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2015 Team Issue

Snowbirds, CF-18 Demo, Red Arrows, Patrouille de France, Ramex Delta, Patrol Cartouche Dore, Patrouille Suisse, PC-7, USAF Thunderbirds, Fat Albert Airlines, and the Golden Knights



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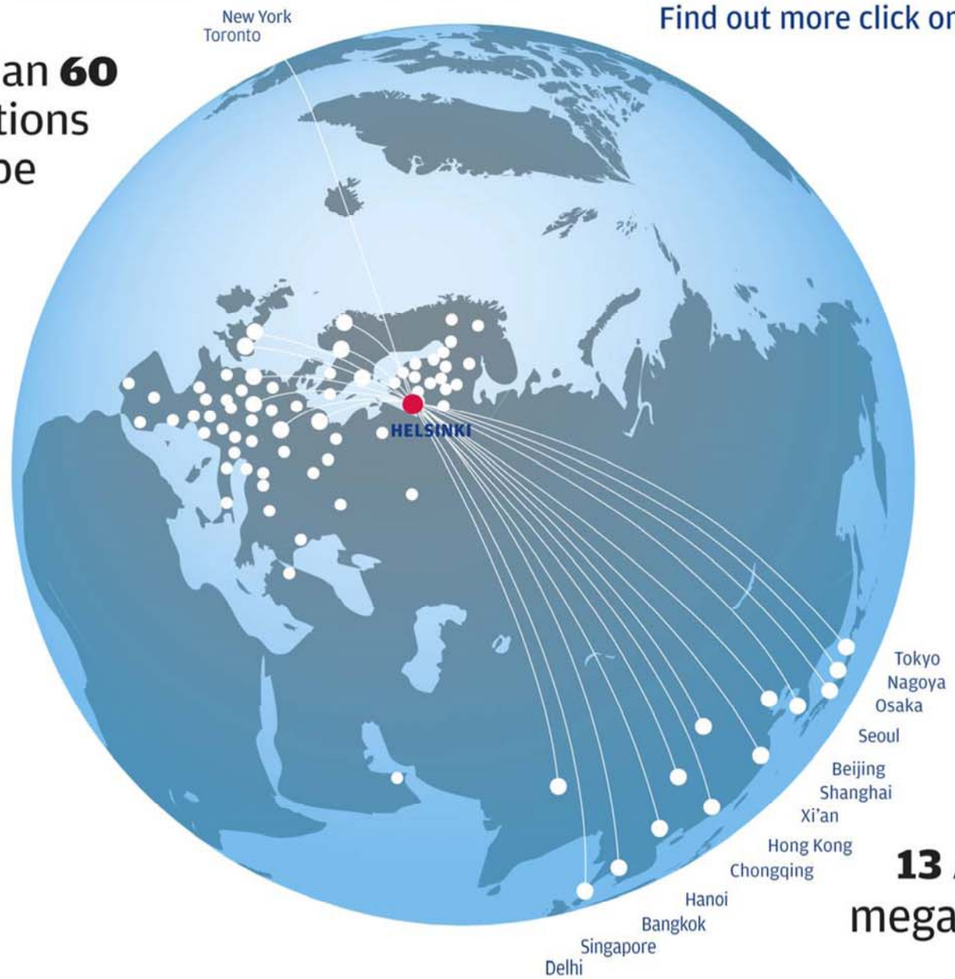

13 Asian megacities

THE AVIATION MAGAZINE

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Cover: Snowbirds with the 2015 CF-18 Demo Team Jet over Comox, B.C., Canada, photo by Steve Bigg

Index page: Ramex Delta over Istris AB, France, photo by Patrice Olivier

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AIR TO AIR





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THE AVIATION MAGAZINE

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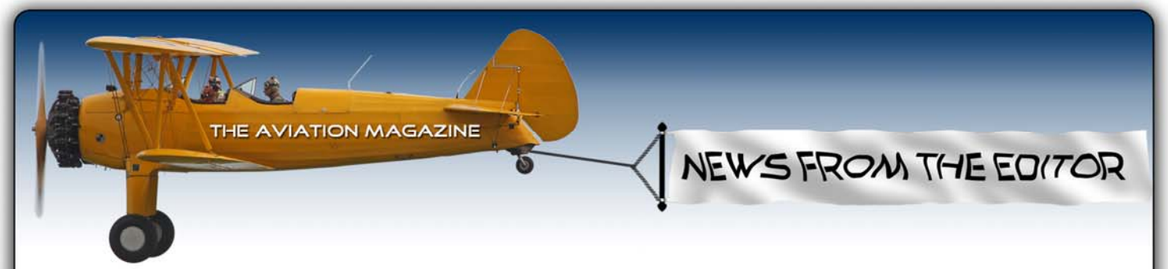

NEWS FROM THE EDITOR

THE AVIATION MAGAZINE recently had a chance to visit the spring training ground of the Snowbirds and of the CF-18 Demo Team as they were getting ready for the upcoming air show season, at CFB Comox, located in beautiful British Columbia, Canada. We featured the CF-18 in June-July's issue #35, that also included the unveiling of its unique paint scheme for 2015, celebrating the 75th Anniversary of the Battle of Britain.

As the Editor, I decided to release a special issue that would expand on our visit to Comox and include the Snowbirds, Canada's Ambassadors to the world, as well as our recent visit with Ramex Delta, at Istres AB, in France, who were getting ready for the air show season as well. Thus, the idea was born, why not add some of the other well known aerobatic jet teams who also represent their countries as Goodwill Ambassadors to the rest of the world.

In 2008, Quebec City celebrated its 400th anniversary with a special air show, unlike any other in North America since, which featured four of the best known aerobatic multi-jet teams in the world. Actually five were invited, but due to technical issues and other commitments the Patrouille de France could not make it. Nevertheless the four teams (Snowbirds from Canada, Red Arrows from the UK, USN Blue Angels and the USAF Thunderbirds from the US) made history.

In this special edition we feature the Snowbirds and the CF-18 from Canada, the Red Arrows from the UK, Ramex Delta, Patrouille de France, and Patrouille Dore from France, Patrouille Suisse, PC-7TEAM from Switzerland, USAF Thunderbirds, as well our long over due ride articles with Fat Albert Airlines of the Blue Angels, and with the US Army Golden Knights Parachute Team.

A quick trivia that you can ask your friends, which is the oldest aerobatic team in the world?
(1) Blue Angels
(2) Thunderbirds
(3) Red Arrows
(4) Patrouille de France
(5) Snowbirds

Congratulation to you if you know. If you do not know then read our issue and you will know.

Flashback to 2008 Quebec City Air Show

BLUE ANGELS ★ SNOWBIRDS ★ RED ARROWS ★ THUNDERBIRDS

Quebec City's 400th anniversary's air show was a once in a life time opportunity to see four of the very best multi jet teams performing together in one air show in North America. But do not fret if you missed them back in 2008. We are featuring all of them in this issue!

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Snowbirds

Article and photography by Steve Bigg



Paco Snowbird #1



Paco briefs his team and Cheech for the media photo flight.



Not a lot of people could tell you who the Royal Canadian Air Force's (RCAF) 431 Squadron is even if they've seen them perform. Even so, after 45 years on the Canadian and American air show circuits they are still one of the most sought after performers available to air show organizers and it's no stretch to say they're famous to air show fans. Their full squadron title of 431 Air Demonstration Squadron was given to them when the squadron was officially formed in 1975, but since their first season 45 years ago in 1971 they've been best known not as 431 Squadron but simply as; The Snowbirds. And even though most people don't know them by their official squadron title, you'd be hard pressed to find an air show fan who doesn't know and love to see them come to their local show.

For their 45th anniversary season the Snowbird's theme has been chosen to commemorate the 75th anniversary of the Battle of Britain (BoB). Over 400 Canadians flew or served as ground crew during the BoB and the team will fly the 2015 show season to honour the effort and sacrifices they gave to aid in winning the first major defeat of Germany during WWII.

Leading the team's flying performances again this year is Major Patrick "Paco" Gobeil; Snowbird 1. Paco led the team during the 2014 season and is a veteran of the air show circuit having also been the RCAF CF-18 Hornet Demonstration Team pilot for the 2012 season. The Snowbirds and the CF-18 Demo Team share the same primary purpose when performing at shows. Their job is to demonstrate the level of skill, professionalism and teamwork that members of specifically RCAF and the Canadian Armed Forces as a whole are capable of. Certainly the precise formation flying of the Snowbirds pilots goes a long way towards accomplishing that goal. But any one of the teams pilots would be quick to point out that all the work that goes on behind the scenes by the rest of the team is what enables them to be the stars of the show.

The roughly 80 members of 431 Air Demonstration Squadron spend 6 days a week over a 6 month period training, practising, maintaining and organizing for the season. The process of getting ready to hit the road culminates with the 24 members of "the road team" deploying to 19 Wing, Comox on British Columbia's Vancouver Island for 2 weeks to complete their final workups before their first official air show. In addition to the final practice flights to perfect the routine, the time in Comox gives both the pilots, team coordinators and the maintenance crew the opportunity to get used to operations on the road. It's also an opportunity for the team to begin to bond as group away from the familiar facilities of their home base in Moose Jaw, Saskatchewan. This bonding is a very important step to being successful on the road. It takes an incredible amount of team work to be sure everything is ready logistically and the jets are all working while the team criss-crosses all over Canada and America to perform more than 60 full shows, displays and fly pasts. The team have to rely heavily on each other while on the road to make sure everything is right.

Snowbirds fly their signature 9 plane abreast formation as they complete a training show at Comox, BC.

That job is not made any easier given the CT-114 Tutor jets flown by the Snowbirds have celebrated their own significant anniversary last year. 2014 marked the 50th anniversary of the Tutor being in service. Replaced by the Beechcraft Harvard II (T-6 Texan II) as a primary flight trainer for the RCAF, the Tutor is now flown exclusively by the Snowbirds with the exception of one plane assigned to the Aerospace Engineering Test Establishment at 4 Wing in Cold Lake Alberta. Maintaining a team of 50 year old aircraft is challenging enough. To do it on the road and without an additional support aircraft to carry tools, parts and equipment is a testament to the skills and ingenuity of the team's maintainers.

The Tutor was first used to form an 8 plane jet aerobatic team in 1967 when the Golden Centennaires flew to celebrate Canada's Centennial anniversary.



©2009 Laszlo Nyary

The team flew over 100 shows across Canada as well as several abroad before being disbanded after their last show. The leader of the Golden Centennaires continued to push for and develop a jet aerobatic team until his "instructor pilot advanced formation training program" led to the official creation of the Snowbirds and shortly after the reactivation of 431 Squadron as the Canadian Forces Air Demonstration Squadron. The team has flown the Tutor ever since but at present the Tutor is scheduled to be retired by the end of 2020. The Canadian Forces website lists a Snowbird Aircraft Replacement Project with an anticipated timeline for delivery of new aircraft in 2021 but it won't be until 2017 that a Request for Proposals is expected.

Thoughts of new aircraft for the team are far from the minds of the Snowbirds and their fans presently though as there are many shows to be performed before a new aircraft for the team is needed and decided on. In 2015 the team has shows as far south as Dallas, Georgia, as far north as Fort John, British Columbia, all the way east to Summerside, Prince Edwards Island and as far west as Santa Rosa, California. A lot of ground to cover between their May 1st opener and their last show on October 4th but it's all in seasons work for 431 Air Demonstration Squadron.

The Aviation Magazine would like to thank the Snowbirds and the CF-18 Demo team, in particular Lt. Mat Strong, Lt. Patricia Brunelle as well as 442 Search and Rescue Squadron for their significant help in covering the RCAF's 2015 demonstration teams.



©2015 Cpl Andre Maillet, 4 Wing RCAF

Squadron photo for 2015 of the 431 Air Demonstration Squadron: the Snowbirds, 15 Wing Moose Jaw, Saskatchewan, above, and a flock of Snowbirds in action at Westover ARB, Massachusetts, in May 2015, below.



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Left to right: #8 Captain Shamus Allen, #6 Captain Maciej Hatta, #4Captain Philippe Roy, #2 Captain Avert Pyne, #1Major Patrick Gobeil, #3Captain Bart Postma #5Captain Matthew Hart, #7Captain Steve Reed, #9Captain Morgan Strachan, PAO Lieutenant Patricia Brunelle, at Anderson Regional Airshow, SC



©2015 Brian Veprek

CF18 DÉMO

Bagotville | Cold Lake

PART II

ARTICLE BY STEVE BIGG AND PHOTOGRAPHY AS NOTED



CF-18 DEMO PART I

click here to download

The 2015 CF-18 Hornet Demonstration Team aircraft, AC# 188761, is the same aircraft used by the 2014 team and is actually a very unique aircraft, possibly one of a kind in the world. 761 carries the distinction of having had two different pilots eject from it. Quite the history for a single seat aircraft! Both ejections, one at RAF Station Alconbury in England in 1987 and the other in Yellowknife in Canada's Northwest Territories took place on the ground. The incident in Yellowknife caused little damage but the accident at Alconbury nearly destroyed the aircraft leaving it in 2 separate pieces. After the acquisition of a pair of Hornet wings from Australia and a C model F/A-18 nose section that was built for a Spanish Air Forces jet, several years of work went into rebuilding the aircraft and 761 was put back into RCAF service. In addition to being used as the demo jet for the last two years the aircraft also had a special paint scheme on the outside of both tails to celebrate the reactivation of 409 Tactical Fighter Squadron in July of 2006.

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©2015 Capt Adam "Manik" Runge

2015 CF-18 Hornet Demo Team Members

Rear row, left to right :

- Master Corporal Francois Cyr (410 Squadron), technician, Western Maintenance Team
- Master Corporal Eric Fleming (410 Squadron), deputy crew chief, Western Maintenance Team
- Master Corporal Martin Robert, (425 Squadron), technician, Eastern Maintenance Team
- Master Corporal Patrice Girard, (425 Squadron), deputy crew chief, Eastern Maintenance Team
- Lt Mat Strong, Team Public Affairs Officer
- Maj Eric Martinat, Coordinator and safety pilot
- Michel "Spike" Tremblay, Coordinator and safety pilot
- Corporal Jonathan Séguin, (425 Squadron), technician, Eastern Maintenance Team
- Corporal Alex Dumitras-Geli (409 Squadron), technician, Western Maintenance Team

Front row, left to right :

- Sergeant Janet Ekstrom (410 Squadron), crew chief, Western Maintenance Team
- Captain Denis "Cheech" Beaulieu, (425 Squadron), Demo Team pilot
- Sergeant Réne Lanteigne, (425 Squadron), crew chief, Eastern Maintenance Team



©2015 Steve Bigg

Cheech cruises above the Rocky Mountains on Canada's West Coast in the 2015 CF-18 Demo jet.

©2015 Steve Bigg

CF18 DÉMO

Bagotville Cold Lake

- Cheech flying “dirty” over beautiful British Columbia while posing for the camera, above
- Practising the air show style take off at CFB Comox , left below
- Taxiing by the Snowbirds, right bottom.



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CF18 DÉMO
Bagotville Cold Lake

High speed pass by Cheech at Westover ARB, above
Saluting the air show crowds at Salute America Air Show, Atlanta, below.



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ROYAL AIR FORCE RED ARROWS™ 2015

BY THE EDITOR WITH PHOTOGRAPHY COURTESY OF RED ARROWS UNLESS NOTED OTHERWISE

One of the world's premier aerobatic display teams, the Red Arrows are the public face of the Service and represent the United Kingdom both at home and overseas. With a trademark combination of close formation flying and dynamic loops and rolls, the team has been displaying since 1965.

For 2015, the BAE Systems' Hawk T1 jets feature a new tailfin design – a flowing Union flag-inspired livery that highlights the team's remit as national ambassadors. In addition to this role, the Red Arrows also assist recruitment into the Armed Forces, promote the excellence of the Royal Air Force, support British industry and assist defence diplomacy.

For the team's 51st season, the Red Arrows Squadron is commanded by Wing Commander Martin Higgins. Wing Commander Martin Higgins, who is a former team pilot, has responsibility for the Squadron and ensures procedures are followed by the team for safe and efficient flying. There is also a new Red 1, Squadron Leader David Montenegro – one of nine display pilots. Squadron Leader David Montenegro, was a team pilot between 2009 and 2011. Now, as Team Leader, he is responsible for all aspects of the display, from running the training programme to creating the routines and leading the team on the ground and in the air.

Among the other eight display pilots that make up the famous Diamond Nine of the Red Arrows, three are brand new to the team for 2015. Typically, air crew spend three years as a Red Arrows pilot. Each of the pilots has fast jet operational experience flying the Tornado or the Typhoon, enabling the Royal Air Force to secure the skies and protect the nation and its interests, 365 days a year.

Ensuring the team and aircraft are ready for each season involves a lot of team work on the ground. Known as the Blues because of the colour of their display coveralls, the team's 110-strong ground crew include skilled engineers, drivers, suppliers and other personnel with either existing frontline experience or who will go on to complete operations after leaving the Red Arrows.

Each year ten engineers are specially selected from the Blues. Known as the Circus, the engineers are assigned to one pilot each and fly to and from display destinations in the back of the Hawks, but not in displays. Members of the Circus are responsible for servicing the aircraft at each landing and take-off site. They then prepare the jets for the next event or for returning to their home base at RAF Scampton, where other engineers also maintain the jets. Often, during a typical summer weekend, the team will criss-cross the country and display at two events in a day, as well as performing numerous flypasts on transits between airfields and meeting the public when on the ground between flights.

About 80 displays will be carried out in 2015 and the season runs from May until September. However, the team is active year-round – with months of preparation during the autumn, winter and spring periods to perfect a show that will be seen by millions of people. Based at RAF Scampton in Lincolnshire, the Red Arrows had completed 4,660 displays, in 56 countries, by the start of this season.

For more information about the team, visit www.raf.mod.uk/reds

ROYAL AIR FORCE RED ARROWS™ 2015



The line up left to right is as follows: Squadron Leader Mike Ling (Red 10), Fight Lieutenant Joe Hourston (Red 9), Flight Lieutenant Olly Parr (Red 8), Squadron Leader David Montenegro (Red 1, Team Leader), Flight Lieutenant Steve Morris (Red 7), Flight Lieutenant Mark Lawson (Red 6), Flight Lieutenant Tom Bould (Red 5), Flight Lieutenant Stew Campbell (Red 4), Flight Lieutenant Emmet Cox (Red 3), Flight Lieutenant Mike Bowden (Red 2).

ROYAL AIR FORCE RED ARROWS 2015

ROYAL AIR FORCE RED ARROWS™ FROM YESTERYEAR







- RIAT 2010, top left ©2010 Laszlo Nyary
- RIAT 2013, mid left ©2013 Peter Thivessen
- Quebec City 2008, bottom left ©2010 Laszlo Nyary
- Malta 2014, top right ©2014 Christopher Mifsud
- Malta 2014, bottom right ©2014 Christopher Mifsud





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Patrouille de France

By Laszlo Nyary

PHOTOGRAPHY AS NOTED

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Patrouille de France, (PAF) the French aerobatic team of the Armée l'air is the French Air Force's Ambassadors to the world. The pilots currently fly the Dassault/Dornier Alpha Jet, operating out of Base aérienne 701 Salon-de-Provence.

This world famous precision aerobatic demonstration team can trace their history all the way back to 1931, thus making the team the world's oldest and one of the most skilled demonstration teams.

France's first aerobatic demonstration was on May 10, 1931 over Étampes-Mondésir. It was performed by the instructors from the local flying school with Morane-Saulnier MS-230 aircraft (frame #9 on filmstrip). Their first display abroad was that August in Belgium. In 1934, the team transitioned to Morane-Saulnier 225 aircraft. The Patrouille d'Étampes team commanded of Captain Pierre Fleurquin from 1932-39, was chosen to represent France at international events. From 1936 until 1939, the team employed Spad 510 aircraft (frame #10).

In 1937, Patrouille d'Étampes team relocated to Salon-de-Provence, and they became known as the Patrouille de l'École de l'air "Flying school Patrol". The Second World War interrupted the operations.

After WWII, in 1946 a former Patrouille d'Étampes team member, Captain Perrie, re-established an aerobatic team at the school for air instructors in Tours. The new team again was named after its base location and it was known as the "Patrouille Tours". In 1947 this team returned to Étampes. The Department of Aerial Navigation gave the team official status as a "squadron" in the French Air Force and it was equipped with twelve Stampe SV4 aircraft (frame #11).

The first French Air Force aerobatic team with jet aircraft was established in 1950 in Dijon by the commander of the 2nd squadron, Captain Marias. This team was equipped with four De Havilland Vampire jet fighters (frame #12). In 1951, Captain Marias went on to found another display team drawn from the 4th squadron based in Friedrichschaffen. In 1952, Commandant Delachenal, Commander of 3rd squadron airbase at Reims-Champagne, established yet another aerobatic team employing four Republic F-84G Thunderjet (frame #13). In 1953, during an aerial event at Maison Blanche in Algeria, the show's commentator, carried away by the spectacle he had just witnessed, gave the team the name "Patrouille de France". In 1954 the US made F-84 aircraft was replaced by the French Dassault Ouragan (frame # 14), and the team flew it until 1957, when it was replaced by Dassault MD.454 Mystère IV (frame#16) the first transonic aircraft to enter service with the French Air Force. Due to budget cuts in 1964 the Dassault Mystère IV team was disbanded, but shortly the Ministry of Defence decided to create an official "Patrouille de l'École de l'air", consisting of six Fouga Magister aircraft (frame #17) stationed once again at Salon-de-Provence. In time the six Fouga Magister grow to nine aircraft. Their last performance was September 16, 1980 at their home base of Salon-de-Provence. They were replaced by seven Alpha Jet, with an additional aircraft added in 1982 to make a total of nine.

In 2009, the Patrouille de France made history with the appointment of Commandant Virginie Guyot, the first woman to lead a national demonstration team in the world, below at Malta International Airshow.





2015 LA PATROUILLE DE FRANCE

Image courtesy of Officier Relations Publiques, Équipes de présentation de l'armée de l'air 20.300

Left to right back row: **Nº8 Capitaine Benjamin MICHEL, Nº6 Capitaine Benjamin CHANAT, Nº1 Commandant Romain BETHOUX, Team Leader, Nº5 Capitaine Olivier BLANC-TAILLEUR, Nº7 CApitaine Hervé AUBERT**

Front row: **Nº2 Capitaine Philippe CASTAGNET, Nº4 Commandant Christophe DUBOIS, Nº3 Capitaine Bertrand TARDIF, Nº9 Capitaine William LEROY**

2015 LA PATROUILLE DE FRANCE

Image courtesy of Officier Relations Publiques, Équipes de présentation de l'armée de l'air 20.300



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Left to right: **Nº8 Capitaine Benjamin MICHEL, Nº2 Capitaine Philippe CASTAGNET, Nº4 Commandant Christophe DUBOIS, Nº6 Capitaine Benjamin CHANAT, Nº1 Commandant Romain BETHOUX Team Leader, Nº3 Capitaine Bertrand TARDIF, Nº5 Capitaine Olivier BLANC-TAILLEUR, Nº7 Capitaine Hervé AUBERT, Nº9 Capitaine William LEROY**

LES AVIONS DE LA

PATROUILLE DE FRANCE



Since 1931, the teams under different names have flown at least nine different aircraft types, as highlighted on pages 34-35. The French Post Office over the years issued several stamps that featured these aircraft, several of these stamps had caught my attention one issued in 2008 and a particular set from 2013.

In 2013, “Patrouille de France” the teams official name since 1953, became 60 years old. To commemorate their 60th Anniversary a special set of stamp was issued which illustrated the jets they flew since the adoption of this name.

ALPHA JET

The Dassault/Dornier Alpha Jet is a light attack jet and advanced trainer aircraft co-manufactured by Dassault Aviation of France and Dornier of Germany. The Alpha Jet performed its first flight at Istres on 26 October 1973. The aircraft manoeuvred well and had no difficulties at transonic speeds. This capable small twin-jet which takes off in 700 metres and reaches Mach 0.86 at 15,000 m, is perfectly adapted to combat flight training and is operated by several foreign air forces. The Alpha Jet, thanks to its performance and safety, in 1981, has successfully replaced the Fouga Magister for the Patrouille de France. The aircraft is only slightly modified for the aerobatic team, these modifications include; the removal of the Head Up Display, the change of the landing gear light location to the nose, a special blue, white and red livery, and a container added beneath the fuselage housing the pyrotechnical instantaneous smoke elements which produce a plume of blue, white and red smoke in the sky.





8 ship formation of the Patrouille de France, above, and a crew getting the Alpha Jet ready before a performance, to the left.


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EXCLUSIVE REPORT BY THE AVIATION MAGAZINE
WE ARE DEDICATED TO BRING YOU THE VERY BEST....

Without a doubt, one of my favourite jet teams that is actively flying is the Ramex Delta, from the Istres-Le Tubé Air Base, BA 125, located near Istres, northwest of Marseille, France.

The tactical team members are relatively new to the air show circuit, they were created in 2009, by "Nanar" and was flown by Mirage crews from the 3 M2000 N squadron. In 2011, the Strategic Air Command (SAC) decided that only one team by squadron is granted to fly an air show season. At that time Jonah, from the Escadrille La Fayette, asked the SAC, to approve it to do it with his squadron with Gaby, the current team leader. Their first air show was in Saint Dizier, in June 2011. At that time, there was the team of Luxeuil (Requin India), and Jonah's Ramex Delta. The next year, Ramex Delta was the only one team in the air force to perform a tactical show.

We at The Aviation Magazine, had the pleasure of meeting them at air shows, and a couple of lucky members of our staff including myself, at their home base.

What makes the Ramex Delta unique among other jet teams, is that they not only fly combat ready aircraft the Dassault Mirage 2000N without any modification for the air show displays, the pilots serve concurrently as regular pilots of Strategic Air Forces (FAS, Forces Aériennes Stratégiques) the airborne nuclear deterrent of the French Air Force (L'armée de l'air). Additionally their display routine is closely related to actual tactical deployment versus aerobatic routines designed for air show displays.

We had an extensive article about the Ramex Delta team, as well about their squadron the Escadrille La Fayette in our #23rd issue, 2013 June-July, covering our first base visit. Additionally, they have appeared on our cover to celebrate the 80th Anniversary of the L'armée de l'air in our #27th issue, 2014 April-May, and once again on our cover #29th issue, participating in one of the largest air shows in France during 2014 at Cazaux AB, for the air forces' 80th anniversary celebration. (click on issues for a free download)













Our 2015.04.15 visit at BA 125 the home of Ramex Delta

A day in the life of pilots of the Ramex Delta Team, narrative by Patrice, representing The Aviation Magazine.

Before the air show season begins, every year the team has to go through a certification process and approval, in which they are scrutinized thoroughly to ensure that they meet the high standards , safety and expectations by the Public Display Authority of the Air Force, working towards the final validation of the display by General Denis Mercier, Chief of Staff of the Air Force at Salon de Provence Air Base.

In order to achieve validation, the team practices weather dependent one or two sorties a day, and three or four times a week. These practice sessions last for several hours. Usually before the scheduled flight time they start about one and half hour earlier. The Aviation Magazine had the rare privilege to attend one of these pre-flight preparations which starts at their briefing room. To honour us, they wore and flew with the Aviation Magazine's patches, that can be clearly seen on their right shoulders.

For 2015 the flying members of the team are:

- Ramex 1: Gabi — Team leader, and PP — WSO
- Ramex 2: Pierrot — pilot, and Camille — WSO

T minus 1:30:00 in the Briefing Room "The Music"

The four members in silence and intensely concentrate on all of their flying moves, mimic with their hands their flight, as well as their stick and throttle movements of their 12 minute routine. To a outsider this kind of looks like a conductor conducting an orchestra, thus name "The Music".



Mirage 2000N Ramex Delta N°2



Pierrot – Ramex N°2

T minus 1:00:00

The pilots get ready by going to the flight equipment locker room, put on G-suits and grabbing their helmets, it takes a few minutes to put on the G-suits properly.

T minus 0:45:00

From the flight locker room to the official dispatch desk, to sign out the aircrafts, the flight plan details, and to learn about any repairs performed by the mechanics to be aware of.





PP – Ramex N°1

T minus 0:35:00

Walking towards the aircraft with “Boq” the mechanic for the 2/4 LaFayette squadron. Gabi wearing the 2013 The Magazine patch, while the others are wearing our latest Flying Moose Tour patch of The Aviation Magazine.





Ramex N°1 crew



T minus 0:25:00

After a thorough walk around the aircraft by the pilot, checking and talking to the mechanic, the flight crew makes final adjustments to their G-suits and are ready to sit inside the cockpit.



T minus 0:10:00

Once seated the engine is started the instrument panel is checked for the proper functioning of the engine, hydraulics and all necessary support systems, once all the operation systems indicate normal, the canopies are closed and are ready to taxi out to the runway.



T minus 0:00:01 Time to take off and start the display...





Ramex Delta in close formation, the leader Ramex #1 always ahead of Ramex #2




RAMEX
DELTA
TACTICAL DISPLAY







T plus 0:12:01 Time to land after the tactical display by the Ramex Delta Team...









T plus 0:20:00

After parking and disembarking the two pilots discuss their flight, and the team poses quickly by one of the aircraft and continue for complete debriefing inside….



T plus 0:30:00

Back in the “office” the team is debriefed and their performance is analyzed by the Gabi, the Team Leader as well as their coach Jonah, their former Team Leader from the 2011-2013 season. This can take some time as video is reviewed, taken from the ground as well as from the cockpit…

Once the reviews are done, it is time to relax a bit, in this case visiting the air base’s aviary, where falcons are kept to scare birds off the runway, In this case it was possible to bring them to the actual apron where the aircraft are parked to pose with the birds of prey. And with this, our visit ended.

The Aviation Magazine would like to thank all the members of Ramex Delta Team; Gabi, PP, Pierrot, Camille, Jonah; Ricardo — pilot from Strike squadron 2/4 La Fayette; Squadron Commander 2/4 La Fayette; ADC Alain Courtillat — Chief of Photographic Service, and his crew SGT Anaïs, SGT Pierre, all the ground crew, all the base personnel involved, and SIRPA AIR. You are the BEST!









CARTOUCHE DORE

ARTICLE BY THE EDITOR WITH PHOTOGRAPHY AS NOTED

Patrol Cartouche Doré (Golden Cartridge Patrol) is one of the aerobatic teams of the French Air Force. They are based at the BA 709 Cognac Châteaubernard since its inception of 1989. The base is home to the l'école de pilotage de l'armée de l'air (EPAA) flight school of the air force.

The team consists of five pilots; one leader, and two rightwing and two leftwing members. During an air show only three fly in a tight formation, less than 2 metres apart, led by the leader and one of the two right and left wing members who alternate at each demonstrations. These other two remain on the ground to watch, learn and comment on the performance. There are three photographers filming all the flights, which are used for educational purposes by the flight school as well. In an average year they perform at thirty aviation events.

Cartouche Doré fly the French made EADS Socata "TB 30 Epsilon" powered by a 6 cylinder Avco Lycoming O-540 piston engine producing 300 hp, driving a two-blade propeller, and is fitted with a retractable undercarriage. This nimble aircraft is ideal for student pilots learning to fly. Maximum speed is 378 km / h (204 knots, 236 mph) at sea level. The Epsilon is a low winged cantilever monoplane of all metal construction. The pilot and instructor sit in tandem under a sliding Plexiglas canopy, with cockpit layout designed to aid transition to the Dassault/Dornier Alpha Jet for the students after graduation.

During a typical display Cartouche Doré fly at speeds between 80 and 180 knots, or 150 360 kmh, reaching a maximum altitude of 2000 ft or 700 m.

© R.Nicolas-Nelson EPAA SAPA Cartouche Doré

CARTOUCHE DORE

2015

left to right: LTT Mochino - Capitaine LEVY
Capitaine Blanquer - Lieutenant Chapel
Capitaine Regent "Averell"

© 2015 Sergent Chef Philippe Ison. EPAA S/A Cartouche Doré





Display images from 2014 at the Roanne air show, France, in September.

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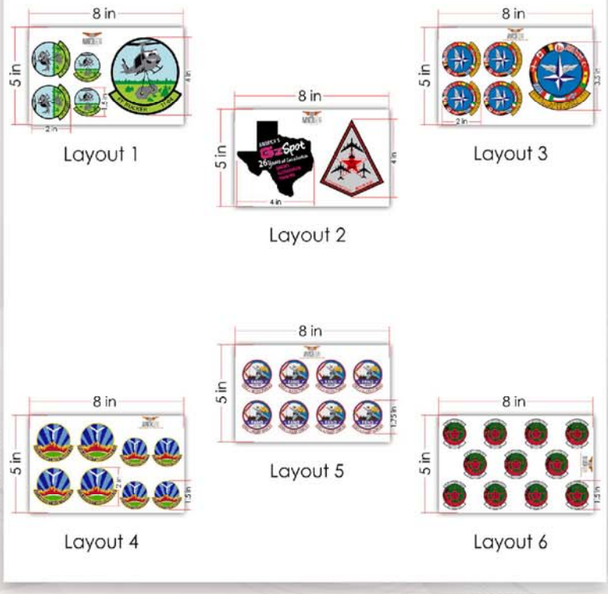
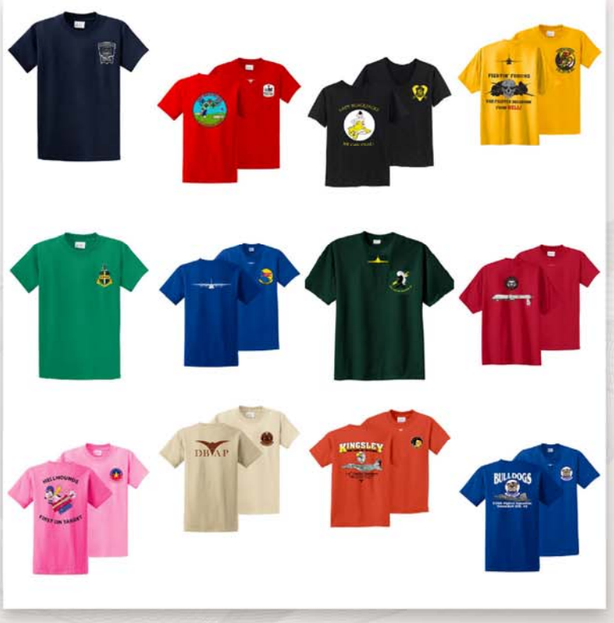


Squadron Shirts



Patrouille Suisse

REPORT BY RALF P. WALTER WITH PHOTOGRAPHY AS NOTED

© VBS / Tokunaga Katsuhiko

The Patrouille Suisse is an aerobatic jet team of the Swiss Air Force. The team flies six Northrop F-5E Tiger II jets. The Patrouille Suisse normally operates six Northrop F-5E Tiger II aircraft out of total of twelve F-5Es that are maintained in team colors.

History

Officially, In 1959 the Ueberwachungsgeschwader (UeG) was tasked with setting up two pairs of Hawker Hunter Mk.58 aircraft. 1964, in the light of the EXPO fair and the 50th anniversary of the Swiss Air Force they flew numerous displays all over Switzerland. On August 22, 1964 the Patrouille Suisse, the first official Swiss Air Force aerobatic team was established. About four years later, the future of the Patrouille Suisse hung in the balance. When making a film about the Swiss Air Force the team leader, CAPT Birrer crashed into the mountains and was killed. However, after a break of only several weeks 1st LT Enrico Ferrero was appointed new team leader and ordered to setup a new display program with four aircraft. Maneuvers were restricted to a minimum altitude of 300 ft above ground level (AGL) for the whole formation, whereas crossing of single aircraft or pairs were restricted to 150 ft AGL.

1970 the number of aircraft was increased from four to five with an entirely new display program. Loopings had a diameter of 1.500m, rolls were not allowed bellow 1.800 ft AGL and g-loads limited to maximum of +5g/-3g.

In 1978 the Patrouille Suisse had its first performance outside of Switzerland. On the occasion of the 25th anniversary of the French Air Force aerobatic team Patrouille de France the Swiss displayed at Salon-de-Provence, the home base of the Patrouille de France. This also was the first time for the team to fly with six aircraft. In 1979, at its second performance outside of Switzerland, the Patrouille Swiss was awarded the Shell Trophy for the best flying display at the Royal International Air Tattoo.

© VBS / Tokunaga Katsuhiko

Until 1991 the aircraft had the standard Swiss Air Force color scheme. That year, as part of the commemoration of the 70th anniversary of the Swiss Confederation the team's Hawker Hunters received their own identity by giving them a distinctive color scheme - now the wing's underside is red and white with a large white cross.

With the withdrawal of the Hunter from active service within the Swiss Air Force the era of the Hunter with the Patrouille Suisse also came to an end. Their last official display on this type of aircraft was on September 25th, 1994 at the French air base Nancy.

The 1995 season saw the team on six all red and white colored Northrop F-5E Tiger II aircraft. Apart from the all red and white color scheme, the aircraft is a standard F-5E Tiger II. In 1996 a white smoke generation system was added. This replaces the right hand 20mm cannon. However, if needed the cannon can be easily re-fitted. When not flown by the team, the aircraft are used for standard flying operations within the Swiss Air Force.

In 2014 the Swiss air Force celebrated their 100th, and the Patrouille Suisse their official 50th Anniversary. Please see our coverage by clicking on the magazine cover to the right.



The Patrouille Suisse is based at Emmen Air Base. The pilots are fulltime fighter pilots, assigned to different squadrons and also qualified to fly the F/A-18 Hornet. They only come together for training and performing displays at local and international events and air shows.

Images of the Hunter from yesteryear as well as of the Tiger IIs from the 50th Anniversary at Air 14, including a special silver 20 Fr coin minted for the occasion.



All images unless noted ©VBS

2015

SWISS AIR FORCE TEAM
PATROUILLE SUISSE

LT COL DANIEL HÖSLI
«DANI» TIGER ZERO – COMMANDER

CAPT SIMON BILLETER
«BILLY» TIGER UNO – LEADER

LT COL NILS HÄMMERLI
«JAMIE» TIGER DIECI – DEPUTY COMMANDER

CAPT RODOLFO FREIBURGHAUS
«ROODY» TIGER DUE – RIGHT WING

CAPT MICHAEL DUFT
«PÜPI» TIGER TRE – LEFT WING

CAPT MICHAEL MEISTER
«MAESTRO» TIGER CINQUE – 2ND SOLO

CAPT GUNNAR JANSEN
«GANDALF» TIGER QUATTRO – SLOT

CAPT GAËL LACHAT
«GALI» TIGER SEXI – 1ST SOLO

MARIO WINIGER
«WINI» TIGER OTTO – SPEAKER

ALBAN WIRZ
«ALBAN» TIGER NOVE – SPEAKER

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Article by the Editor with Photography as noted

As ambassador of the Swiss Air Force, the PC-7 TEAM shows dynamic, elegant and precise formation flying at its best. With a crisp flowing program, attractive formation changes and many different figures, the PC-7 TEAM gives a very professional performance during which flight safety and team-spirit are the top priority. The PC-7 TEAM derives its name from the airplane used, the Swiss made Pilatus PC-7 trainer.

History

Their history traces back to the seventies, when they flew simultaneous aerobatics with two Pilatus P-3 aircraft. After the introduction of the PC-7 in 1983, solo displays were flown with the new orange and silver-coloured trainer plane. During the Air Force competitions in 1987, Colonel Hansruedi Ruesch, the commander of the surveillance wing at the time, ordered a formation with nine PC-7 into the air for the first time. On 20 July 1987, the first nine volunteers gathered to attend a three-day training course in Locarno. The first display, performed on 29 August 1987 in Dübendorf, received a very enthusiastic response from the public.

Diamond formation in front of the iconic Matterhorn, Switzerland

© VBS All images







However, 1989 is considered to be the foundation year, as it was then that the team was re-formed to fly at the celebrations marking the Swiss Air Force's 75 year- jubilee. The display was a great success and as a result, from 1989 onwards, the new Swiss Air Force PC-7 TEAM performed several displays a year, enthralling the Swiss population. In 1992, they demonstrated their skills above the skies of Avord, France. Subsequently, the number of displays increased Monaco, England, Germany, France, Denmark, Sweden, Malta and many other European countries can be found on the annual schedule now. In 1998 the PC-7 TEAM even performed in Israel.

The display program has been continually refined over the years and new elements like multiple crossings, mirror flights and new formations have been added.

In 2008, the PC-7 was completely modernised. The cockpit was upgraded to stateof-the-art technology, given a general facelift and the aircraft's colour scheme was changed to the Swiss national colours, red and white. Highly popular in Switzerland and abroad, the PC-7 TEAM has received several awards, including the "King Hussein Memorial Sword" for best flight presentation at RIAT, Fairford, GB, in 2013. In time for its 25-year jubilee in 2014, the PC-7 TEAM installed a new smoke generating system in its planes. The smoke makes the formations and figures flown in the sky more clearly visible to the crowd.



SWISS AIR FORCE
PC-7 TEAM

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2015



Left to right back row: Colonel Werner Hoffmann Commander, Maj Andreas Hebeisen Public Affairs, Capt Philippe Hertig Public Affairs; Turbo 1 Capt Martin Vetter, Leader inside the cockpit
Front row: Turbo 7 Capt Marius Krüsi 2nd Solo, Turbo 4 Capt Matthias Müller Slot, Turbo 3 Capt Mario Thöni Left Wing, Gst Maj Martin Hess Spare Pilot, Turbo 5 Capt Cyril Johner Left Outer Wing , Turbo 2 Capt Alain von Büren Right Wing, Turbo 8 Capt Christoph Schneider 1st Solo, Turbo 6 Capt Thomas Hilpert Right Outer Wing

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Fat Albert Airlines

ARTICLE BY NORMAN A. GRAF WITH IMAGES AS NOTED





We covered the 2015 Blue Angels' Team in our Naval Aviation special edition recently, available for a free download by clicking on the Aviation Magazine image to the left that included the all Marine crew of the Fat Albert Airlines.

Our regular readers of this Magazine will all be familiar with the C-130T aircraft used to provide logistics support for the Blue Angels. Affectionately nicknamed "Fat Albert," the Hercules transports personnel and equipment to each air show venue and flies an opening demonstration for the team. What many may not realize is that selected individuals are invited to ride along during rehearsal and practice flights. These include local VIPs, distinguished military personnel and accredited members of the media. We were fortunate to be invited on board during the 2014 Wings Over Houston air show. We'd like to bring you behind the scenes and let you experience the full tactical demonstration from inside the aircraft.

Several members of the military, local VIP Christine Ha (blind winner of the third season of MasterChef) and select media all gathered on the tarmac at Houston's Ellington Field on Friday, October 31, 2014. We were greeted by Maj. A.J. Harrell, one of the pilots, who gave us a brief overview of the upcoming flight. It would be short, especially for a C-130, and very bumpy because of the winds, but we were assured it would still be fun. Most of the two dozen airmen selected for this incentive flight had flown on C-130s and many had flown the Hercules in combat zones. Putting this flight into context, Maj. Harrell explained: "We'll try to fool you into thinking it's the same, but it'll be a little bit different." We would find out soon enough what he meant by that.

Major Dusty Cook gave us the formal briefing. He would be the pilot in the left seat, Major Harrell would be flying in the right seat. The rest of the crew was composed of flight engineer Staff Sergeant Kevin Sanchez, navigator Gunnery Sergeant Christian Villalobos and in the back, for our safety and entertainment, Staff Sergeant Adam Miller, Sergeant Chris Farinella and Petty Officer Mark Lombardi.

"Now you know who the crew is, and who's going to be taking care of you. Feel free to listen in, I'll be giving them the crew brief. I'll follow it up with a passenger brief and then answer any questions you may have," said Major Cook.

"All right crew, attention to brief. Time's about 32 after. Man-time 45, Take-off 15 hundred. We'll be using runway 35 Left, center point will be the white semi-trailer, the white tarp will be showline, the 500 foot line will be the inboard edge of the runway itself. All emergencies will be handled according to NATOPS (Naval Air Training and Operating Procedures Standardization). Anything prior to 80 knots we'll abort between 80 knots and the VMCA and we'll then make the decision after that. An airborne emergency we'll bring it back to 35 Left. Anybody can also call a "Knock it off" if you see the need to do that. We'll climb to cope and decide if we can continue the demo or not. Field today is gorgeous. VFR. Winds are out of the north about 10 to 15 knots. For our profile I will be on runway 35 Left. I'll be on the brakes. I'll set max power. Mo says "Hit it Bert!" I'll release the brakes. We'll start our takeoff roll. At 80 knots I'll take the yoke. VMCA execute a low transition. 170 knots 45 degrees nose up. At 110 we'll push over the top. At 135 knots we'll get the flaps. At 150 knots we'll pull left. At 160 knots we'll verify we're clean. At 170 call maneuvering speed. A right turn heading of 035 and then I'll pull a 60 degree angle of bank turn to the left to set up for our input to the parade pass. We're in for the parade pass. We'll descend no greater than 4000 feet per minute and no lower than 500 feet. Till contact. No lower than 200 feet. That'll be our target set today. Once past the crowd line I'll call "Rolling" and it'll be 60 degree angle of bank turn to the right for our egress line. Once we're wings level and established clear I'll call "Pull up." 10 degree nose up for our target altitude of 1000 feet. At 2 miles I'll call roll and 60 degree bank turn to the left for our entrance to the flat pass. We'll descend no greater than 4000 feet per minute, no lower than 500 feet until we contact. No lower than 200 feet wings level for our target altitude today of 40 feet. 320 knots. At center point I'll call "Stand by, Stand by." I'll call "Pull up." It'll be 10 degrees nose up and roll 60 degrees turn tight for our minimum radius turn at 500 feet. From there we'll call contact for the head on. I'll descend down to 200 feet. At point 5 we'll call "Pulling" and it'll be 20 degrees nose up and roll 60 degrees turn bank to the left for our downwind. Once we're at speed we'll configure clean. At 2 miles I'll call "Rolling." 45 degrees angle of turn bank to the left for our final. Once I feel like it's time to go in we'll get flaps to a hundred, back up both throttles and at 95 knots I'll call "Push." It'll be 25 degrees nose down. Once we're on the deck, I'll transfer the yoke back. We'll clear in the back 50 knots

© Laszlo Nyary

knots “Standby the Flag.” Once we’re actually stopped we’ll clear the flag. We’ll back up, we’ll flash the lights to Mo, we’ll taxi back to right here and we’ll take some pictures.”

Got that? Good! Buried in all of the technical jargon is the fact that we would be pushing the aircraft to its limits: max pitch (both up and down), max bank, max g’s (both positive and negative) and max speed (.64 Mach). And all that in just over eight minutes. We were in for a ride!

Because of the aggressive maneuvering and high g’s, everything we brought on with us needed to be strapped down. We were responsible for taking everything we brought on to the plane back off with us afterwards, including the contents of our stomachs. “You don’t have to use it, but you have to take one,” explained Sgt Farinella as he passed out “sick-sacks.” One airman was given the opportunity to sit in the “bubble” during the flight. This plexiglass dome is located on the roof of the aircraft between the wings and provides a spectacular view during the show. To get there he had to ascend a stepladder which was bolted to the floor, then get securely strapped in. The rest of us settled into our web seats along the side of the fuselage and buckled our seatbelts. Sgt Farinella came by again and yelled “Scootch!” to several of the media, indicating to them that they needed to scootch their backsides deeper into the seats and tighten their belts a bit more securely. The ramp closed and we taxied out.

Out on the runway the engines revved, rattling the aircraft as Maj. Cook stood on the brakes. Brakes off and we were on our way. Once airborne we stayed on the deck, a mere four feet off the asphalt, as we cleaned up the gear and built up airspeed. Rotating into the maximum effort climb slammed us into our seats and threw us towards the rear of the aircraft as we rose at six times the climb rate of a similarly-sized 737 commercial jet. Without an external frame of reference our only clue to the angle of climb was Sergeant Miller’s crazy posture: he appeared to be leaning forward at 45 degrees without any support!

Pushing over the top at 110 knots gave us several seconds of negative g’s. Arms and legs involuntarily rose up: Sgt Farinella and Petty Officer Lombardi held on to the rungs of the stepladder as their feet almost hit the ceiling. A number of sick-sacks flew by (thankfully still empty) and the camera in my hands eerily tugged its way up into the air. What a blast! But the roller coaster ride had just begun. Over the next several minutes the view outside the windows turned from blue sky to green grass as we experienced the maximum banks during the minimum radius turn and other transitions. Over and over we were pressed into our seats by several times the force of gravity. Our final encounter with negative g’s came during the assault landing as our pilots took us into a dive eight times steeper than your normal airliner approach to landing. We slammed onto the deck and the pilots immediately stomped on the brakes. The cargo bay filled with smoke and the acrid smell of burning rubber as the tires skidded over the runway. For the last time we were straining against our seatbelts as we decelerated. The ramp opened as we came to a stop and immediately started backing up. After taxiing back to the ramp we exited and took photos with the crew. The Blue Angels jets were already airborne and ‘Bert needed to be prepped for tomorrow’s show, so there was no time to linger.

The Aviation Magazine would like to thank Scott Tims for organizing this amazing media opportunity and we would like to sincerely thank the all-Marine crew of Fat Albert Airlines for their service and for one hell of an eight-and-a-half-minute ride.





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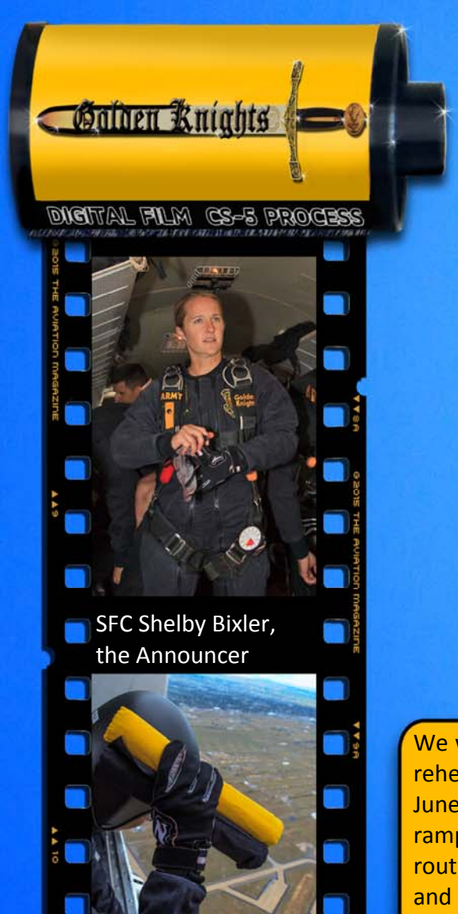
Flying High with the Golden Knights

ARTICLE & PHOTOGRAPHY BY NORMAN A. GRAF

The Strategic Army Command Parachute Team was formed in 1959 at Fort Bragg, NC, the “Home of the Airborne.” Two years later it adopted the nickname the “Golden Knights” by which it has been known ever since. The Golden Knights are composed of a number of separate units: the Tandem Team, the various Competition Teams, and the Black and Gold Demonstration Teams. The Tandem Team delivers the experience of freefall parachuting to Soldiers and VIPs across the U.S. by buddying-up and jumping in tandem. The Competition Teams compete both nationally and internationally and have amassed an impressive number of medals in their fifty-six years of existence. The Black and Gold Teams perform aerial demonstrations around the world, thrilling audiences with their amazing skydiving displays.



SFC Shelby Bixler, the Announcer

The WDI is about to be tossed down….



The best way to take action photos



We were understandably thrilled when we were invited to fly along during a rehearsal jump at the Warriors Over the Wasatch air show at Hill AFB in June, 2014 (see our review of the air show here). We met the team on the ramp on a drizzly, overcast morning. As the jumpers walked through their routines on the tarmac we were briefed on what to expect during the flight and boarded the aircraft. The Demonstration Team is carried aloft in the C-31A Troopship, a militarized version of the Fokker-27 MK400 Friendship. (The team's other aircraft type, the de Havilland UV-18A Twin Otter, is the primary support aircraft for the Competition Teams and the Tandem Team.)

After a short delay due to a rain squall we took off and began a circling climb over the base. The jumpers normally exit the aircraft at 12,500 feet, but since the runway at Hill AFB is at almost 5,000 feet above sea level, and the ceiling was limited that day, they would be jumping from only a little over a mile above the ground. As we ascended, team members kept a keen eye on wind and weather conditions. During the ascent they dropped Wind Drift Indicators (WDI, or "woodies"). These are wooden batons attached to long crepe paper streamers which clearly show the wind speed, direction and variability over the drop zone. The launch point is calculated based on how far the woodies land from the target.

As we neared our jump altitude even the massive C-5 Galaxy and B-52 Stratofortress arrayed on the tarmac looked like miniature scale models. The team members conducted last-minute checks of their gear, donned their helmets and lined up. SFC Shelby Bixler, the Announcer, was the first to exit the aircraft. She would freefall to a lower altitude and quickly descend to take her place on the announcers podium.

DIGITAL FILM CS-5 PROCESS



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SFC Kevin Presgraves, the Team Leader, soon indicated it was time for the rest of the team to jump. He departed the aircraft and was followed in quick succession by the remaining parachutists. Each Golden Knight snapped a crisp salute as the 120 mph slipstream caused them to disappear from view almost immediately. We followed the bright red streams of their smoke canisters until we saw the black and gold parachute canopies deploy.

The pilot of our aircraft then banked the aircraft hard and engaged in a maximum descent. Once back on the ground we caught up to the jumpers furling in their parachutes and beginning the prep work for the next day's jump. Once their tasks had been completed, they lined up for a group photo in front of their aircraft. We'd like to sincerely thank the members of the Golden Knights Black Team for the opportunity to ride along on one of their flights. For more information on the team, please visit their website at http://armygk.armylive.dodlive.mil/



The Black Demonstration Team, above.
The Team's C-31A Troopship, below.





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2015 USAF THUNDERBIRDS

REPORT BY THE EDITOR WITH PHOTOGRAPHY AS NOTED

AMERICA'S AMBASSADORS IN BLUE



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#1 Lieutenant Colonel Christopher Hammond commander/leader



#2 Major Joshua Boudreaux left wing



#3 Captain Alexander Goldfein right wing

Officially, the Thunderbirds are known as the U.S. Air Force Air Demonstration Squadron.

The Thunderbirds squadron is an Air Combat Command unit composed of eight pilots (including six demonstration pilots), four support officers, four civilians and more than 100 enlisted personnel performing in almost 30 job specialties.

A Thunderbirds air demonstration is a mix of formation flying and solo routines. The four-jet diamond formation demonstrates the training and precision of Air Force pilots, while the lead and opposing solo aircraft highlight some of the maximum capabilities of the F-16 Fighting-Falcon.

The pilots perform approximately 40 maneuvers in a demonstration. The entire show, including the ground show and air demonstration, lasts about 75 minutes. The season typically starts in March and ends in November, with the winter months used to train new members.

Officers serve a two-year assignment with the squadron, while enlisted personnel serve three to four.

The squadron performs no more than 80 air demonstrations each year and has never canceled a demonstration due to maintenance difficulty. More than 280 million people in all 50 states and 57 foreign countries have seen the red, white and blue Thunderbirds jets in more than 3,500 aerial demonstrations.

History

The Thunderbirds were officially activated June 1, 1953, as the 3600th Air Demonstration Unit at Luke AFB, Arizona. The unit was nicknamed the “Stardusters.” Their first aircraft was the straight-winged F-84G Thunderjet, a combat fighter-bomber that had seen action in Korea. Early in 1955, the team transitioned to the swept-wing F-84F Thunderstreak.



#4 Major Curtis Dougherty slot



5 Major Jason Curtis lead solo



Captain Nicholas Eberling opposing solo



#7 Major Tyler Ellison operations officer



#8 Major Scott Petz avance pilot/narrator



#9 Major Christopher Scheibler flight surgeon



F-84G Thunderjet



F-84F Thunderstreak

©2013 Laszlo Nyary

In June 1956, the team moved to its current home at Nellis, AFB. At the same time the Thunderbirds traded the veteran F-84 for the world's first supersonic fighter, the F-100 Super Sabre -- an aerial platform that would serve the Thunderbirds for 13 years. More than 1,000 demonstrations were flown in the Super Sabre, thrilling spectators around the world.

In 1964, the team changed briefly to the F-105B Thunderchief, but an in-flight mishap revealed a problem with that airframe’s design. So, after only six shows, the Thunderbirds returned to the F-100.

From 1969 to 1973, the Thunderbirds flew the Air Force's front-line fighter, the F-4E Phantom II. In 1974, the Thunderbirds converted to the T-38 Talon, the world's first supersonic trainer.



#10 Captain Angelina Urbina executive officer



#11 Major Lucas Buckley maintenance officer



#12 Major Darrick Lee Public Affairs officer

All images unless noted ©USAF



F-100 Super Sabre F-105B Thunderchief F-4E Phantom II

The T-38 was more fuel-efficient and less costly to maintain, which made it an ideal choice during the oil crisis of the 1970s.

Early in 1983, the Thunderbirds reinstituted their traditional role of demonstrating the Air Force's front-line fighter capabilities. Transition to the F-16A and to the F-16C in 1992, allowed the team to retain manpower and fuel efficiency while demonstrating to spectators the latest in fighter technology.

The Lockheed Martin F-16 Fighting Falcon is a highly-maneuverable multi-role fighter, the only modifications needed to prepare aircraft for air demonstrations are a smoke-generating system and painting in Thunderbird colors.



T-38 Talon

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The U.S. Air Force Thunderbirds over New York City, Memorial Day Weekend, 2015, above The Thunderbirds perform their demonstration March 2, 2015, in preparation for the commander of Air Combat Command at Nellis Air Force Base, Nevada, below.



The Thunderbirds in detail featured in this issue, click for a free download.

THE AVIATION MAGAZINE

As close as you can get without being at an air show!



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