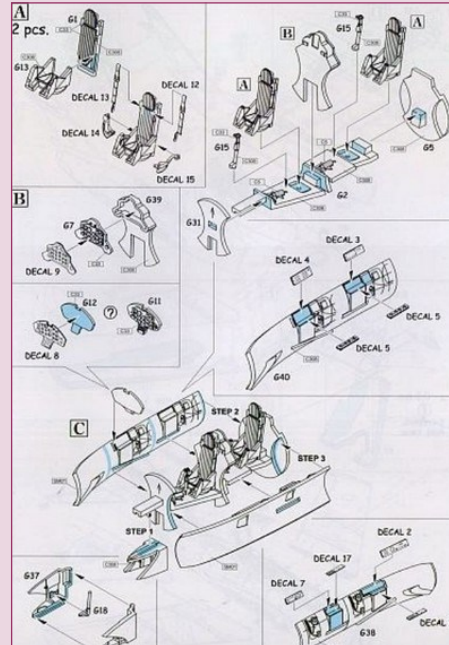
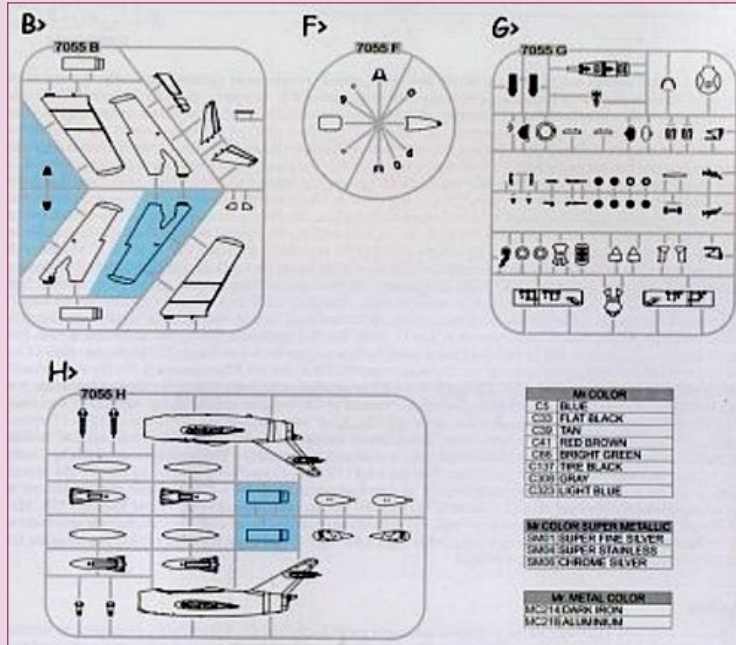
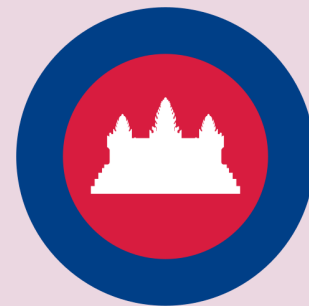
Eduard's kit #7433 is the "Weekend Edition" release with decals for two schemes:

[A] MiG-15 UTI Iraqi air force in a desert camouflage scheme, 1980s;

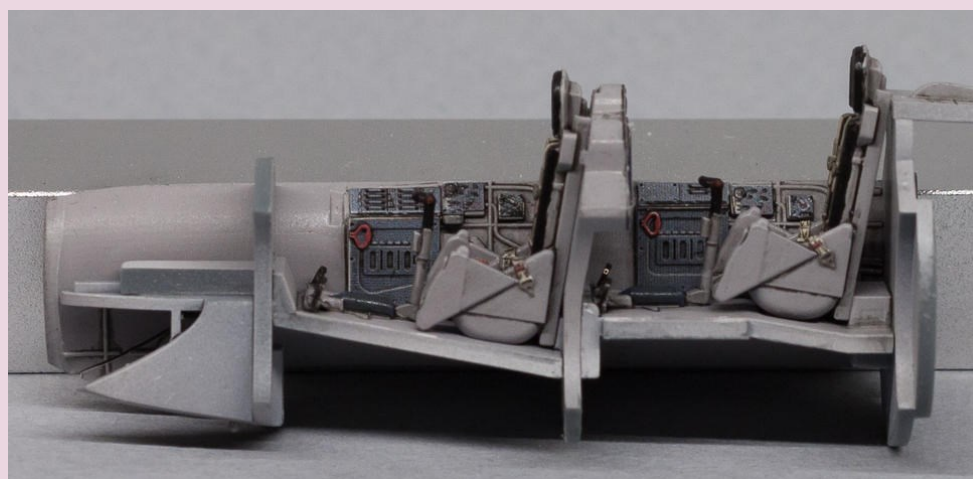
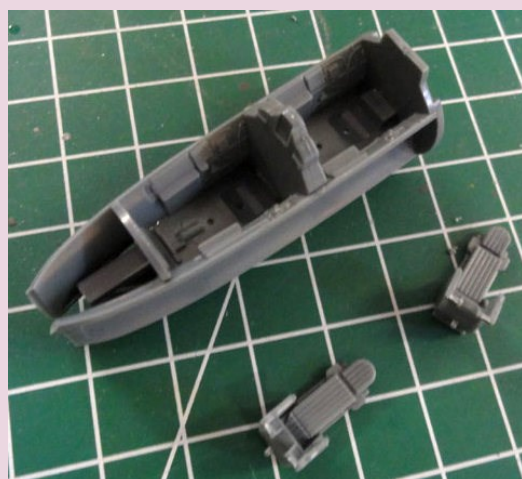
[B] MiG-15 UTI of the Soviet / USSR Space training centre. Yuri Gagarin, the first man in space, flew this later on in 1968.



This model was to be built as an aircraft of the Cambodian air force. The end of 1963 saw the arrival of 3 MiG-17 fighters together with a pair of MiG-15UTI trainers. A few years later (probably in 1965), a Chinese copy of the MiG-15UTI, the FT-2 trainer, was delivered as China began providing military support.

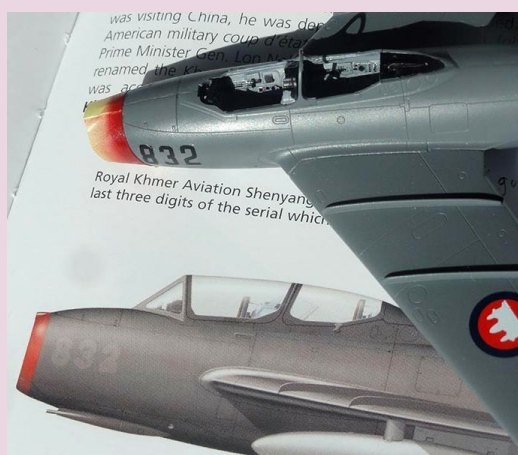


The cockpit interior was painted mid grey. The seat cushions were black leather with olive and/or medium brown seat straps. The instrument panel was mainly black or very dark grey with black boxes on the sides. The areas below the canopy are also mid grey and at the windscreen anti glare black. I only added seat harnesses, some of these were left overs from the other Eduard kits I had made.



First, the model received a base coat of grey using Revell Aqua 75 "Steingrau" with the airbrush, followed by a coat of grey FS36118 using Gunze Sangyo H305 acrylic. Then the red tip panels and nose ring were added with Revell Aqua 330 red.

The number decals came from a Trumpeter K-8 Karakorum. The wing fuel tanks were finished in a metal colour and the Cambodia roundels came from a Microscale 72-102 MiG-17 decal set. I think they are the correct size. Their orientation on the wing was "guestimated".



The nose number was sprayed over with grey. The long wire antenna and an extra blade antenna on the spine were also added.

As usual, the model received a semi-dull varnish coat of airbrushed Johnson Future /Pledge mixed with about 5% Tamiya X-21 Flat Base, and the mix was thinned with 40% Iso Propyl Alcohol (IPA). This gives an even semi-dull sheen and protects the decals.





Gallery

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S.A.F.O. extract - Philippine F-5A

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The Northrop F-5A in service Philippine Air Force 'Blue Diamonds' Aerobatic Group

ALL COLORS PER FED STD 595

MARKINGS ARE GLOSS BLACK #17038

THE ANTI-GLARE PANEL IS FLAT BLACK #37038

AIRPLANE IS PAINTED
ALUMINIZED POLYURETHANE
ALL OVER

'BLUE DIAMONDS' SCRIPT IS WHITE
#17875 AGAINST A BLUE #15044
BACKGROUND WITH A RED #11136
OUTLINE. VARIATIONS IN SCRIPT
ARE KNOWN TO EXIST.



GLOSS INSIGNIA RED #11136



GLOSS INSIGNIA WHITE #17875
(INSIGNIA AREAS ONLY)



GLOSS INSIGNIA BLUE #15044

THE UPPER, INBOARD QUADRANT OF
THE TIP TANKS IS FLAT BLACK
#37038

THE PILOT'S NAME BOARD IS BLACK #17038
WITH STENCIL LETTERING IN WHITE #17875

THE 2 FUSELAGE FUEL TANK
FILLERS ARE INSIGNIA RED
#11136 (10.0 DIA & 6.0
DIA) AND INSIGNIA WHITE
#17875 (8.0 DIA)

PILOT: MAJ FRANCO RE
CREW CHIEF: SS RAMOS MC

With thanks to Major Florentino
P. Dato-On and to Lt Col Pedro
C. Pille of the P.A.F. for
their very kind assistance.

THE 'BLUE DIAMONDS' AEROBATIC GROUP
INSIGNIA IS RED #11136 OUTLINE, BLUE #15044
FIELD, WHITE #17875 BACKGROUND AND BLACK
#17038 AIRCRAFT SILHOUETTE

THE FIN TIP IS
SEMIGLOSS GREY #26440

TAIL CONES ARE HEAT
DISCOLORED BARE METAL

Blue Diamonds

PHIL. AIR FORCE

FA-507

10507

Gus Morfis 7-23-72

Airfix 1:48 De Havilland Chipmunk T.10

by Mark Attrill

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A recent post on our Facebook page reminded me that we had not provided a review of the new Airfix 1:48 scale kit of the de Havilland (DHC-1) Chipmunk T.10, which saw service with at least four Asian Air Arms during a long and illustrious career as a basic training aircraft. The aircraft was, in fact, the first type to be designed and built by de Havilland Canada, and first flew in 1946, entering service with the Royal Canadian Air Force two years later. The vast majority of de Havilland Chipmunks were in fact manufactured under licence in the United Kingdom, with over 730 eventually serving with all three British Air Arms. Another 550 or more went into service worldwide, including with the Air Arms of Burma (Myanmar), Ceylon (Sri Lanka), Malaysia and Thailand.



In spite of its popularity and widespread use, the DH Chipmunk was not well served in the modelling world. The first mainstream kit was the Airfix 1:72 scale offering, which first appeared in 1969 and was well received and deemed to be accurate. I do recall it was festooned with rivets and raised panel lines but it stood the test of time and has been re-issued several times since. AZ Models released their first in a family of Chipmunks in 1:72 scale in 2017, and again it has been well received. In the larger 1:48 scale, the legendary John Adams of Aeroclub Models, was the first to release a limited production kit. Needless to say it was extremely accurate but a challenge for many and soon became a rarity, as did a subsequent mixed-media release from Heritage models. So, when Airfix announced their intention to release a brand new 1:48 scale kit in 2021, many aircraft modellers greeted the news with enthusiasm, since this is one of many aircraft that really lends itself to being recreated in the larger scale.

The kit is presented in the now familiar bright red Airfix box, which features attractive artwork of a late-era RAF aircraft in the standard Red/White/Light Grey colour scheme adopted in the 1980s for RAF Training aircraft. Inside the box, the modeller is presented with three sprues containing circa 70 finely moulded light grey and 5 clear parts which is a fairly high parts count for a relatively simple basic training aircraft with a fixed undercarriage and no armament. The decal sheet includes markings for no less than four aircraft; the restored example featured on the box art with No. 2 Flying Training School markings; the first British manufactured DH Chipmunk in an overall silver scheme that was displayed at Farnborough in 1949; and one each from the Fleet Air Arm and Army Air Corps, featuring different colour schemes and markings. A full set of comprehensive and clear assembly instructions, which also include full colour camouflage and marking diagrams, complete a nice little package.



Assembly is rather conventional and starts with a nicely detailed cockpit, which includes well defined instrument panels and even the floor mounted compasses. Seat cushions with integrally moulded seatbelts are also included but care will need to be taken when using these since they are not applicable to many of the original airframes where instructors and students alike often donned parachute packs that acted as the seat cushion. I have actually purchased a couple of Eduard aftermarket items to enhance the kit detail, including one of their more recent Eduard SPACE sets, which includes a set of the increasingly popular 3D decal type instrument panels together with photoetched seatbelts and other cockpit enhancements (see below). Not surprisingly, given the simplicity of the original, the entire airframe comes together quite quickly after the installation of the cockpit tub. The next stage of construction deals with a nicely detailed de Havilland Gypsy Major 8 engine which warrants careful construction and painting since one of the kit options provides the modeler with the opportunity to display the engine side panels open. The kit does feature separate flying control surfaces including two

different styles of rudder, and also offers an option for the distinctive rear fuselage mounted strakes that were later fitted to counter spin characteristics, so one will need to check references for a particular airframe very carefully. The very simple fixed undercarriage consists of six parts although I, once again, will opt to use the Eduard Brassin replacement resin wheels set (see below). Last but not least, in terms of the construction sequence, is the distinctive windscreen and canopy which are separate so the latter can be posed open. Airfix have, very thoughtfully, also provided a very useful plastic jig to ensure the panels that make up the sliding canopy are perfectly aligned for mounting onto the fuselage. I imagine that many will want to pose the canopy

open, particularly if they are using some of the excellent cockpit detailing sets that are now being released. The kit also provides some very finely detailed parts for the airframe including, for example, the operating handles for the canopy and the undercarriage mounted landing light.



As previously stated, the four decal marking options provided in the kit are for British examples and are therefore not particularly relevant to this review. That said, many of standard airframe safety, maintenance and servicing markings would be relevant for DH Chipmunks operated by other Air Arms so a short comment on the quality of the decal sheet is appropriate. Not surprisingly, the decals are equal in quality to those included in all of the recent releases from Airfix. The decals appear to be semi-matt in appearance but they do respond well when applied to a properly prepared surface and they show

good register, clarity and colour density. There have been a number of aftermarket decal sheets released to compliment this new kit but, to date, none of these sheets caters for any of the aircraft operated by Asian Air Arms. That said, some of the markings would be relatively easy to source from generic marking and serial number decal sheets, and I feel sure that one or two enterprising decal manufacturers may well release a sheet with some more exotic marking options in the near future.



This is a welcome release of an aircraft type that has been high on the wish lists of many 1:48 scale aircraft modellers for some time. Airfix are to be congratulated on producing a model that is straightforward and easy to build, with some neat features including the presentation of the landing lights, miscellaneous airframe fittings and a novel jig to help the modeller with the assembly and alignment of the cockpit canopy, an important element of the DHC-1 Chipmunk.

The basic kit will provide a nice replica in its own right but several of the aftermarket manufacturers have been quick off the mark with some modest improvement sets to further embellish your model. As I mentioned earlier, I have invested in two of the Eduard sets, mainly to take advantage of some excellent 3D decal instrument panels and seat belts, together with a resin wheel set. Kits World, better known for their excellent decal sheets, have also branched out into producing 3D decals and they have included a set of instrument panels, other cockpit accoutrements and seat belts for the DH Chipmunk in their early releases of this new line.

Highly Recommended

Mark Attrill – April 2022



Samurai Sabres!

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Samurai Sabres

The North American F-86D, F-86F and RF-86F in Japanese service

Andy Binks



In collaboration with the Asian Air Arms Research Group and Aviation

It gives us great pleasure to announce the latest book in the Samurai series – *Samurai Sabres*.

In order to match previous editions, it will be printed as a softback (20x25cm) on 100# Premium Lustre Gloss (148 GSM) Paper. As ever, created with modellers in mind, the book highlights a collection of 73 personal photographs within its 70 pages. Mimicking our previously acclaimed format, we also refer to alternative images in other publications to aid the completion of an accurate F-86 kit of a particular airframe.

With the new Airfix F-86F-40 model on the horizon, as well as high-quality classic kits in all the major scales from other manufacturers, this amazing book will guarantee inspiration.

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Photo by Akio Misawa

Taken at Komaki AB on 1 March 1968, this F-86D-45 NA wears the green tail stripe of 101 Squadron. This aircraft has been on display in the grounds of Miho AB since November 1991.

The flat area above the exhaust at the base of the tailfin is the door to the braking parachute compartment. The 16-foot diameter parachute was needed as Japanese runways were far shorter than those in the United States. Note that this aircraft has also undergone the TACAN upgrade, the second antenna of which can be seen on the lower rear fuselage, below the hinomaru.

Apart from the worn paintwork on the nose cone and the green anti-glare panel in front of the cockpit, the aircraft has an overall natural metal finish. Note the red strip along the base of the cockpit canopy, revealing that the aircraft was under the care of a crew chief from the 101 Squadron maintenance team C.

When in USAF service, the serial number of this aircraft was 52-4045.



Photos by Akio Misawa

This image of an Aluminium/Silver-painted 3 Squadron F-86F-40-NA Sabre was taken at its Misawa AB home in 1976. The hue of the nose paintwork is similar to FS11136 Insignia Red. Note the small orange patch at the top of the tailfin leading edge.

Of special interest, and seen in many photographs, is the open hatch just forward of the wing leading edge, giving access to the collection boxes for the spent ammunition cases and links. This was frequently used as a step by the pilot, but could only be opened and closed by the ground crew.

Yet another iteration of the 3 Squadron underwing fuel tank marking is carried here, showing yellow highlighting to the black nose area along with the three mysterious black and yellow markings on the side of the fuel tank seen on page 34. Note that the usual 3rd Squadron lettering is missing and that the nose of the fuel tank is worn but the red line across it has been repainted.

There is a superb photo on page 4 of *The F-86D & F-86F History in JASDF, Sabre Special* (Kantoshu) showing this Sabre on climb-out with its wheels retracting.



This will be a limited-run production - just 130 copies will be made available - so ensure you don't miss out.

Pricing will be £32 (UK), £36 (EU) or £39 (Rest of the World), all including standard postage and packing charges. To get your limited-edition copy, contact andrewbinks@btinternet.com without delay.



Taken in November 1976 during a visit by the Air Defense Command HQ Squadron to Tsuiki AB, this F-86F-40-NA Sabre (ex-USAF 55-3932) has been captured in beautiful light. As ever, the overall finish is that of FS17178 Aluminium/Silver. Of note is the aircraft serial number stencilled onto the rear of the underwing pylon. The photo on page 13 of *The F-86D & F-86F History in JASDF, Sabre Special* (Kantoshu) shows a rear view of this aircraft in the same colours.

The JASDF Blue Impulse aerobatic display team operated this Sabre from 1964 until 1966. A photograph on page 71 of *North American F-86 Sabre* (Hobby Japan, ISBN 978-4-7986-1036-8) shows the aircraft in team markings. Following this assignment, the airframe entered storage at Gifu AB on 18 January 1967 and was then reactivated on 22 September 1976. Its second period of service was brief, as the aircraft had been returned to storage by mid-1977. A year later, its original fuselage having been replaced by that from 12-7996, 512 was re-activated again, for just one more year before being withdrawn from JASDF use in August 1979.

After being returned to the USA and converted to a QF-86F target drone in 1986, this aircraft was operated by the USNWC (coded 880) and the PMTC as 553932. No record of its ultimate fate was found.

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Wings Over the Hindu Kush – Air Forces, Aircraft and Air Warfare of Afghanistan 1989-2001

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WINGS OVER THE HINDU KUSH

Air Forces, Aircraft and Air Warfare
of Afghanistan, 1989-2001



Tom Cooper, of aviation publishers Helion & Company, and a long standing member and supporter of the SIG, has once again supplied me with a number of titles from the excellent **Asia@War** series that will, no doubt, be of interest to Asian Air Arm SIG members. As many of you know, I have a fascination with Post World War II conflicts and, in particular, the air wars or campaigns that delineated many of these events. The seemingly endless conflict that has taken place in Afghanistan for almost 50 years since the overthrow of Zahir Shah, the last monarch of Afghanistan, is one such subject, and this particular book focuses on the extremely complex situation that pervaded throughout the period following the ill-fated Soviet invasion and occupation in Afghanistan between 1979-89 and the US-led operations that took place in the aftermath of the 9/11 attacks on the USA from 2001. The endnotes on the author, **Lukas Müller**, describe him as an 'amateur historian' but this impressive book is anything but amateur! In mitigation, Lukas has been studying the topic for over 20 years and has amassed an enormous amount of research material, but putting it all together in some semblance of order has been a mammoth



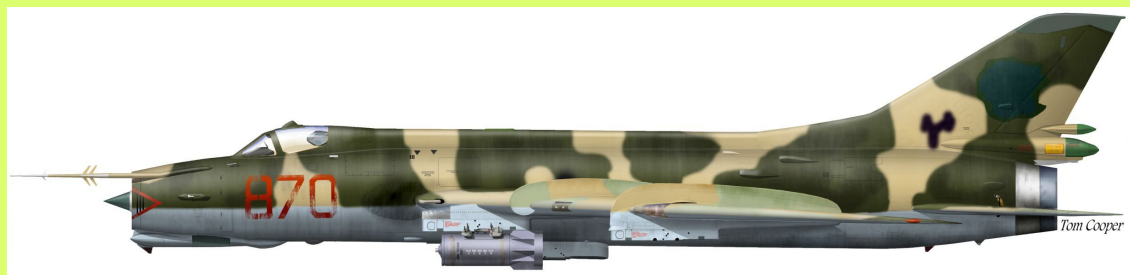
task, as he navigates the complexities of the alliances, broken alliances, internecine warfare and tribal conflicts that permeated Afghan politics and government during a troublesome 12-year period in the nation's history.

The author provides a very useful 'scene setter' with an overview of the geo-political situation leading up to the late 1980s, together with a brief history of Afghanistan, a breakdown of the ethnic groupings and the main players during the Afghan Civil Wars in the 1980/90s. This is followed by a short history of the Afghan Air Force before 1989. The main body of the text then charts the hugely complex history of air warfare in Afghanistan between 1989-2001 and pieces together the ebb and flow of conflict and each of the air arms that were formed, disbanded, reconstituted or reformed during the same period. There appeared to be at least six different Air Arms or entities operating during this period with many sub-groups, but the author does an admirable job in highlighting their individual attempts to support what was largely a land campaign between Afghan Government Forces and/or the various ethnic or tribal groupings during this extremely turbulent time in the modern history of Afghanistan. In doing so, the logistics and maintenance challenges are also highlighted underlining the fact that in spite of having a huge number of aircraft at their disposal the majority of entities struggled to operate a fraction of the number available, given the very real issues with training in particular; both for aircrew and ground crew. Where possible, individual or key moments in the delivery of the air campaign are emphasised with some fascinating stories that underlined the chaotic nature of warfare in this region over the period in question.



The air activities associated with the campaign in and around Jalalabad in 1989/90 and the so-called Airstan incident, involving a Russian Ilyushin Il-76 of dubious ownership were particular highlights for me, but there are plenty of other anecdotal or highly descriptive stories throughout the comprehensive text offered in this volume. The written element of the book culminates with a series of

appendices covering Orders of Battle for each air entity, a list of known defections between 1989-2001 and another, very



non-combat losses in the latter table being quite notable.

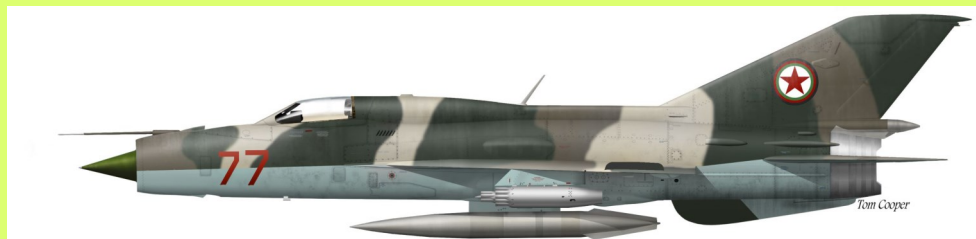
The book also provides a liberal and extremely helpful number of maps and tables to assist the reader with referencing the complexity of the subject too, with numerous references to bases and equipment. I was less enamoured with some of the photographic content, although it is fully appreciated that it is notoriously difficult to source high quality imagery of military equipment in Afghanistan during the time period in question. Although one can accept that a highly rare but poor image is better than none, I would personally



challenge the value of screen 'grabs' which in my mind do not offer much to the finished product, but each to their own. Given the aforementioned limits in accessibility, much of the photographic content has been sourced from those members of the international community that have managed to gain entry to contemporary or former military sites after 2001 and, in this case, these images do have some use in determining the original colour schemes and markings applied to aircraft in Afghanistan during the 1990s. Where this book really scores heavily however is in the presentation of its illustrations. For the modeller and aviation researcher in particular, the highlight of the book is the inclusion of an excellent selection of aircraft and vehicle Colour Side Profiles (CSP) by Tom Cooper, Luca Canossa and David Bocquelet which cover 15 pages. Each and every profile quickly dispels the impression that the vast majority of Afghan aircraft sported very similar colour schemes or markings. My particular favourites are an extremely scruffy MiG-21PFM operated by Dostum's forces after



1992, another earlier model MiG-21FL in a rather unusual medium blue colour scheme and operated by Massoud's air force over the same time period and a Mil Mi-35 Hind, also operated by Massoud from the infamous Panjshir Valley in the late 1990s. Other subjects include Mil Mi-6MTV 'Hips' and a number of fixed-wing transport types operated in Afghanistan with several sporting civilian airline style colours. For those readers that may be interested in Ground Based Air Defence assets, there are also several profiles covering military vehicles dedicated to this role, including a fascinating BMP-1 Infantry Fighting Vehicle which sports a UPK-23 gun pod (normally fitted to Soviet-era Ground Attack aircraft) mounted on top of the turret!. All of these profiles provide a



great deal of inspiration for modellers since they do also highlight the plethora of individual insignia worn by the various aircraft, and here Tom Cooper has helped again with a very comprehensive colour table providing enlargements of all of the various 'national' insignia applied to both aircraft and military vehicles.

This volume was a great read and is another extremely valuable addition to the Helion and Company **Asia@War** series where, once again, the Series Editors have combined the written talents of a well-informed author with a host of previously unpublished imagery sourced from personal collections and archives and a superb selection of colour side profiles, maps and tables to produce a high quality reference book on an unusual and little publicised subject. I certainly look forward to reading Lukas' next book in due course.

Thoroughly recommended to anyone with an interest in the lengthy conflict in Afghanistan and, in particular, the activities of the various air entities and factions during the 12-year Afghan Civil Wars that occurred between 1989-2001.

Mark Attrill
April 2022

Ed: I would personally like to thank Tom Cooper for providing me with the colour profile drawings used in this article.



Asian Air Arms News



In February, the Indian Air Force (IAF) showcased its Tejas Light Combat Aircraft (LCA) at the Singapore Airshow for the first time, to support India's efforts to position the aircraft for existing and emerging regional requirements.

The service dispatched three of the Hindustan Aeronautics Limited (HAL)-made aircraft to the airshow, with one example placed on static display accompanied by industry and government officials.

At the show, Tejas LCA pilot Group Captain Manish Tolani described the Tejas as a "4.5 Generation" fighter aircraft with proven capabilities across various climatic conditions, including the hot and humid weather across Southeast Asia. "India has one of the most diverse climate conditions in the world," said Gp Capt Tolani, in reference to the contrast between the relatively arid climate of the subcontinent's northern regions and the southern regions' tropical weather. "Given that the Tejas can perform in these climates prove that it will also be able to undertake missions in this part of the world," he added.

The Tejas LCA has a combat weight of 13,330kg with a length and wingspan of 13.4m and 8.2m, respectively. This makes it the smallest lightweight, multirole single-engined tactical fighter in the world. The aircraft is powered by a General Electric F404-GE-IN20 turbofan which enables it to operate at altitudes of up to 50,000ft.

The Tejas LCA is being offered for the Royal Malaysian Air Force (RMAF)'s Light Combat Aircraft/Fighter Lead-In-Trainer (LCA/FLIT) programme announced in June 2021, which calls for a total of 18 newbuild aircraft to replace the service's fleet of Aermacchi MB-339CM jet trainers that are already grounded, as well as its BAE Systems Hawk Mk 108 twin-seat and Mk 208 single-seat light attack aircraft. The effort is one of the key initiatives being pursued under the country's Capability Development Plan 2055.

The aircraft, manufactured by Hindustan Aeronautics Limited (HAL), entered service with the Indian Air Force (IAF) in July 2016. Tejas is developed as a single-seat fighter aircraft for the IAF, as well as a two-seat training aircraft. Lightweight materials, including aluminium, lithium and titanium alloys, and carbon composites, have been used in the construction. The wing structure includes composite spars and ribs with a carbon fibre-reinforced plastic skin. The LCA Tejas is fitted with a night-vision compatible glass cockpit with a Martin Baker (UK) zero-zero ejection seat.

The cockpit has two 76mm × 76mm colour liquid crystal multifunction displays developed by Bharat Electronics, a head-up display developed by the government-owned Central Scientific Instruments Organisation (CSIO) in Chandigarh, and a liquid crystal return-to-home-base panel and keyboard. A helmet-mounted display and sight (HMDS) is also included, while the hands-on throttle and stick control system minimises pilot workload and maximises situational awareness.

The Tejas is the second supersonic fighter developed by HAL after the HAL HF-24 Marut. The Tejas achieved initial operational clearance in 2011 and final operational clearance in 2019. The first Tejas squadron became operational in 2016, as No. 45 Squadron IAF *Flying Daggers* was the first to have their MiG-21s replaced with the Tejas.



Manufacturers - Please can we have a kit of this attractive little aircraft?

The Singaporean A-4 by Yk Goh

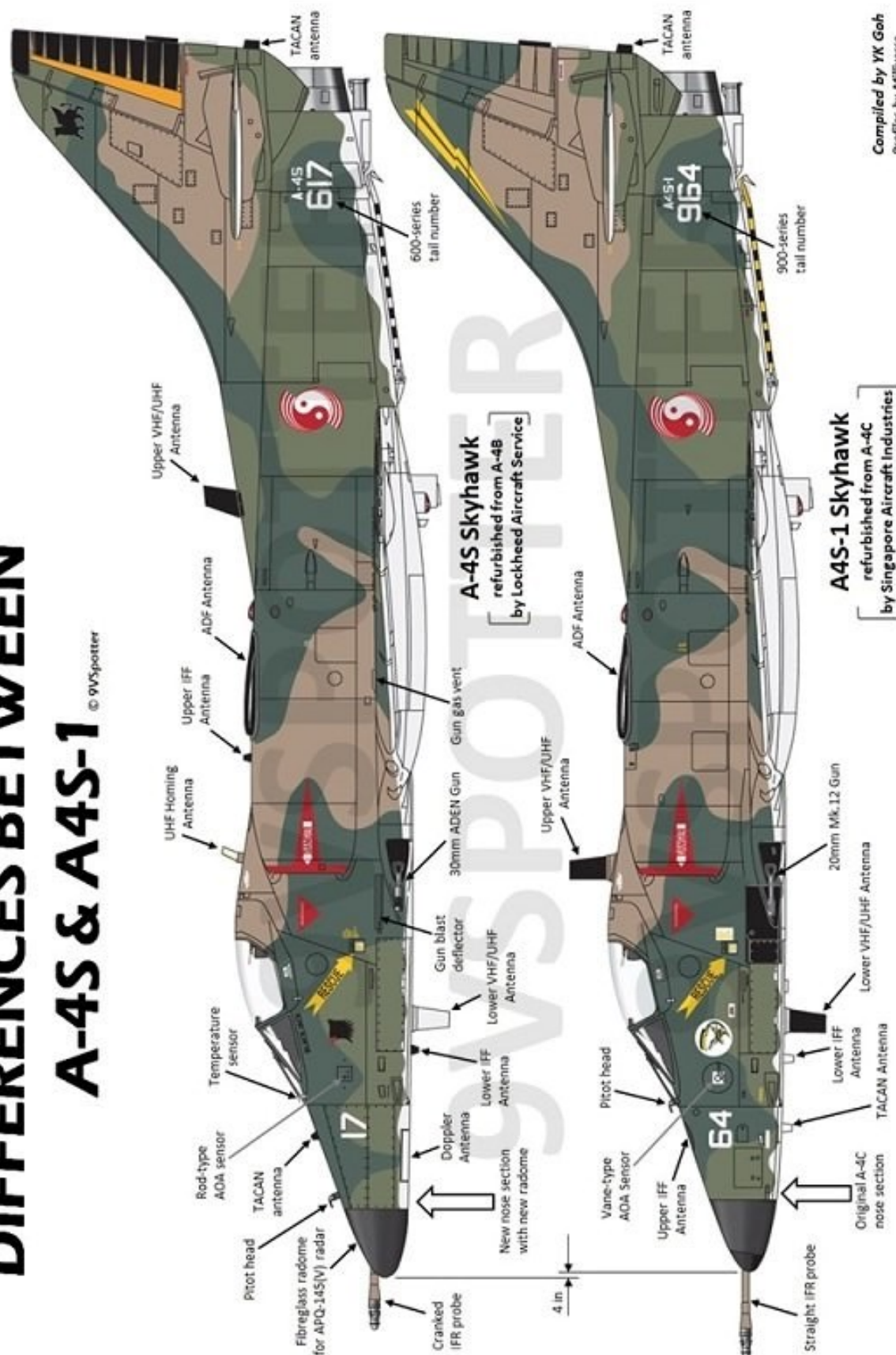


Many modellers are unaware that the A-4S and A4S-1 are different in many ways, although they look almost identical. The main difference is in the nose structure. The A-4S, which is based on the A-4B has a completely new nose comprising of an extension and a fibreglass radome for the APQ-145 radar. The contours and panel lines are thus unique and not the same as that of the A4S-1, which is basically an A-4C.

These two profiles shows where the differences are and should help modellers in coming up with accurate representations of the A-4S and A4S-1.

DIFFERENCES BETWEEN A-4S & A4S-1

© 9V5Spotter



This article is taken from the AAA SIG's Facebook page, and thanks go to Yk Goh.

'My Fair Lady' - MiG-21: Over 50 glorious years of service in the Indian Air Force

ASIAN AIR
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In the aviation world, especially that of fighter aircraft, the MiG-21 is undoubtedly an icon. The aircraft entered production in 1959 and over the next 25 years or so, more than 11,000 MiG-21s of different variants were produced. If we factor into account the Chinese copy of the MiG-21, the J-7, into account, then more than 14,000 aircraft were produced.

The MiG-21 was designed as a high speed, high altitude interceptor, working in a ground control interception environment, to shoot down incoming American bombers approaching the USSR mainland. The way it was supposed to work was this – after radars had identified the American bomber, a ground controller, using information about the enemy and his own (friendly) aircraft, would direct the MiG-21s towards the incoming bomber, placing them in a favourable position to launch their missiles. This mode of operation was also successfully employed by the Vietnam People's Air Force (VPAF) of

North Vietnam in air battles against the USAF. The North Vietnamese ground controllers would direct and position their MiG-21s in a favourable position to fire their AA-2 'Atoll' or K-13 short-range, infra-red missiles at the USAF fighters and then immediately scoot away at high speed. Even if they didn't actually hit the USAF strike aircraft (infra-red technology wasn't too great then), the attack forced them to jettison their payload and abort their missions.

The Indian Air Force went on to adapt this short-range, high speed, high altitude interceptor for a variety of roles. From air combat to ground attack to reconnaissance to electronic warfare; The MiG-21 in IAF service has done what even the original designers never envisaged when they designed this aircraft.

After having done all of the above, during the 1990s the IAF worked out the most comprehensive upgrade for the MiG-21, turning this venerable fighter into a formidable fighting machine – thus the MiG-21 'Bison' was born.

"In life, you offered this pilot a seat more coveted than that of a king's; in death, you took an air-warrior to his glorious Valhalla."

These words by former Air Chief Marshal A.Y. Tipnis, who led the Indian Air Force (IAF) during the Kargil War in 1999, sum-up the feeling which fighter pilots who've cut their teeth on the MiG-21 have for this fighter aircraft.



No.28 Squadron,
First Supersonics'

No other aircraft has seen such extensive service in the IAF as the MiG-21. The IAF's love affair with the MiG-21 started in 1963-64 when 9 MiG-21 aircraft, comprising of six MiG-21 PF (Type 76) and three MiG-21 F-13 (Type 74) entered service.

No 28 Squadron, aptly named 'First Supersonics', was established in the early 60s to induct this new fighter from the USSR. Interestingly, the IAF had evaluated the F-104 'Starfighter' and the French Mirage III, and it seems that IAF pilots had a favourable view of the American fighter. But then Cold War shenanigans and a Soviet offer of license production of the MiG-21 in India tilted the scale in the MiG-21's favour.

Over the years, the IAF has operated many various types of MiG-21. Overall, the IAF has had more than 900 MiG-21s in service since 1963-64; it reached its peak strength in the early 90s when more than 20 Squadrons were operating various MiG-21s.

In addition to the nomenclature given by the Soviet Union to various types of MiG-21s, the IAF also followed its own nomenclature, which I think was applied by HAL and went by **Type-XY**.

The types of MiG-21s operated by the IAF are as follows:

(1) MiG-21 F-13 (Type-74) [NATO reporting name: "Fishbed-C"]





This was one of the first two types of MiG-21s to be inducted into No 28 Squadron in the IAF. It was also the second type of MiG-21 to be produced by the USSR. The Type 74 had one internal cannon and could also carry 2 x K-13 'Atoll' air-to-air missiles. While I don't have exact numbers of how many MiG-21 F-13 aircraft were operated by the IAF, my assessment is that no aircraft after the initial lot of 6 aircraft were imported.

Type-74 in IAF colours



Indian Air Force MiG-21 BC821, 28 Sqn "First Supersonics", Chandigarh, 1963, Flying over Western Desert.

(2) Mig-21 PF (Type-76) [NATO reporting name: "Fishbed-D"]

Mig-21PF Fishbed at the National Museum of the United States Air Force. (U.S. Air Force photo)



Along with the Type-74, this was the second type of MiG-21 to be inducted into the IAF. A total of 12 MiG-21 PF (Type-76) were operated by the IAF. The main difference between the Type-74 and the Type-76 was that the Type-76 carried an R1L airborne intercept radar but did not have an internal cannon. As the below-mentioned incident shows, this lack of cannon was to prove troublesome during the 1965 war:

"Since the Kutch alert, 28 Sqn had moved to Adampur and was on high alert. Training, especially missile firing drills, radar operations and interception, had been intensified. Leave had been cancelled. India's first supersonic squadron was itching to show its stuff, especially against the PAF's

F-104. After the first few Combat Air Patrols (CAPs) over Pathankot from Adampur, one flight was moved to Pathankot. Mally Wollen (who had taken over as CO) fired a missile at a Sabre, but it missed because of the ground clutter at low altitude. Unfortunately, he was flying a Type-76, which didn't have a cannon. When he landed back he is supposed to have said "For a cannon! Just for a cannon!" He was so frustrated that he almost brushed the Sabre with his fin!"

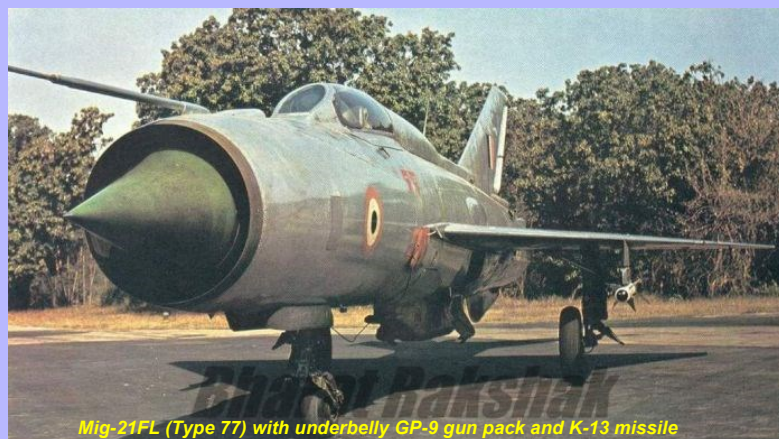
(3) MiG-21 FL (Type-77) [NATO reporting name: "Fishbed-D"]

This was the first MiG-21 variant which was both imported from the USSR and also mass produced in India under license by Hindustan Aeronautics Limited (HAL). It was an enhanced version of the MiG-21 PF (Type-76) and featured an R2L search-and-track radar. Like the MiG-21 PF (Type-76), it also did not have internal cannon. However, after experience in the 1965 war, the IAF ordered GP-9 gun packs, which could be mounted on the underbelly of the aircraft. However, mounting the GP-9 gun pack meant that MiG-21 FL (Type 77) could not mount an external fuel tank and this impacted upon the combat radius of the fighter. Combat radius with GP-9 gun pack and without external fuel tank was about 100 miles, while with the fuel tank it was 140-180 miles [source: *Eagles Over Bangladesh – IAF in the 1971 Liberation War* (Authors: PVS Jagan Mohan and Samir Chopra)].

Mig-21 (Type 77) from No 8 Squadron 'Eight Pursuit'



Mig-21FL (Type 77) with GP-9 Gun Pack and K-13 AAM



Mig-21FL (Type 77) with underbelly GP-9 gun pack and K-13 missile



Production of the MiG-21 FL (Type-77) started from 1966 onward, and a contract for 195 aircraft was placed on HAL. By 1971 war, about 150 MiG-21 FL (Type 77) were in the inventory of the IAF; production continued until 1973 [source: *Eagles Over Bangladesh – IAF in the 1971 Liberation War* (Authors: PVS Jagan Mohan and Samir Chopra)].

The last MiG-21 FLs were retired in 2013.

The MiG-21 FL (Type-77) played a crucial role in the 1971 war. In aerial combat, its score was:

- Lockheed F-104 Starfighter – 4
- Shenyang F-6 (Chinese copy of the MiG-19) – 1
- Canadair F-86 Sabre – 1

This painting of Flt Lt B B Soni, in MiG-21FL C-750, shooting down a PAF F-104 Starfighter was commissioned by Vayu Aerospace Review



Painting of Mig-21FL shooting down an F-86 Sabre



Six MiG-21s were lost in combat due to various reasons, although only one was lost in Air-to-Air Combat, to an F-86 Sabre, on the last day of the war.

This high-speed interceptor was adapted by the IAF for the ground attack role. It played a leading part in neutralizing the Pakistan Air Force (PAF) airfields in East Pakistan, now Bangladesh, thereby denying the PAF any space to intervene in the land battle.

The prowess of IAF MiG-21 FL (Type-77) crews in the ground-attack role is best illustrated in the attack on the Governor's House in Dacca which led to the resignation of the Governor and the civilian authority in what was then East Pakistan. The details of the incident are narrated below:

“Amazingly, as soon as I alighted from a chopper at Tezgaon on the day after surrender, the first person who came rushing to me was a Russian. He had learnt from another member of our party that I had flown one of the MiG-21s which had bombed the runways. He asked me point-blank to tell him honestly which kind of bomb sight we used for such pinpoint bombing and effectiveness.

He said he saw bombs falling for days nowhere else but on the runways. I thanked him for the compliment and reminded him that we were flying their MiG-21s and they should know which gun sights they had provided us. He shook his head in disbelief. He had read the PAF claims that Indian MiG-21s in the east were using laser gun sights. No one was ready to believe the truth, that what we actually used was the same old primitive fixed gun sight for our bombing.

The accuracy achieved was through our extensive training practice orientation, selection of attack techniques appropriate to the situation, sheer determination, motivation and guts in the face of enemy fire. The No.28 ‘First Supersonics’ were soon named ‘Runway Busters’ by the C-in-C of EAC, Air Marshal H.C. Dewan. We had earned our spurs and found a place in the history of air warfare.”

Another very famous incident associated with the MiG-21 FL (Type-77) and the Bangladesh Liberation war is the attack on the Governor's House on 14th December 1971:

“On 14th December I had just returned from a close-support mission in the morning from Mainamati Cantonment when Group Captain Wollen came rushing to our operations room and said, “Bhoop, a very critical and urgent task has come from Air HQ. There is a very important meeting going on at Circuit House, Dacca, and this building needs to be attacked at 1120 hrs.”

I [said] that first, it was already 1055 and it required 21 minutes to be at Dacca, and then “Where in God's name is the Circuit House located in Dacca?”

MiG-21s of No.28 Squadron and No.4 Squadron plaster the Governor's House at Dacca – leading to the collapse of the East Pakistani Regime. Painting by Deb Gohain





He said, "If you hurry up you can just about make it. Here, I have a tourist map of Dacca and here, next to this road crossing is the Circuit House." I looked back at him, the Circuit House was part of a densely populated area of Dacca, and from the air one could see hundreds of road crossings, how was one to pick that one? I simply said, "Yes Sir, it shall be done." I borrowed that map from him to take along, and with this, search for that Circuit House after getting overhead Dacca.

For this mission I was taking four MiG-21s loaded with 32 high explosive rockets each. I was strapped in the cockpit of the aircraft and started the engine, when I saw one of our Flight Commanders waving a paper and run towards me. "Sir, this is for you." It read, "Target is Government House, repeat Government House and not Circuit House. Confirm understood. Best of luck and good shooting. Mall."

I raised my thumb to confirm that I had noted the change. I quickly scanned the tourist map in my lap and located the Government House, and taxied out. At this stage I did not inform the other three members of my team, which consisted of Flight Lieutenant Vinod Bhatia, Flight Lieutenant Raghavachari and Flight Lieutenant Malhi, of the change as I did not want to announce this on R/T for the whole world to know.

As we were approaching Dacca and had barely a minute to go, I gave the new target to my numbers 2, 3 and 4. I described the rough location of the target and asked them to look for it. Flight Lieutenant Bhatia spotted it first, calling that the target was at 11 o'clock, 500 yards away. It was a magnificent old-styled palatial building with a high dome, situated in the middle of a lush green compound. There were quite a few vehicles inside the entrance gate.

I did a "chakkar" around it to confirm its identity and then ordered the attack, taking the building from broad side. I aimed at the room below the dome, others took on other portions. We did two passes each and fired 128 rockets into the Government House.

By the second attack, smoke and dust could be seen rising from many locations from the abode, the mightiest in East Pakistan. It obviously broke the backbone of the civilian Government. Two days later General Niazi, the Supreme Commander of the Pakistan Military in East Pakistan, was to surrender to the Indian Defence Forces along with 93,000 troops."

C-779 is the same legendary fighter aircraft which was flown during the air strike on the Governor's house in Dacca in the 1971 Indo-Pakistan War. Wg. Cdr. B.K. Bishnoi, CO of the No.28 Squadron, was flying C-779 during that mission.



(4) MiG-21 M/MF (Type-96) [NATO reporting name: "Fishbed-J"]

The evolution of the MiG-21 continued in the USSR, and the next iteration of the type, which was supplied to third-world countries, was the MiG-21M where M stands for Modernizirovanny ("Modernised"). It was termed the Type-96 in IAF service. Compared to the MiG-21 FL (Type-77), the MiG-21 M (Type 96) had an internal Gsh-23L, twin-barrel, 23mm cannon. It had four pylons (2 under each wing) which could carry external fuel tanks (on outer pylons) and missiles. It was the first multi-role version of the MiG-21 series.

A further evolution of the MiG-21M (Type-96) was the MiG-21MF (Type-96F), where MF stood for Modernizirovanny ("Modernised"), F = Forsirovanny ("Up-rated engine"). Compared to the MiG-21M, which had a R11F2S-300 engine, it had a R-13-300 turbojet engine. The MiG-21M/MF also featured the first instance of Zero-Zero ejection seats (the pilot could eject even if the aircraft was stationary and on the ground).

The MiG-21M/MF started entering service from 1973 onward. A total of 158 aircraft of this type (93 MiG-21M and 65 MiG-21 MF) entered into IAF service. It equipped four squadrons and one flight of the IAF. As per one ex-fighter pilot, it was a much-loved version of MiG-21. The last of the type was retired from IAF service in early 2018.

The MiG-21M/MF also has a strong connection with the Kargil War of 1999.



17 Sqn 'Golden Arrows' emblem



A MiG-21MF, piloted by Squadron Leader Ajay Ahuja, Vrc, from 17 Squadron 'Golden Arrows', was on a photo-reconnaissance mission in the Kargil sector. At the same time, Flt Lt Nachiketa was on a ground attack mission in his MiG-27. While undertaking his mission, Flt Lt Nachiketa's fighter suffered an engine flameout (engine shut-down in mid-air) and he had to bail out.

In an attempt to identify the final location of Flt Lt Nachiketa, so that he could pass on the coordinates to rescue team, Squadron Leader Ajay Ahuja continued to circle in the area. By doing so, he exposed himself to man-portable air defence systems (MANPAD) – which are basically shoulder launched surface-to-air missiles, carried by Pakistan Army forces occupying the high mountains. Subsequently, he was hit by an FIM-92 'Stinger' missile. His last communication was, "Hercules, something has hit my plane, the possibility of a missile hit cannot be ruled out, I am ejecting over...(location)." [4]

It is believed he was killed by the Pakistan Army after he'd safely landed on the other side of the Line-of-Control.

Interestingly, the Commanding Officer (CO) of 17 Squadron 'Golden Arrow' during the Kargil War was the present Chief of the Air Staff (COAS), ACM B.S. Dhanoa.



(5) MiG-21 Bis (Type-75) [NATO reporting name: "Fishbed-N"]



The MiG-21 Bis (Type-75) was the definitive version of the MiG-21, which came into being in the USSR in the early 70's.

It is an advanced variant with further improved avionics indicated by the ILS antennae under the nose and on the fin tip. Standard avionics include an automatic radio compass, IFF and a Sirena-3 RWR system. The aircraft has full blind flying instrumentation with attitude and heading indicators given by the radio-controlled gyro platform. There is also a search & track radar. The gyro gun-sight can maintain precision up to 2.75G, and automatic ranging can be fed into the gun-sight.

The airframe has a lifespan of 2,685 hours.

The MiG-21 Bis (Type-75) went on to be the most numerous MiG-21 type to enter service with the IAF, a total of 290 of this type having been ordered.

Incidentally, one of the first squadrons to take part in Operation Safed Sagar, the name which the IAF gave to the air campaign in the Kargil War, was the Srinagar-based No 51 Squadron 'Sword Arm', the same Squadron to which Wing Commander Abhinandan belongs (see below). At that time, it was equipped with the MiG-21 Bis.



No. 51 Squadron
'Sword Arm'

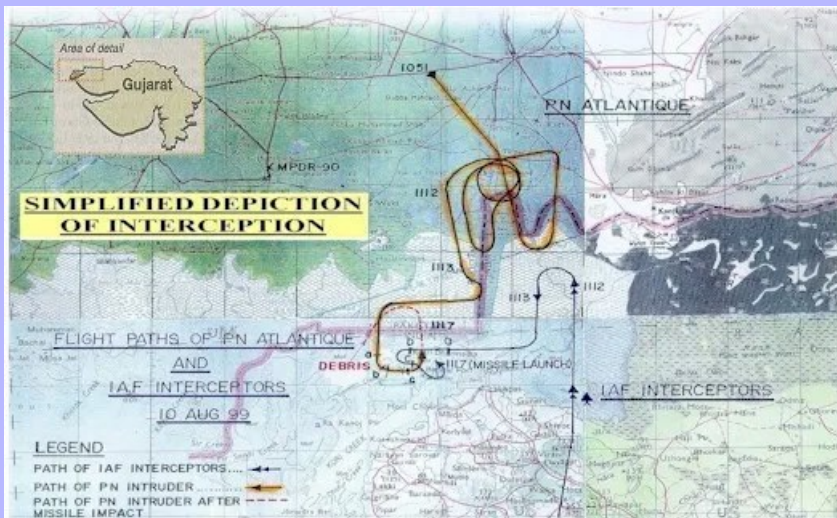


A MiG-21 Bis of 51 Sqn being readied for a strike mission during the Kargil War



51 Squadron shoulder patch

Another famous incident associated with the MiG-21Bis (Type-75) is the downing of a Pakistan Navy Atlantique aircraft in the Gujarat sector. Only a month after the Kargil War had been declared as over, on 10th August 1999, IAF radars detected a Pakistan Navy Atlantique maritime patrol aircraft approaching the International Border (IB). The aircraft violated Indian airspace multiple times. As it tried to flee back into Pakistan, Squadron Leader Bundela of No 45 Squadron 'Flying Daggers' shot down the Pakistan Navy aircraft with an R-60 air-to-air infra-red heat-seeking missile.



No.45 Squadron, 'Flying Daggers'



Mig-21bis of No 45 Squadron

(6) MiG-21 Bison

Sometimes during the late 90s, the IAF took a decision to enhance the combat potential of the venerable MiG-21. This was at a time when the Light Combat Aircraft (LCA) project had been launched and it was expected to replace MiG-21s in IAF service. However, decision-makers in the IAF rightly felt that the objectives of the LCA program were very ambitious, and, given the state of India's industrial capability, unlikely to be realised in the projected time-frame.

Therefore, as an interim measure, a decision was taken to modernize 125 MiG-21 aircraft. The MiG-21 Bis (Type-75), being the 'newest' of the type in IAF service, were chosen as the candidate for development, 'New' here being a relative term because the last MiG-21Bis was manufactured at HAL in 1985!

The upgrade was done by a consortium of Hindustan Aeronautics Limited (HAL) and MiG-MAPO along with other Indian agencies. The first two aircraft were upgraded in Russia and joined the IAF in 2001. Thereafter, the upgrades were done in India by HAL. The first squadron to be equipped with the MiG-21 Bison was No. 3 Squadron, 'Cobras'. The feedback of the first set of pilots who flew the upgraded MiG-21 Bison was:

"The pilots termed the aircraft as a 'revelation' – they were most impressed by the avionics and new systems, though the airframe and engine were the same. All five pilots reported the change as 'fantastic'".

The main upgrades added to the MiG-21 are as follows:

Phazotron NIIR Kopyo multimode, X-band pulse Doppler radar.

Ability to fire R-73 Close Combat Missile or Within-Visual-Range missile (WVR) – the one fired by Wing Commander Abhinandan to shoot down a PAF F-16D.

Ability to fire R-77 Medium-Range or Beyond-Visual-Range Missile (BVR).

SURA helmet mounted sight, used in conjunction with R-73 missile. This allows the MiG-21 Bison pilot to target an enemy fighter by simply looking at it; this is called 'off-boresight capability' because the pilot does not have to position his aircraft behind the enemy aircraft. He can target the enemy fighter flying to his left or right by simply turning his head towards the target.

A new nosecone.

New canopy and single-piece windshield, which gives much better visibility to the pilot compared to the older MiG-21 Bis.

Sextant's TOTEM RLG-INS with NSS-100P GPS embedded GPS receivers.

El-Op Head-up Display (HUD).

Sextant MFD-55 LCD display.

Autopilot.

DRDO's Tarang radar warning receivers (RWR).

Digital flight data recorder.

New liquid-air cooling system.

Hands on Throttle and Stick (HOTAS) controls, reducing the pilot's workload and allowing him to more efficiently manage various functions.

Twin conformal Vympel flare dispensers (26mm, 120 rounds), for protection against heat seeking missiles.

About 5 squadrons of the IAF are known to operate the MiG-21 Bison, and the type will continue to be in service till 2025.



A pair of Mig-21 Bison



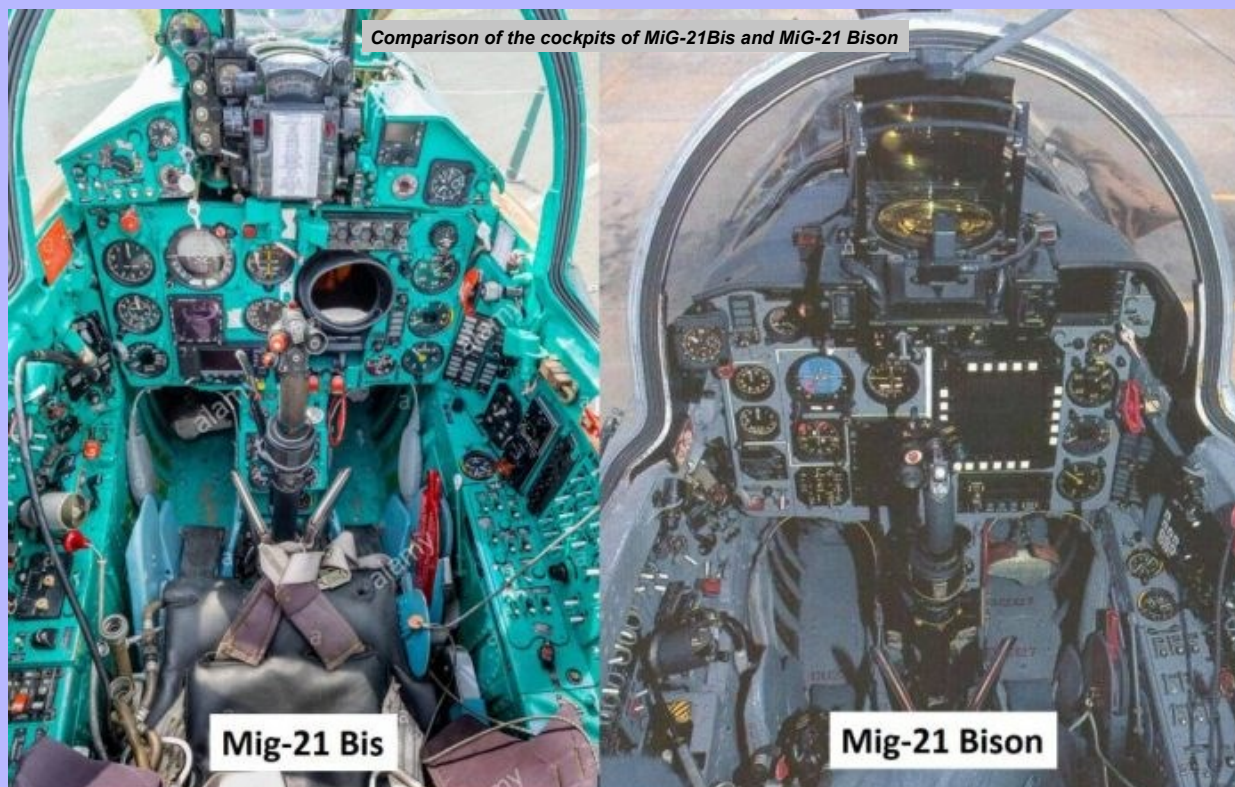
A MiG-21 Bison of No 32 Squadron 'Thunderbirds' displaying the entire set of armaments it can carry



A MiG-21 Bison equipped with R-77 missiles on inner wing pylon and R-73 missile on outer wing pylon



No 3 Squadron, Cobras



(7) **MiG-21 Mongol U/UM/US (Type 66, 68, 69)**



Two-seat trainer used by the IAF. All of them were imported from either the USSR/Russia or eastern European countries. The trainer version had no internal cannon. It served two main training purposes:

- MiG Operational Flying Training Unit (MOFTU): Stage III training where those flying cadets who are cleared for fighter stream, are given first exposure to fighter flying.
- Operational Conversion Unit (OCU) – Given the number of MiG-21 squadrons of various types in the IAF, the IAF had dedicated squadrons to train new fighter pilots on the MiG-21. This happened AFTER

the pilots had done their Stage III training and had been posted to a squadron flying the MiG-21.

Conclusion

MiG-21s of all types have had an illustrious career in the Indian Air Force. More than 80% of fighter pilots of the IAF until recently had earned their spurs on the MiG-21. Most fighter pilots have vigorously contested the nickname ‘flying coffin’ given to it by the media and lesser informed people.

But as they say, the only constant is change. So, the time will come in the near future when the IAF will retire the last of its venerable MiG-21s.

To end, I again quote former Air Force Chief ACM A.Y.Tipnis, for his words best encapsulate the feelings of a fighter pilot towards the MiG-21:

“Heed not the barbed taunt of “widow-maker”, my lovely filly, for you are in fact a man-maker of boys. Were I to go down with you, my soul would have been tortured to have anyone call you my “flying-coffin”;

But I live, so I hope that I am there 10 years from now, along with your many disciples and admirers and our progeny and theirs too, to sing your praises for your half-a-century of relentless, superlative service to the nation and the Indian Air Force.

One day surely you must rest your hard driven limbs, but to each one of us whom you took to your bosom, whether in service or in retirement, you will ever remain “My Fair Lady”!”

This article, written by Rohit Vats, first appeared on the OpIndia blog in 2019, and was highlighted by Luke NeVERN on the group’s Facebook page. Many thanks to Luke for bringing it to everyone’s attention.



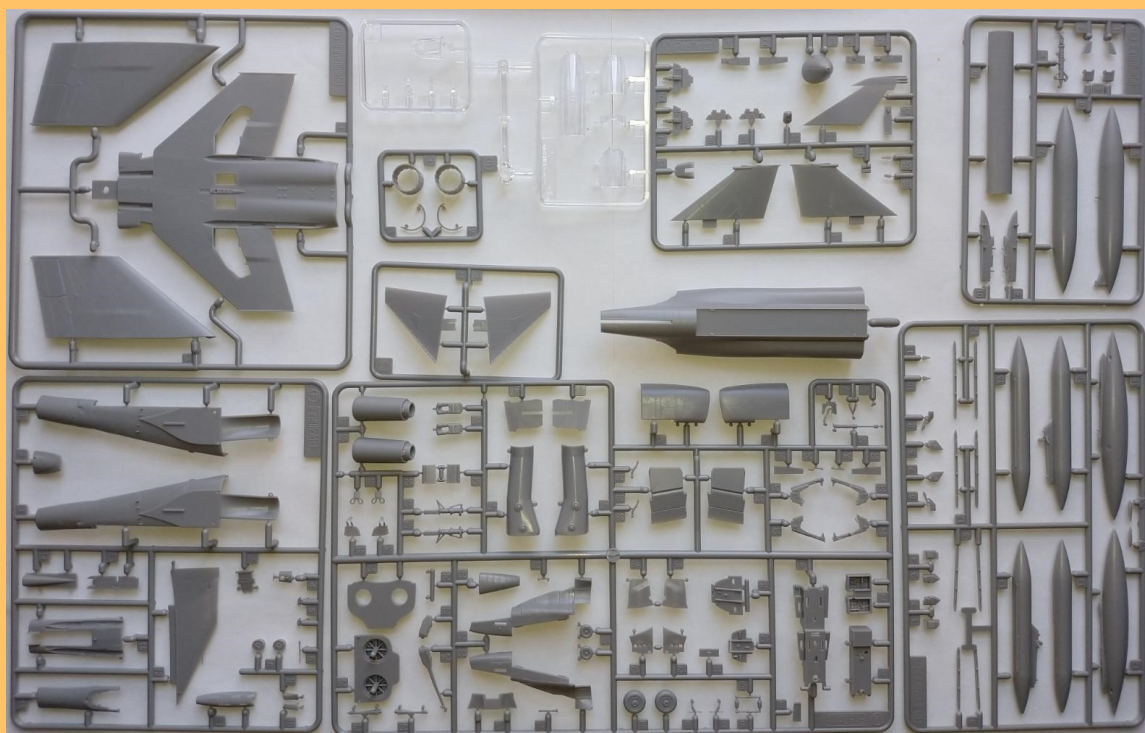
Fine Molds – 1:72 Scale McDonnell-Douglas F-4EJ Kai Phantom – JASDF 2020 Special Markings

During a recent three-week trip to Warsaw for work, I managed to visit one of the many model emporiums that are located in the city, and finally acquired one of Fine Molds' highly acclaimed 1:72 scale McDonnell Douglas F-4EJ Phantom kits. I have been trying to get one of these kits for some time, but Fine Molds are not renowned for an extensive distribution network and the popularity of the kits has meant that they are regularly sold out. On this occasion, I was actually spoiled for choice, since the shop had at least four versions of the F-4EJ kit available including both of the aircraft that had been adorned with the 2020 Special Retirement Markings. In the end I opted for the well-known 'yellow' version with Black and Yellow wing markings and the famous 301 Hikotai Frog insignia across a large portion of the fin surfaces.



For those of you that may not be familiar with Fine Molds as a brand name, a little bit of background. They have actually been around for some time and are probably best known for their Star Wars kits. They have been producing aircraft kits for at least 30 years but their catalogue is very selective and, until quite recently, quite esoteric in part. Some years ago they produced a highly regarded family of 1:72 ME Bf-109s and ME410s in 1:72 scale and the Nakajima Ki-43 Oscar in 1:48 scale but did not follow up with any other popular types, instead focussing on the Japanese market with such rarities as the Kawasaki Ki-10-II Type 95 'Perry' bi-plane and the Kyushu Q1W1 'Lorna' torpedo bomber. In more recent years they have become a little more mainstream with a family of 1:72 F-14 Tomcats, judged to be some of the best kits available in a highly competitive market, and they then delighted F-4 Phantom fans with the first of their extended family of kits some two years ago. Fine Molds kits have always had an excellent reputation for their quality so I imagine the mantra 'quality over quantity' holds true and the new F-4 Phantom kits are no exception.

The kit comes in a sensibly sized box with a high quality photo of the real aircraft on the lid and a colour side profile of the scheme on the side. Upon opening the box, the modeller is presented with nine medium grey and one clear plastic sprues, together with the obligatory construction manual and a full set of decals. The majority of the early F-4 releases also feature some bonus parts; in this case the kit includes four sprues of 'Nano Aviation' parts, which include ejection seat belts, canopy mirrors and the 'slime' lights that adorn the fuselage sides and aid navigation at night. The seat belts sprues are moulded in a slightly softer type of plastic to aid their flexibility when positioning them on the seats.



The quality of the mouldings is exquisite. The level of surface detail and engraving is on a par with high quality 1:48 scale kits with very finely rendered panel lines, fasteners and rivets. The parts breakdown is very similar to that found on the larger Zoukei-Mura kits, with a slide moulded middle and rear section main fuselage, upper spine panel to eliminate the central seam that is prevalent on other 1:72 scale Phantom kits and a forward fuselage that is also broken down along seam lines. The kit also features full length intake trunking which, again, has been designed in such a way as to reduce unsightly seams on both the inner and outer surfaces and also features nicely rendered engine fans. The cockpit is very nicely detailed and provides you with the option to paint and drybrush the instrument panels and side consoles or use the decals that have been provided for this purpose. The undercarriage bays are equally well detailed and will certainly benefit from the light application of a wash to make the detail pop. I was also impressed with the separate afterburner section, which is also split along an important panel line, which delineates the bare metal section from that part of the rear fuselage that is finished in the standard Light Grey. Sprue K includes



the parts that are particular to the upgraded F-4EJ Kai variant and include the revised outer wing panels, fin top and nose radome together with the aforementioned instrument panels and side consoles. The fourteen-piece Mk.7H Ejection Seats, which include the aforementioned 'Nano Aviation' seatbelts are some of the last parts to be assembled with the airframe completed with the application of the cockpit canopy. Separate parts are included for open or closed canopy sections, which come complete with tiny cockpit mirror assemblies. The kit does include stores pylons and a full set of external drop tanks, including the 600 gallon high-G centreline tank fitted to later F-4EJs but you will need to source any missile armament from the spares box or one of the separately available Fine Molds Detail-Up parts set. Two sets are currently available for turned brass Alpha and Pitot probes (Item AA52) and a JASDF Missile Set (Item FP39). If you are completing the model in the featured colour scheme then you probably don't need to bother with the weapons since the aircraft only ever

seemed to operate with stores pylons and missile rails fitted and often without the drop tanks too (as shown on the box lid). The dual language construction manual is very clear to follow and leads the modeller through the assembly sequence easily. There are colour callouts throughout and a very comprehensive colour reference chart at the back of the booklet although this is largely in Japanese; it appears to show cross references for GSI, Tamiya and Lifecolour paints only but it is recommended to double-check. Some FS numbers are also annotated. The two-part decal sheet is superbly rendered with excellent colour saturation and very finely detailed maintenance markings and provides options for decalced 'slime' lights should the modeller decide not to use the plastic parts.

I dare say there will be many who ask whether we really needed another 1:72 scale kit of the F-4 Phantom and, under normal circumstances, I would probably be one of those individuals. That said, I don't recall an all-new 1:72 scale F-4EJ Kai Phantom kit in recent times. Hasegawa have re-released their original 'second generation' F-4EJ kit (which first appeared in the late 1980s) several times over the years with revised parts to complete the F-4EJ Kai and whilst this remains a nice kit, it does suffer from incomplete intake detail and some fit issues with the fuselage breakdown, including the fuselage centre seam issue that has been eradicated with the release of the Fine Molds kit.

This new kit is very much in keeping with what we have come to expect from modern moulding techniques and capabilities with some very smart design features which allow the modeller to build an excellent replica of the ever popular F-4EJ Phantom.



Highly recommended
Mark Attrill – May 2022

Aichi B7A1 Ryusei "Grace"

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Some background from Wikipedia: "The B7A *Ryusei* was designed as a carrier attack bomber that would replace both the Nakajima B6N *Tenzan* torpedo plane and the Yokosuka D4Y *Suisei* dive bomber in IJN service. It was intended for use aboard a new generation of *Taihō*-class carriers, the first of which was laid down in July 1941. Because the deck elevators on the *Taihō*s had a larger square area than those of older Japanese carriers, the long-standing maximum limit of 11 m (36 ft) on carrier aircraft length could now be lifted."

The wing featured extendable ailerons with a ten-degree range of deflection, enabling them to act as auxiliary flaps. Dive brakes were fitted underneath the wings just outboard of the fuselage. The B7A's outer wing panels were designed to fold upwards hydraulically for carrier stowage, reducing its overall span from 14.4 m (47 ft) to approximately 7.9 m (26 ft).

Selection of a powerplant was dictated by the Japanese Navy which requested that Aichi design the aircraft around the 1,360 kW (1,825 hp) Nakajima NK9C Homare 12 18-cylinder two-row air-cooled radial engine.

The presence of an internal bomb bay with two high-load-capability attachment points allowed the aircraft to carry two 250 kg (550 lb) or six 60 kg (132 lb) bombs. Alternatively, it could carry a single externally mounted Type 91 torpedo, weighing up to 848 kg (1,870 lb).

Defensive armament initially consisted of two 20mm Type 99 Model 2 cannons in the wing roots and one flexible 7.92mm Type 1 machine-gun mounted in the rear cockpit.

Despite the plane's weight and size, it displayed fighter-like handling and performance, beating the version of the A6M Zero in service at the time. It was fast and highly maneuverable.

In June 1944, the *Taihō* was the only Imperial Japanese Navy aircraft carrier then modern enough to operate the B7A *Ryusei* in its intended role. Other Japanese carriers lacked the modern arresting gear necessary to assist the recovery of aircraft weighing over 4000 kg. However, *Taiho* was sunk during the Battle of the Philippine Sea before enough B7As were even available to embark. Afterward, the B7A was relegated to operating from land bases



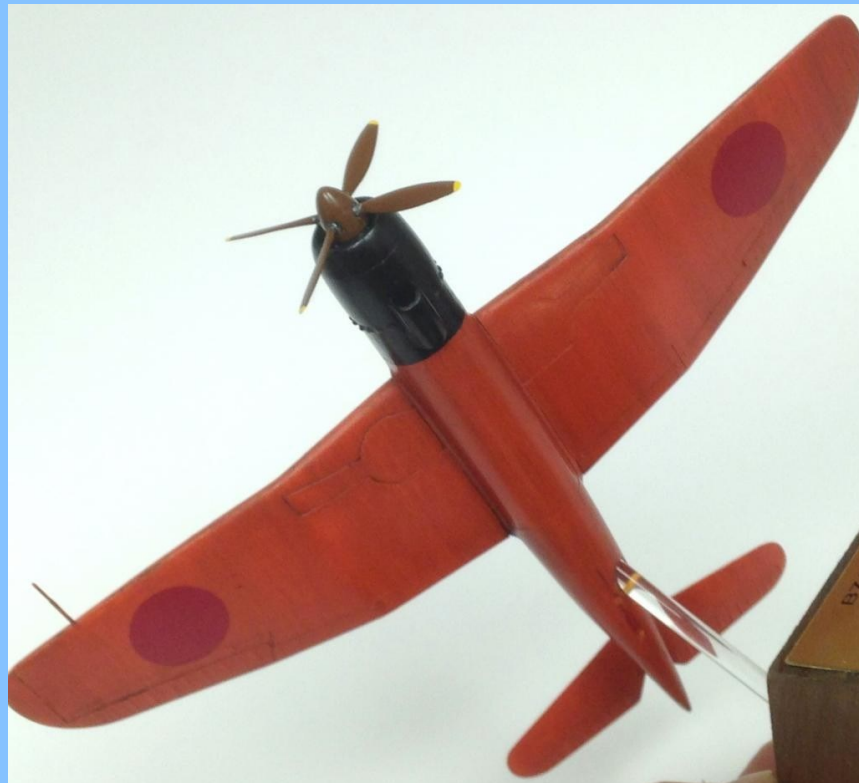
This was one of my early builds, before I started using an airbrush and including pilots in every build, so even though it's wheels up, it looks like a drone! I also didn't really do any weathering, chipping, oil staining or such, other than my first attempt at a wash with oils (more on that below).

I had an old Hasegawa Rita kit in my stash, and the box art showed it in this orange training color. Before attempting that on a canvas that large, I wanted to try it on a smaller aircraft, and had this Fujimi Grace in my stash, with box art also showing the trainer orange scheme.

It took me a while to find an orange I wanted to use - it ended up being Humbrol. I didn't like the consistency of the paint for brush painting, nor having to fiddle with those obnoxious (or is the correct term "bloody") tins!

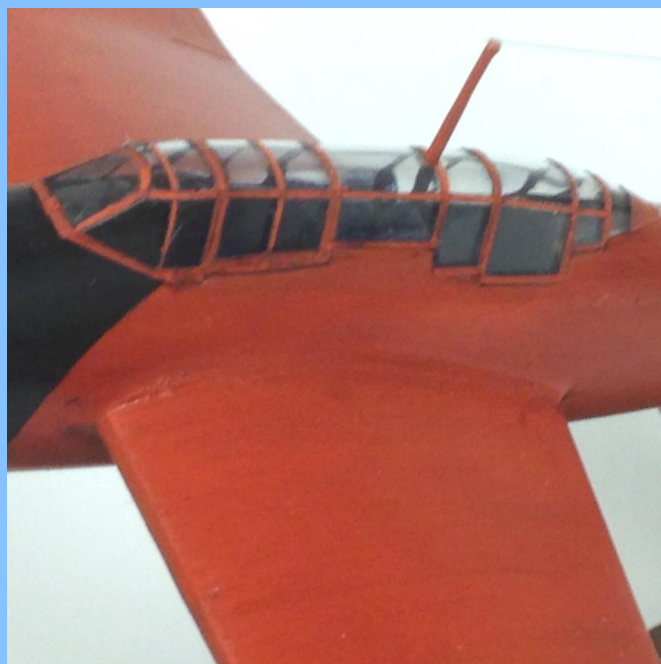


Once the orange was on, I wanted to tone it down a bit. I'd read about using oil dot filtering and oil washes, so thought I'd get some brown oil paint and mineral spirits and have a go.



For a first attempt, I'm not overly embarrassed! I did learn a bit working with oils - how quickly they start to get "hard to work" even loading the brush with fresh mineral spirits. The effect came off much heavier than I'd intended, but at least it doesn't look like it just rolled off the factory floor!

Greg Kittinger





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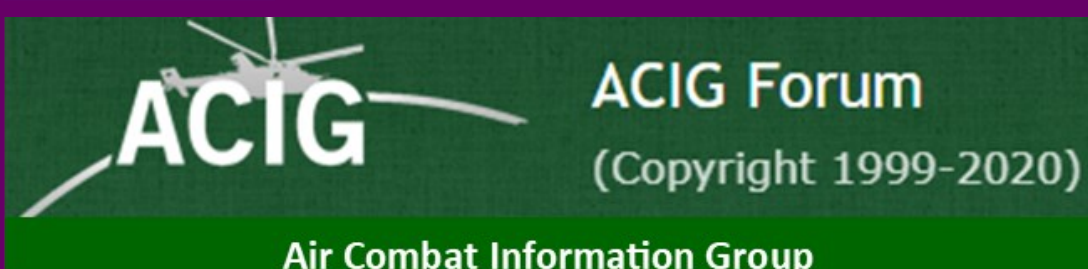
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