

THE AVIATION MAGAZINE

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№ 60 November - December 2018

Volume 9, Issue 8



- ✈ California Capital Airshow, USA
- ✈ Raptors Over Germany
- ✈ Royal International Air Tattoo RIAT, UK
- ✈ KADEX 2018, Kazakhstan
- ✈ And so much more...





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THE AVIATION MAGAZINE

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Index page: AS532UL Cougar of the Swiss Air Force at Axalp by Tommaso Munforti



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THE AVIATION MAGAZINE

by www.TheAviationMagazine.com

The Aviation Magazine is published six times a year, by a team of volunteers interested in aviation. We are devoted to cover a wide range of aviation events ranging from air shows, air base visits, military exercises, civilian spotting, pilot and veteran interviews all with exceptional photography.

The Aviation Magazine is a leader in the e-magazine format since 2009, bringing exclusive and fascinating reports to our global aviation enthusiasts digitally.

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Welcome to our 60th issue. It is filled with reports on big events like the Royal International Air Tattoo and small but nevertheless, important events such as the deployment of Lockheed Martin F-22 *Raptors* to Spangdahlem AB in Germany. Work on the next issue has started. You can look forward to reports on air shows in the US and in the Czech Republic, on several base visits and much more.

Thank you very much for reading and downloading The Aviation Magazine.

Ralf Peter WALTER
Editor

Feel free to e-mail me any time: editor@TheAviationMagazine.com

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**MERRY CHRISTMAS AND
A HAPPY NEW YEAR TO
ALL OF YOU**

**STAY SAFE AND HAVE
A FANTASTIC 2019**

CALIFORNIA CAPITAL AIRSHOW

Article and photography
by Geoffrey Arnwine

The 2018 California Capital Airshow was held on September 21st-23rd at Sacramento Mather Airport celebrating the 100 year anniversary of Mather Field. The show featured a wide variety of performers including the U.S. Air Force Thunderbirds, F-35 Heritage Flight Team, CF-18 Hornet Demo Team, and the 144th Fighter Wing with their specially painted F-15 Eagle commemorating the wing's 75th anniversary. In addition to the full airshow weekend, there was a twilight show on Friday, which featured multiple aerial performers as well as an impressive fireworks display.

Gates opened to the public at 9:00 am and spectators were able to visit multiple static displays including many aircraft on the ground, various tents and a special museum commemorating Mather's 100th anniversary. The museum featured different paintings of the field's history as well as aircraft that were stationed there and old military vehicles, suits and weapons.

Flying activities kicked off at 11:00 am with opening ceremonies and the singing of the National Anthem with the U.S. Army Golden Knights parachute team performing the flag jump. Later, the team returned to the skies to perform a full aerial demonstration. Shortly after the ceremonies concluded, a rare formation flyby of a U-2 Dragon Lady and two T-38 Talons flew over from Beale Air Force Base.

There was a great lineup of aerobatic performers to see during the weekend. They included the world renowned Gene Soucy in his Grumman Showcat crop-duster biplane, Matt Younkin in his Beech 18, Redline Airshows in their two RV-8s and Jeff Boerboon in his Yak-110 which is a modified aircraft with two Yak-55 fuselages and a jet engine. This unusual plane also raced with the Shockwave Jet Truck and even flew in formation with a P-38 Lightning.

Multiple warbirds took to the skies to perform multiple passes as well as pyro runs. Among those aircraft included a P-51A and D Mustang, F4U Corsair, SBD Dauntless and B-17 Flying Fortress. In addition to the simulated demonstration, a P-38 Lightning performed a solo demonstration piloted by the legendary Mr. Steve Hinton.

The show featured a nice variety of military flyovers. Among those flyovers was a group of transports from Travis AFB that included a C-17 Globemaster III, C-5M Super Galaxy, and KC-10 Extender. Also, a U.S. Coast Guard C-27J Spartan flew over which was locally based in Sacramento at McClellan Airport.

Another major military performance was the combined arms demonstration which included the very rare E-4B Nightwatch and the 144th Fighter Wing F-15 Eagle. The E-4B, known as the "Doomsday" aircraft, is a strategic command and control aircraft built from a Boeing 747 airframe. During the demonstration, the F-15 played the role of defending allies by simulating an attack run on hostile targets. On Sunday, the performance featured two F-15s as well as the 75th anniversary bird which was piloted by the wing's commander Lt. Col. Russ "Spicoli" Piggott who also served as the F-16 Viper West Demo pilot. The specially painted aircraft had just come out of the paint shop and made its first airshow appearance at Sacramento.



Gene Soucy in his Grumman "Showcat",
a modified Grumman Ag Cat cropduster



Representing the Royal Canadian Air Force was the CF-18 Hornet Demo Team piloted by Capt. Stefan "Porcelain" Porteous. Every year, the team has a special theme and this year's was the 60th anniversary of NORAD. To pay tribute to the anniversary, the jet was painted in a full body dark blue scheme which included ribbons, swords, and globes. During the demonstration, Porcelain showcased the many capabilities of the CF-18 including a simulated attack run to conclude the performance.

One of the major highlights of the show was the U.S. Air Force F-35 Heritage Flight Team from Luke Air Force Base, Arizona. This was the first time that the crowd from Sacramento got to witness the F-35 Lightning II perform over Mather. Piloting the jet was Capt. Andrew "Dojo" Olson who flew a mini demo before joining up with a P-38 Lightning for the Heritage Flight. The Heritage Flight is a rare flight consisting of Air Force fighters of past and present. This particular formation was very special because it featured the original Lightning as well as the newer second one.

Concluding the airshow was the United States Air Force aerial demonstration squadron known as the Thunderbirds, making their first appearance in Sacramento since 2015. The team, lead by Lt. Col. Kevin Walsh performed a fantastic routine with their six F-16 Fighting Falcons. Their demonstration included various formation flights, multiple solo passes, and tactical maneuvers that all Air Force fighter pilots are trained to do. When finished flying, the team arrived at the crowd line to meet fans and sign autographs.

After flying activities were finished, the crowd was able to visit the many different attractions that were offered on the ground. The 100 year anniversary of Mather Field by the 2018 California Capital Airshow was a huge success that did not disappoint. Special thanks to the organizers, volunteers, performers, spectators, and sponsors for making the show a success!



- Boeing E-4B Nightwatch of the U.S. Air Force (main image)
- Alenia C-27J Spartan of the U.S. Coast Guard (inset)



- Lockheed U-2 Dragon Lady and Northrop T-38 Talon of the U.S. Air Force (above)
- McDonnell Douglas CF-188 Hornet of the Royal Canadian Air Force (below)



- McDonnell Douglas F-15 Eagle of the U.S. California Air National Guard (above)
- Heritage Flight with Lockheed Martin F-35 Lightning II & Lockheed P-38 Lightning (below)


 SACRAMENTO COUNTY
 presents
CALIFORNIA CAPITAL AIRSHOW
 MATHER AIRPORT • SEPTEMBER 21, 22 & 23, 2018
 in partnership with






- Boeing B-17G Flying Fortress (main image)
- Douglas SBD-5 Dauntless (above)
- Chance Vought F4U-1 Corsair (right)

- North American P-51A Mustang (above)
- North American P-51D Mustang (left)



LIVE-FIRING IN THE SWISS ALPS

Article and photography by Tommaso Munforti



Have you ever seen a fighter air-to-ground attack? Have you ever heard the noise of a fighter's gun? Have you ever seen a fighter, looking at it from the top and not pointing your eyes to the sky? If your answer is "yes" you certainly know the place where I was. If it is "no", you have to go there.

Axalp-Ebenfluh in the Bern region of Switzerland. It is here, in the middle of the Swiss Alps, that every year at the beginning of October, the Swiss Air Force trains its fighter pilots on the use of the aircraft's gun. The public, placed on one side of a deep valley at 2240 m, can experience an air-to-ground attack demonstration from close distance. Axalp, in fact, is by far more than an air show. This is a pilot training session with live weapons and it is open to the public.

The low level passage of four F-18 Hornets deploying flares opened the training session exactly on time at 2 pm. The next 30 minutes were a non stop sequence of very low passes and tight turns of F-18 Hornets and F-5 Tigers attacking three different targets located in the mountains.

Due to thick fog in the morning and strong wind, aerial demonstrations such as the SAR and the fire-fighting demo or the paratrooper drop either were cancelled or stripped down. The F-5 Tiger fly-by — this year was the last time with the F-5 Tiger at Axalp — was unfortunately cancelled for the same reason.

As in previous years, the event ended with an impressive display of the Swiss aerobatic team "Patrouille Swiss" against the unique backdrop of the Alps.



F/A-18C Hornet, Swiss Air Force



- F-5E Tiger, Swiss Air Force (main images)
- F-5E Tiger, Patouille Suisse (inset)



- AS.532UL Cougar, Swiss Air Force (top left)
- F/A-18C Hornet, Swiss Air Force (top right)
- F/A-18C Hornet with PC-21 and PC-7, Swiss Air Force (above)

MEETING DE L'AIR

BASE AÉRIENNE 133 NANCY-OCHEY, FRANCE

ARTICLE BY RALF PETER WALTER, PHOTOGRAPHY AS NOTED



On the last weekend of June the "Meeting de l'Air" took place at the Base Aérienne 133 Nancy-Ochet. This was the second of only two air shows hosted by the French Air Force in 2018. While the weekend is open to the public, the spotter's day on Friday is restricted to only 250 photographers. Two positions close to the runway – one at the threshold and the other one about in the middle – offered perfect photo opportunities. Friday usually is arrival day, i.e. fly-in of most of the air show's participants. However, it is also used by some pilots for the training and rehearsal of their flying display at the air show. The highlights were the display of an Airbus A400M and a Breguet 1150 Atlantic. In high speed and low speed passes, tight turns with high g-loads, steep descends and climbs, the pilots very impressively demonstrated the performance of these aircraft. Much louder but no less impressive, were the displays of a Spanish Air Force EF2000 and a French Air Force Rafale. Unfortunately, most of the aircraft only flew in and then were parked in the static display areas. However, it was a great day, perfectly organized with a good variety of aircraft to take photos of.

The Aviation Magazine thanks Cdt Hervé Portenseigne from FOSA (Fondation des Oeuvres Sociales de l'Air) for making this report possible.

Rafale C, French Air Force



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Mirage 2000D of the French Air Force

© 2018 Ralf Peter Walter



- A400M Atlas, French Air Force, main image
- CN235M-300, French Air Force, top left
- C-27J, Italian Air Force, top right



Breguet 1150 Atlantic
of the French Navy



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- EF2000 Typhoon, Spanish Air Force, main image
- Mirage 2000C, French Air Force, top left
- Alpha Jet E, French Air Force, top right
- TB-30 Epsilon, French Air Force, middle right



RAPTORS OVER GERMANY

Article and photography by Felix Mayer



With operation *Iron Hand 2018*, Spangdahlem Air Base saw the return of the Lockheed F-22A Raptor to the European theatre. On 8th of August 2018, thirteen Raptors and 200 personnel assigned to 95th and 301st Fighter Squadron based at Tyndall Air Base, Florida deployed to Europe for three weeks for a so-called Flying Training Deployment (FTD). It was the second time that F-22As deployed to Spangdahlem. The first time, in September 2015, four Raptors were deployed for two weeks during the "Rapid Raptor Deployment" to prove the ability of a fast deployment within a short timeframe.

After arrival, five aircraft immediately forward deployed to Poland for a few days. They participated in a mass fly-past above Warsaw to celebrate the 100th anniversary of the Polish Air Force. Apart from that excursion, short one-day-deployments were made to the NATO members Spain, Greece, Norway, Romania and Italy. It was shown that these forward operating bases are capable to support the operation of 5th Generation Fighters. The Raptors at Norway got in close encounter with Norwegian Air Force F-35As. This was the first time two different 5th Generation Jet Fighters operated together in European airspace. Logistical support for these day trips was provided by the 100th Air Refuelling Wing from Mildenhall Air Base, UK with their KC-135R Stratotankers and the 86th Airlift Wing with their C-130J Hercules.

Most of the missions were flown into the nearby Temporary Reserved Airspace (TRA, ED-R 205/305) which is located between Spangdahlem Air Base and Ramstein Air Base together with the F-16s of the host Squadron, 480th Fighter Squadron. German Eurofighters, Dutch and Belgian F-16s and French Mirage 2000-5F and Rafales also had the opportunity to engage with the F-22A Raptor. A few missions were flown to the North Sea at the east coast of the United Kingdom where they met with the F-15s of the 48th Fighter Wing, based at Lakenheath Air Base, UK.

The Flying Training Deployment is funded in part by the European Deterrence Initiative and it is part of Operation Atlantic Resolve to increase the U.S. presence in Europe for security purposes. General Tod D. Wolters, USAFE/AFAFRICA Commander stated at the media day that the FTD was a great opportunity to integrate 4th generation with 5th generation aircraft above the European skies "... and if we anticipate in a potential future conflict where we have to go to, and use these two fighters that you can see in this hangar, a 4th and a 5th asset, I want to



make sure we have practiced as much as we can to make sure that these assets, which are going to get involved in this conflict, are as well-trained and as well-versed in each other's capabilities as possible."

Due to its location in central Europa, Spangdahlem Air Base will be playing a key role for future 5th Generation Fighter deployments to Europe, especially for the F-22A Raptor. This way, every NATO member can be reached easily within two flight hours.



U. S. Air Force General Tod D. Wolters, Commander U. S. Air Forces in Europe & Air Forces Africa briefed the media on operation Iron Hand 2018







F-16CJ Wild Weasel of the 480th FS/52 FW at Spangdahlem AB and F-22A of the 301st FS (left) and 95th FS (right)



Polish Air Force's 100th Anniversary

RADOM AIR SHOW 2018

Report & Photography by
Peter Thivessen & Wolfgang Jarisch

The Air Force Base Radom is located in east-central Poland about 100 km (62 miles) south of the capital Warsaw.

The Radom Air Show is an event held biennially and the largest air show in Poland. In this year's edition, the Polish Air Force celebrated its 100th anniversary. This was taken as an opportunity to draw up a special flying display. All in all, nine display teams were on site and as a special guest nation Pakistan was invited for the show. Pakistan and Poland had signed a framework agreement on mutual cooperation in the field of defense in April 2018. This was the reason why the Radom Air Show audience had a chance to see exotic aircraft in Poland. The Pakistan Air Force sent a specially painted PAC JF-17 "Thunder" and the PAC "Super Mushshak" to Radom.

The Pakistan delegation arrived on Sunday, a week before the show, at the 41st Training Air Base in Deblin. There were two JF-17 accompanied by three C-130s Hercules. In one of the C-130s, the PAC "Super Mushshak" was loaded. The "Super Mushshak", designed by the Pakistan Aeronautical Complex (PAC), is a very successful primary training aircraft which is now in service in ten countries, including Pakistan.

For safety reasons, Deblin was chosen for the Pakistan Air Force as the operational base during the event. Due to a missing arresting hook on the JF-17 and a missing arresting barrier at Radom, it wasn't possible to operate the aircraft from Radom Air Force Base. In Deblin, there is an arresting barrier on site. So the JF-17 was only seen in the sky over Radom.

The Polish Air Force concentrated only on their types of aircraft, which is why aircraft and helicopters from the Polish Navy were searched in vain, except for the M-28 "Bryza 1R". Instead of missing navy aircraft, the brand new G-550 from the Polish Air Force VIP-Flight, which is the first post-Soviet VIP aircraft in the inventory, could be admired by the visitors. Also, for the first time at Radom was the new trainer, Alenia M-346 "Bielik". Another interesting helicopter of the Polish Air Force VIP-Flight was shown in the static display, the 40-year-old workhorse, Mil Mi-8.

Alongside the nine display teams, there were many other spectacular flying displays. A regular guest nation in Polish Air Shows is the Ukraine. The Ukrainian Air Force demonstrated the capability of the upgraded Su-27 "Flanker" in an impressive flying display. The upgraded Su-25 "Frogfoot" and the Antonov An-26 "Curl" were in the static display. All kinds of aircraft were seen in the sky over Radom. So there was a flyby of a Boeing 737 accompanied by the Team Iskra. The Turkish Air Force was present with the "Solotürk" F-16 as well as the F-16 Demo Team "Zeus" from Greece. The Belgium Air Force participated in the air show with a specially painted F-16 and lastly the Polish Air Force with the F-16 "Tiger Demo Team". Eurofighter displays were shown by the German Air Force and the Royal Air Force. The "Flying Bulls" were present with a fleet of aircraft, namely two Alpha Jets, a T-28 "Trojan", an F-4U "Corsair" and

JF-13, Pakistan Air Force



the B-25
"Mitchell".

The Czech Air Force presented a specially painted JAS-39 "Gripen" in an impressive flying display and the Austrian Air Force was also there with the ageing Saab 105 just to name a few.

In conclusion, the Radom International Air Show was a well-organized event. A varied flying program with an attractive static display and plenty of entertainment for families. Due to the forecasted bad weather con-



- Mi-35 & Mi-17Sh, Czech Air Force, main image
- Mi-8S, Polish Air Force, bottom left
- W-3PL, Polish Air Force, bottom right

ditions, most of the photos were taken a few days before the event.

However, two tragedies cast a shadow over the event. July 6th, a Polish Air Force MiG-29 crashed (this was the second crash of a Polish Fulcrum in little more than six months) and killed the pilot. The circumstances are unclear and the complete MiG-29 fleet was grounded. A malfunction in the ejection seat was suspected. The Sukhoi 22 "Fitter" uses the same kind of ejection seat as the MiG-29 and also that fleet was grounded after the crash. These two types of aircraft were missing, in the sky and on the ground.

A Romanian Air Force MiG-21 display pilot crashed on July 7th during Borcea Open Day and was killed. Understandably, hence there was no MiG-21 in Radom.

The Aviation Magazine would like to express our thanks to Captain Joanna Motylinska-Szczych and Captain Magda Busz for the excellent communication and support.



- Su-27UB, Ukrainian Air Force, main image
- Typhoon FGR4, Royal Air Force, right top
- JAS39C, Czech Air Force, right middle
- F-16C, Hellenic Air Force, right bottom





■ Su-25UB, Ukrainian Air Force, top
■ TS-11R, Polish Air Force, bottom

■ M-346, Polish Air Force, top
■ Saab 105OE, Austrian Air Force, bottom





PZL-130, Polish Air Force Team Orlik



PC-9M, Croatian Air Force Team Krila Oluje



TS-11, Polish Air Force Team Iskry



Hawk Mk.51, Finnish Air Force Team Midnight Hawks



FUJI RVP

1



C-27J, Romanian Air Force

→ 0A

© 2018 W. Jarisch

1

FUJI RVP

2



M-28B/TD, Polish Air Force

→ 1A

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2

FUJI RVP - 580

3



An-2TD, civil, ex Polish Air Force

→ 2a

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3

FUJI RVP

5



C-27J, Lithuanian Air Force

→ 4A

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5

FUJI RVP

6

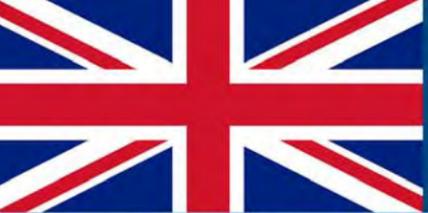


C295M, Czech Air Force

→ 5A

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6



Royal International AIR TATTOO 2018

Article by Ralf Peter Walter, photography by Peter Thivessen unless otherwise noted



One of the first four Lockheed Martin F-35B Lightning II that were delivered to the Royal Air Force

© 2018 Air Tattoo Aviation Photo Team

The Royal International Air Tattoo at RAF Fairford is the world's biggest military air show. This year's event marked the 100th anniversary of the Royal Air Force. From July 13th to 15th, record breaking 185,000 people attended the air show. 302 aircraft from 43 air arms representing 30 different nations had come to RAF Fairford. 121 of these aircraft took part in the flying display.

This year, the flying program included some very unique flypasts. The RAF Marham based 617 "Dambusters" squadron flew with its Tornados and its new F-35B Lightning II in formation with the World War II Lancaster of the Battle of Britain Memorial Flight (BBMF). The Heritage Demo Team of the U.S. Air Force, a F-35A from Luke AFB, Texas and a P-51D Mustang, was joined by a Supermarine Spitfire of the BBMF. As part of the Royal Air Force's Centenary there was a flypast of nine RAF EF2000 Typhoons in "diamond" formation. The "RAF 100 Flypast" with 50 aircraft sadly was cancelled because of thunderstorms and rain.

The Bremont Great War Display Team gave an impression on what aerial combat was like in WWI. With its Sopwith Triplane, an Avro 504K, a Royal Aircraft Factory BE2c, three Royal Aircraft Factory SE5as, a Junkers CLI and two FokkerDrIs replicas they simulated dogfights, accompanied by music and pyrotechnics.

Other highlights of the flying display were a Sukhoi Su-27P Flanker of the Ukrainian Air Force, the F-35B Lightning II of the Royal Air Force and an excellent display of an RAF Airbus A400M. The BBF was awarded the King Hussein Memorial Sword for the best flying display. The Royal Canadian Air Force CF-188 Hornet Demonstration Team featured a Hornet with a special paint scheme to celebrate the 60th anniversary of NORAD (North American Aerospace Defense Command). NORAD is a United States and Canada bi-national organization charged with the missions of aerospace warning, aerospace control and maritime warning for North America.

Highlights of the static display were a "RIAT first" Kawasaki C-2 of the Japan-Air-Self Defense Force and the MQ-9B SkyGuardian MALE (Medium Altitude Long Endurance) drone. The MQ-9B has an endurance of up to 48 hours. It is remotely piloted and capable to take off and land autonomously. The drone flew 6,500 km (3,520 nm) from Grand Forks, North Dakota, USA to RAF Fairford in 20 hours.

The next Air Tattoo will be from July 19th-21st, 2019 at RAF Fairford. The theme for next year's event is "Air & Space: Inspiring the next Generation Air Force to mark 70 years of the North Atlantic Treaty Organization (NATO)".



- McDonnell Douglas CF-188 Hornet of the Royal Canadian Air Force with a special color scheme to celebrate 60 years of NORAD
- Rockwell B-1B Lancer of the U.S. Air Force

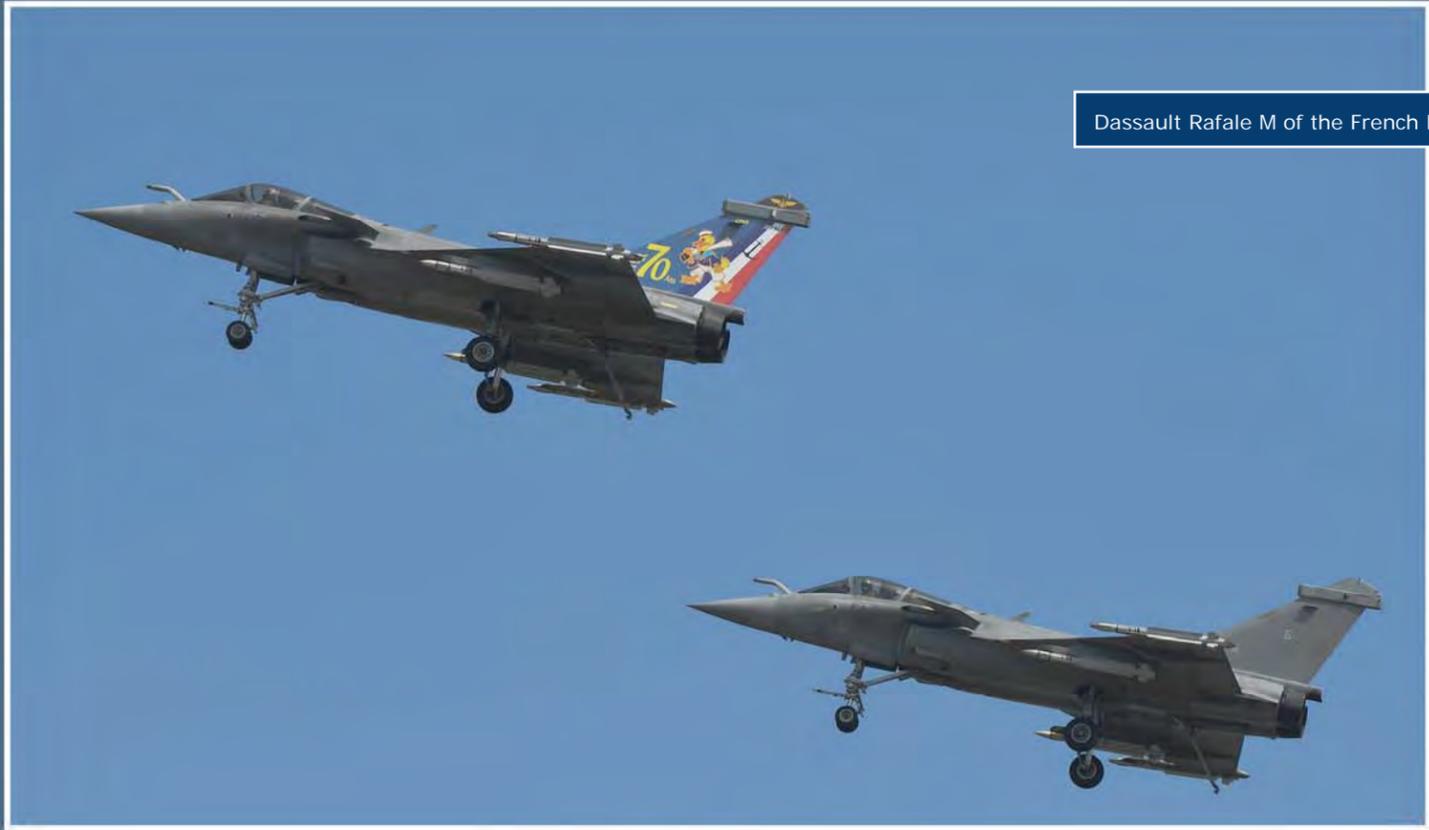


© 2018 Air Tattoo Aviation Photo Team

de Havilland Vampire T55 and FB6 of the Norwegian Air Force Historical Squadron



Dassault Rafale M of the French Navy

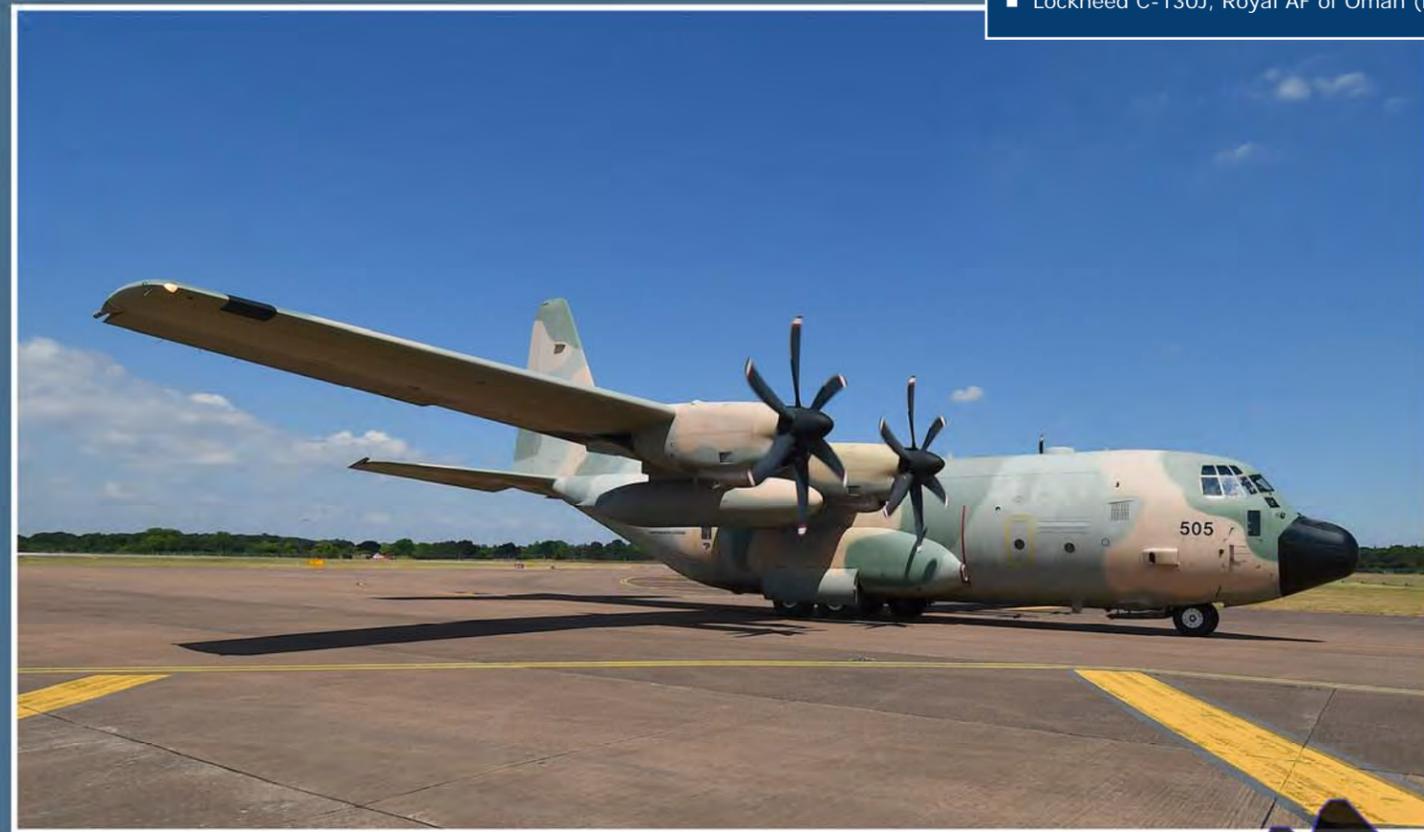
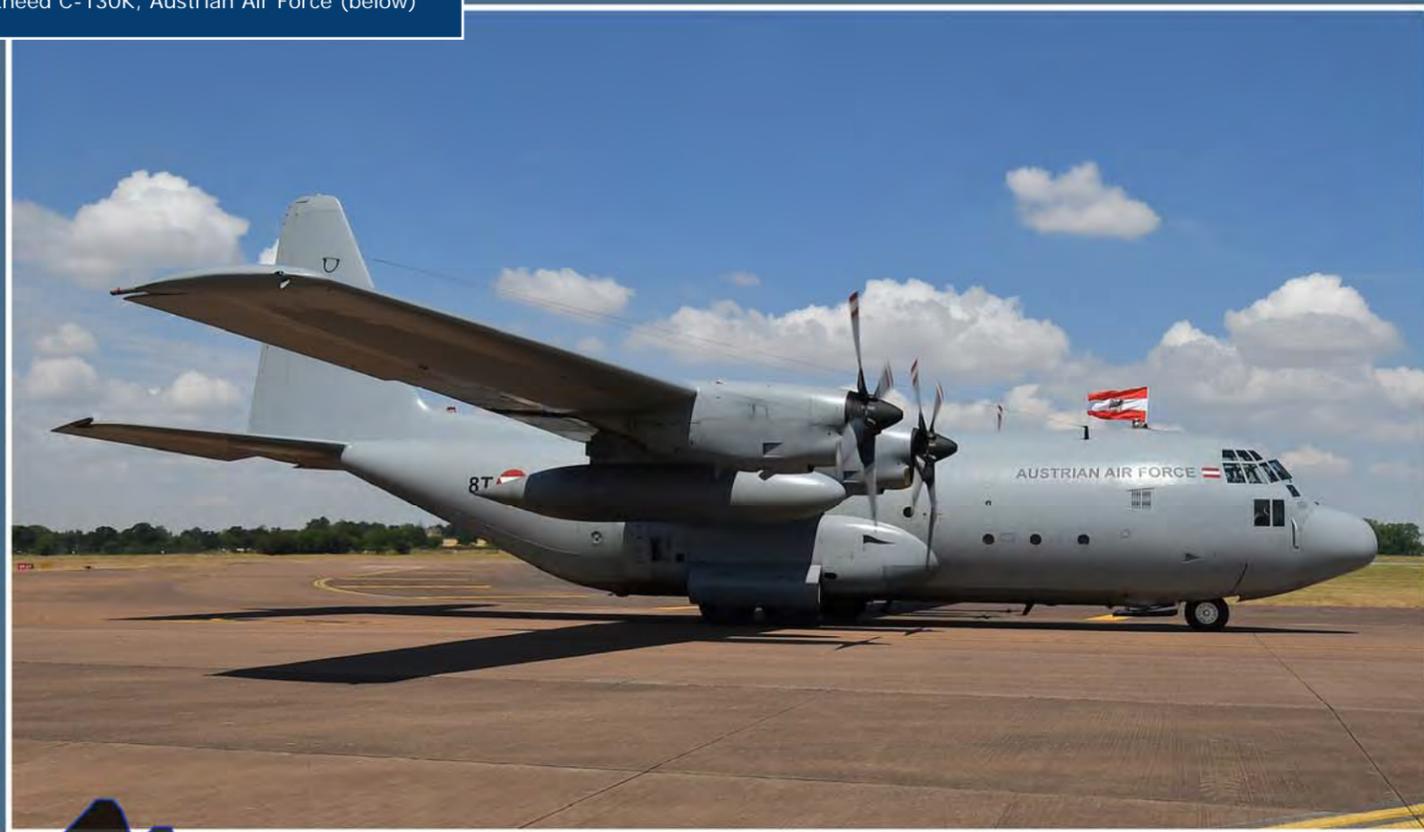


U.S. Air Force Heritage Flight
■ Lockheed Martin F-35A Lightning II
■ North American P-51D Mustang
■ Supermarine Spitfire Mk.Vc



- Lockheed C-130E, Pakistan Air Force (above)
- Lockheed C-130K, Austrian Air Force (below)

- Lockheed C-130H, Royal Jordanian AF (above)
- Lockheed C-130J, Royal AF of Oman (below)





- Boeing RC-135W Rivet Joint , RAF (above)
- Boeing E-3D Sentry AEW.1 (below)

- Boeing E-7A Wedgeall, RAAF (above)
- General Atomics MQ-9B Protector, RAF (below)



- Embraer KC-390, Força Aerea Brasileira (above)
- Kawasaki C-2, Japan Air Self-Defense Force (below)



- Airbus A400M Atlas, RAF (above)
- Ilyushin Il-76MD, Ukrainian Air Force (below)





FUJI RVP	1	FUJI RVP	2	FUJI RVP - 580	3	FUJI RVP	4	FUJI RVP	5	FUJI RVP	6	FUJI RVP - 580	7
			<p>Su-27 Flanker, UkrAF (main image)</p> <ul style="list-style-type: none"> ■ F-35A Lightning II, USAF (1) ■ JAS 39C Gripen, Swedish AF (2) ■ Mirage 2000D, French AF (3) ■ F/A-18C Hornet, Finnish AF (5) ■ Tornado GR4, Royal Air Force (6) ■ Typhoon FGR4, Royal Air Force (7) 										
0A	1	1A	2	2a	3	3A	4	4A	5	5A	6	6A	7



- NHIndustries NH90 TTH, Finnish Army (above)
- Embraer EMB-121AN Xingu, French Navy (below)

- Agusta A109BAi, Belgian Air Force (above)
- Let L410UVP-E, Lithuanian Air Force (below)





- PAST — PRESENT — FUTURE (main image)
Lancaster — Tornado GR4 — F-35B
- Nine-ship formation of Typhoon FGR4, RAF (inset)



KADEX 2018

INTERNATIONAL EXHIBITION OF WEAPONS SYSTEMS AND MILITARY EQUIPMENT AT ASTNA, REPUBLIC OF KAZAKHSTAN

Report & Photography by Peter Thivessen & Wolfgang Jarisch



The International Exhibition of Weapons Systems and Military Equipment, KADEX 2018, was held from 23rd to 26th of May 2018 at the military sector of Astana International Airport. This exhibition has been held since 2010. During this time, it has become an effective platform for creating and developing mutually beneficial contracts between producers and consumers of defense products. KADEX is also a tool for exchanging experiences in the field of technological modernization of the armies. This year's edition was the first exhibition which was held under the auspices of the Ministry of Defense and the Aerospace Industry of Kazakhstan. It was attended by domestic and foreign enterprises of the defense-industrial complex and space industry, leading design bureaus and research institutes.

More than 40 official delegations attended the event. Many of the foreign exhibitors came from neighboring countries, but also official representatives of countries such as Italy, Jordan, Egypt or the United Arab Emirates participated in the event. 318 companies from the strong growing domestic defense industry and other 28 countries presented their products.

The exhibition was officially opened on 23th of May under presence of the president of the Republic of Kazakhstan Nursultan Nasarbajew and the Minister of Defense and Aerospace Industry B.B. Atankulov.

A significant new feature of the KADEX 2018 Exhibition was the International Forum «Space days in Kazakhstan». For the first time in the history of Exhibition, a pavilion dedicated to the achievements of local and international cosmonautics was introduced. «Cyber and Digital Security» and «Advanced Def Tech» conferences were held within the business program of the Exhibition. These events will become one of the central platforms for dialogue, where experts from around the world discuss important issues of the defence industry, military and technical cooperation, space activities, and information security.

KADEX 2018 plays an important role in not only attracting defense firms interested in Kazakhstan's growing defense market, but also bringing to the international spotlight its growing industrial defense capability. Ten pavilions were installed at the exhibition, including national pavilions of Turkey, China

Su-30SM, Kazakhstan ADF

and Russia, pavilions of Kazakhstani enterprises Kazakhstan Engineering NC JSC, Kazakhstan Paramount Engineering LLP, Kaztechnologies JSC. In addition, the pavilion devoted to the space industry was installed for the very first time, and samples of advanced cosmonautics developments were represented there.

The Russian, Chinese and Turkish presence was not to be overseen. Each country had its own pavilion. The Russian pavilion housed 58, the Turkish 21 and the Chinese 20 companies.

Russia offers upgrades for the aging fleet of Soviet era jets of the Kazakhstan Air Defence Force (KADF).

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67 of a total of 214 aircraft of the KADF are fighter aircraft, including MiG-27, Su-25, MiG-29 and Su-30SM's. In the near future, the KADF plans to modernize its MiG-31 interceptors and the L-39 trainers. A contract was signed during the trade fair for eight more Sukhoi Su-30SM. The new batch of Su-30SM fighters is part of 32 aircraft that the defense ministry plans to acquire by 2020. Russia also offers combat proven helicopters like the Mi-28NE Night Hunter, the Mi-35M Hind family and also the Mi-171Sh.

The Chinese National Aero Technology Import & Export Corporation (CATIC) promoted its military transport aircraft, Shaanxi Y-9E at the show. The Shaanxi Y-9E is a further development of the Shaanxi Y-8 with a stretched fuselage and upgraded engines with new six-blade propellers. The transporter should be able to carry 25 tons (25.115 lbs.) of freight or 106 passengers. A single Y-9 has been exported to Myanmar, Thailand and Venezuela Air Force and some customers in Africa are also looking at buying the aircraft.

The Turkish defence companies eye central Asia. The Central Asian defense market is an exciting prospect for future growth. TAI's T-129 ATAK has attracted significant interest worldwide. The Turkish missile specialist is seeking new markets for its well accepted range of missile weaponry and Kazakhstan's strong ties with Turkey provide a significant opportunity for future sales.

Airbus offers the Airbus A-400M to the KADF as a complement to its fleet of eight C-295M. In this case for the first time ever, an "Arlan" Multi-Role Armoured Vehicle was successfully loaded in the A-400M under the watchful eyes of technicians from KPE (Kazakhstan Paramount Engineering) and Airbus Defense.

KPE displayed their competence in reactivating and maintaining the Dassault Mirage F-1. KPE bought all Mirage F-1AZ's from the South African Air Force and four twin seater F-1's from the French Air Force. Some of these reactivated and updated aircraft have recently been delivered to Gabon and Congo. KPE also offers training and maintenance for the F-1.

The global presence of Leonardo was also noticeable at KADEX 2018. Leonardo seeks to grow the rotorcraft presence in the region. As of mid-2018, there is a fleet of nearly 100 helicopters of various types flying in Russia and the CIS. These helicopters are mainly used for VIP transport, passenger transport, offshore and utility tasks.

Airbus Helicopters has been a strategic partner for Kazakhstan since 2010. Kazakhstan Engineering manufactures the Eurocopter EC-145C2 in a joint venture under Eurocopter Kazakhstan Engineering (ECKE). A total of 26 EC-145 has been assembled since 2011. ECKE also has a state of the art flight simulator in service and also offers training and maintenance to their customers in this region.

Many companies offer their UAV's and many companies offer defense measures for UAV's. IOMAX was in Kazakhstan for the first time to show the possibilities of the "Archangel" Strike and ISR Platform. This aircraft is successfully in service in the Arab Region.

After the official opening speech by President Nursultan Nasarbajew, which took place in the hangar opposite the exhibition area, the flying display started with two Sukhoi Su-30SM. They were followed by the rehearsal of the Turkish Air Force Display Team "Solotürk", flying with two F-16. A thunderstorm ended all dynamic displays at the first day. All in all, only 18 items of aeronautical equipment and UAV's were shown at the open demonstration area and some in the flying display. The flying displays during the trade fair and the official public days were less than in the previous years. The new event parts of KADEX 2018 may have been the reason for the very small flying display, including the well-known Eurocopter EC-145, as part of a hostage rescue demonstration. The latest acquisition of the Kazakhstan Air Defence Force, the Mil Mi-35M and a pair of Mil Mi-17V, were also part of the flying display. The Ukrainian company Motor Sich showed an upgraded Mil Mi-2 and a Mil Mi-8. Both types are upgraded with more powerful engines so they can use rocket pods.

The Aviation Magazine would like to express its sincere thanks to the Ministry of Defense for the great hospitality and the support on base.



Mi-35M1, Kazakhstan ADF

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■ Mi-17V-5, Kazakhstan ADF, above
■ C295M, Kazakhstan ADF, below



■ EC145, Kazakhstan ADF, above
■ Chinese made Wing Loog UAV, Kazakhstan ADF, below



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- An-26, Kazakhstan Border Guards, top
- EC145, Kazakhstan Kazaviaspas, middle
- An-24B, Southern Sky Airlines, bottom

- Tu-154M, Kazakhstan Government, top
- Mi-2, Motor Sich, middle
- Yak40, Zhezkazgan Air, bottom

- Yak-42D, KazAir Jet, top
- Mi8MSV-1, KazMedAir, middle
- Do328-100, Dornier 328 Support, bottom

NATIONAL CHAMPIONSHIP AIR RACES

Article and photography by Geoffrey Arnwine



Aero L-29 Delfin

The 2018 National Championship Air Races & Air Show took place from September 12th-16th at the Reno-Stead Airport. The races featured a variety of aircraft within the different classes as well as an airshow which featured performers including the F-16 Viper Demo Team and Patriots Jet Team.

Gates officially opened to the public at 8:00 am with air races going on throughout the entire day. The ground displays included multiple static aircraft and tents.

The airshow portion of the races started at noon with the opening ceremonies and singing of the National Anthem. Shortly after, a C-130 Hercules from the Nevada ANG locally based out of Reno-Tahoe Airport performed a simulated demo in which the aircraft dropped luggage for troops in a battlefield area.

Other performers included John Klatt, who flew in the jet powered Waco known as the Screamin' Sasquatch sponsored by Jack Link's, a demonstration by the Honda jet, Gene



McNeely in the T-6 Texan known as "Undecided" and the Commemorative Air Force SoCal Wing with their P-51 Mustang, F6F Hellcat, F8F Bearcat, A6M Zero and PBJ Mitchell.

One of the major highlights was the Patriots Jet Team making their return to Reno for the first time since 2014. The team consists of six black painted L-39 Albatros trainer jets that includes pilots who have previously flown with the Thunderbirds, Blue Angels and Snowbirds.

Concluding the airshow portion of the races was the United States Air Force F-16 Viper Demo Team based out of Shaw Air Force Base, South Carolina. Piloting the F-16 was Major John "Rain" Waters who demonstrated the many tactical capabilities of the aircraft. After his solo performance, Rain paired up with a P-51 Mustang for the Heritage Flight, which is a rare formation consisting of Air Force aircraft from past and present.

After the conclusion of all flying activities, spectators were able to visit the various static aircraft and other booths offered on the ground. Gates officially closed to the public at 6:00 pm all five days. Special thanks to the performers, racers, organizers, volunteers, sponsors and attendees for making the 2018 Reno Air Races a success!



- Heritage Flight F-16CM from 55th Fighter Squadron, Shaw AFB with P-51D Mustang (main image)
- C-130 Hercules of the Nevada Air National Guard. Markings indicate that the aircraft is used for aerial firefighting (inset)



- North American B-25 PBJ-1J Mitchell (main image)
- Hawker Sea Fury T.20 (above)
- Hawker Sea Fury FB.11 "Sawbones" (right)

- Hawker Sea Fury T.20 "Dreadnought" (above)
- Yakovlev Yak-3M "Full Noise" (left)



Numerous privately owned Czech made Aero L-39 Albatros were taking part in the National Championship Air Races. Top left and right images show two of six L-39s the Patriot Jet Team is flying





Aero L-29 Delfin "Miss Independence" with Aero L39 Albatros



Grumman F6F Hellcat "Minsi III" with Mitsubishi A6M3 Zero

Patriots Jet Team with Aero L-39 Albatros



**BELGIAN
AIR FORCE DAYS**
READY FOR THE FUTURE
8 & 9 SEPTEMBER 2018
KLEINE-BROGEL AIR BASE

Article and Photography
by Udo Leischner



Kleine-Brogel Air Force Base is located in the north-eastern part of Belgium and hosted this year's edition of "Belgian Air Force Days" on the weekend of the 8th and 9th of September. Also, a Spotterday was organized on September 7th, where arriving and practicing aircraft could be watched.

Kleine-Brogel is home to the 10th Tactical Fighter Wing and is one of two Belgian airbases that are equipped with the F-16 Fighting Falcon.

The event itself showed a very strong international participation which to this extend was certainly above average. The flying display lasted from 10 am to 6 pm and included many highlights as for example a Greek F-16C Block52+ with conformal fuel tanks, Swiss F/A-18C, Belgian Seaking Mk48, Czech JAS 39C Gripen, Danish F-16AM, Spanish EF-18M, Belgian NH-90-NFH and a spectacular painted F-16AM called "Dark Falcon".

■ F-16AM of the Belgian Air Force



Also, the display of four Belgian F-16 called "Thunder Tigers" was very much welcomed. They performed very pleasing formation flybys which was topped by a combined formation with a Dutch KDC-10 simulating an air refueling.

However, for many the most fascinating aircraft was the display of a Ukrainian Su-27 painted in a very attractive "digital" camouflage scheme consisting of blue and gray colors. The demonstration itself was more on the modest side but nevertheless very impressive. Just the crowd that gathered around the static display of both Su-27 was a clear message. Those who already attended the Spotter-day on Friday were lucky to witness the arrival of both Su-27 which flanked a supporting Ilyushin Il-76MD. This surely was a sight to be remembered. Unfortunately, the Il-76MD landed somewhere else.

The static display comprised types like a F-35A from Italy, three AW101 from Portugal, Denmark and UK, CV-22 Osprey from USAF, Mi-8MT from Poland, A400M from Airbus (will be delivered to UK), Mig-29UBS from Slovakia, Typhoon FGR4 from UK, Tornado IDS from Germany, to name only a few.

The Belgian Air Force is in a phase of change. Types like the Sea King and C-130 Hercules are being replaced or are going to be replaced soon and types that are replacing them like NH-90 or A400M could be seen at this event. Also, the venerable F-16 is reaching the end of its useful life span and it is a suspenseful question which aircraft will be selected to supersede them.

Air show events at Kleine-Brogel are usually well worth a visit and this year's edition of "Belgian Air Force Days" was no exception.



- Il-76MD, Ukraine Air Force, top left
- Il-76MD with two Su-27, Ukraine Air Force, top middle
- Su-27, Ukraine Air Force, top right & main image



■ NH90TH Caiman, French Army Aviation, top
■ AW EH101, Royal Danish Air Force, bottom

■ EC 665 Tigre HAD, French Army Aviation, top
■ AH-64DN, Royal Netherlands Air Force, bottom

■ SA-316B Alouette III, Austrian Air Force, top
■ Sea King Mk48, Belgian Air Force, bottom



- KDC-10, Royal Netherlands Air Force with two F-16AM of the Belgian Air Force, main image
- F-35A, Italian Air Force, right
- EF-18M, Spanish Air Force, far right

RAMP TOUR AT THE ALMATY AIRPORT

REPUBLIC OF KAZAKHSTAN

Article and photography
by Tony S



IL-76TD of the Kazakh Aviation Rescue of the Ministry of Emergency Situations



An-24RV of SCAT Airlines

Almaty is the previous (1991-1997) capital of the Republic of Kazakhstan but still the largest city in Kazakhstan. Almaty International Airport (ICAO code UAAA), located about 15 km northeast of the city, is the largest international airport in the country. The airport also serves as a base to some military and paramilitary units.

Almaty Airport offers ramp tours to mass media representatives. The tour was extensive and the guides extremely helpful. There was not a single park or apron that we did not visit. We also visited some grass areas where some interesting aircraft are "stored". The tour had some restrictions. The most notable were that smoking is not allowed, no wandering alone on the movement area and photography of military aircraft was not permitted. The latter restriction was a bit disappointing as there were a few interesting aircraft in grey, camouflage and other color-schemes. In view of the restriction on taking photos of military aircraft, we can only share the civil aircraft with you; and this pictorial reportage focuses on the ex-Soviet types noted during the day there.



Tu-154M of the Kazakh Aviation Rescue of the Ministry of Emergency Situations



- Yak-42D, Avia Jaynar Airline, left top
- Yak-40K, Air Control, left middle
- IL-62M, Kokshetau Airline, left bottom
- T-134B-3, OMS Shipping, top
- Yak-40, Berkut Air, above
- Yak-40, East Wing Airline, right top

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