

THE AVIATION MAGAZINE

WWW.THEAVIATIONMAGAZINE.COM

April - May 2015
Volume 6, Issue 3



- ✈ Wings Over Houston Airshow, Texas, USA
- ✈ Finland International Airshow, Helsinki-Malmi Airport, Finland
- ✈ Images from Yesteryear
- ✈ The Breguet Alizé up close and personal
- ✈ Red Flag 15-1, Nellis AFB, NV
- ✈ RAF Museum visit, UK
- ✈ And so much more...



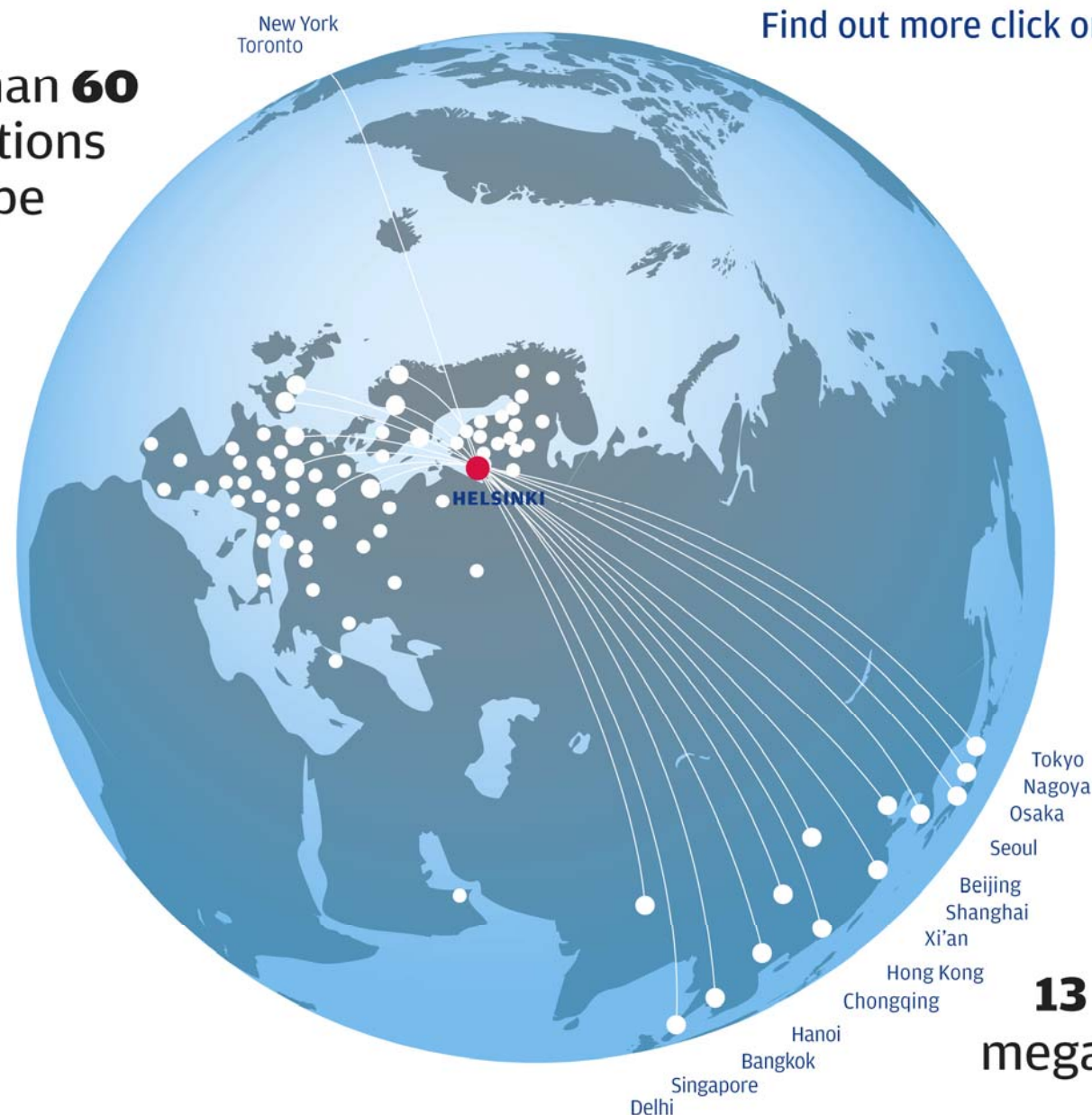
FINNAIR

oneworld

Finnair offers the
fastest routes between
Northern Asia and Europe

Find out more click on page!

More than **60**
destinations
in Europe



**13 Asian
megacities**

THE AVIATION MAGAZINE

BY WWW.THEAVIATIONMAGAZINE.COM

April-May 2015 Volume 6, Issue 3

Features:

- 6 Wings Over Houston Airshow, TX
- 19 2014 Malmi Airshow, Finland
- 27 Images from Yesteryear
- 32 Airport Spotting
- 36 You will never see these flying again...
- 40 The Breguet Alizé up close and personal
- 55 RAF Museum Visit, London, UK
- 53 CAP Missions over Davos, Switzerland
- 64 Red Flag 15-1, Nellis AFB, NV
- 80 Inside the Threat Training Facility, Nellis AFB, NV
- 91 Photo gear for aviation photography
- 94 Red Bull Air Race World Championship: Abu Dhabi

Editorial: 5 Behind the Lens

Cover: The Breguet Br.1050 Alizé, photo by Patrice Olivier

Index page: MV-22, photo by Norman A. Graf



© 2015 THE AVIATION MAGAZINE

amazon.com[®]
and you're done.[™]

Millions of items



Top Laptops,
Tablets and Desktops



The BEST cameras
and lenses!



Click on ad to shop
amazon.com[®]

Help to keep
The Aviation Magazine
FREE



THE AVIATION MAGAZINE

by www.TheAviationMagazine.com

e-mail: info@theaviationmagazine.com

Publisher: AirShowsReview LLC.

Contributing Team members:

North America: Steve "Swiper" Bigg, Norman Graf

Europe: Peter Thivessen, Wolfgang Jarisch, Ray Pace, Patrice Olivier, Robert Kysela

THE AVIATION MAGAZINE formerly *The Magazine* is published six times a year. It is available for a **FREE** download from our website www.TheAviationMagazine.com in Acrobat.pdf format. 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 interviews and fascinating reports to our global aviation enthusiasts digitally.

Please note: we do not accept any unsolicited articles or images for publication.

Advertising: Please contact us at info@theaviationmagazine.com

Interested in joining us? We have (2) Team positions available. We are looking for a Far East contributor, preferably from Japan, with good English communication skills and for one to cover East Coast and south-east USA. If you are interested in becoming a contributor e-mail us at the above e-mail address with samples of your work.



Copyright ©2015 Air Shows Review LLC. **THE AVIATION MAGAZINE** name and web site is owned by Air Shows Review LLC. No part of this e-publication may be reproduced in any form without prior written consent from the publisher. Copies of **THE AVIATION MAGAZINE** may not be sold. However, you are free to distribute it for no charge electronically as long as it is back linked to our site. While we strive for factual reporting of events **THE AVIATION MAGAZINE** is not responsible for the accuracy of the content or for the opinions expressed by authors of their respective articles and reports and are not necessarily those of the editor or publisher. All trade names, trademarks, manufacturer names, photographic images and textual works used in this publication, are the property of their respective owners.



Finally the North American Air Show season is about to kick into a high gear as the Spring finally comes around. While there are less shows in 2015 than prior years, there are some positive developments which include the reinstatement of the F-16 Viper Demo Team by the USAF Air Combat Command (ACC) in addition to the F-22 Demo Team.

For 2015 there will be only one F-16 Team operating from Shaw AFB, SC. The ACC also manages the U.S. Air Force Heritage Flight program and coordinates static display and flyover support of ACC aircraft to air shows and other events in the U.S. and abroad. The US Marine Corps also announced that there will be an AV-8B Harrier and the MV-22 Osprey Flight Demonstration Teams. A complete North American Military Team schedule in .pdf format that also includes the Blue Angels, Thunderbirds, CF-18 and Snowbirds Team dates is available from our site at: <http://www.theaviationmagazine.com/2015TeamSchedules.pdf>

THE AVIATION MAGAZINE is looking forward to cover many of these events throughout the coming season. We need your support by spreading the name of our excellent publications to all your friends, and supporting by advertising and by purchasing our patches and zap stickers to keep **THE AVIATION MAGAZINE** free, remember we all are unpaid volunteers, and it would cost thousands of dollars to produce the BEST and FREE aviation publication on the internet!

Donate \$25 or more and you will get an exclusive gift of (2) high quality 4" dia. Zaps stickers and (2) 4" dia. Patch with Velcro, randomly selected from our remaining stock while supplies last. Click here for the form: <http://www.theaviationmagazine.com/Donation-Free-patch-form.pdf>



WINGS OVER HOUSTON AIRSHOW

Article and photography by Norman A. Graf



North American F-100 Super Sabre

WOW! The Wings Over Houston Airshow, often referred to as WOH, may want to consider changing its abbreviation after this year's show wowed a record crowd. The 30th annual show took place over the first weekend in November at Ellington Field in Houston, Texas. The show is presented by the Commemorative Air Force, the world's largest flying museum, and is, therefore, dominated by warbirds.

The highlight this year was the amazing collection of vintage jets in the air, featuring fighters from World War II through the Vietnam War era. Tora!Tora!Tora! once again put on their recreation of the Japanese attack on Pearl Harbor and new this year was a special Vietnam War tribute featuring a re-enactment of an aerial engagement and air assault. A number of premiere civilian aerobatic performers and the Shockwave jet truck complemented the armed forces demonstrations by the USCG MH-65D, USMC MV-22 and the Navy's Blue Angels. Combine all this with terrific weather and you had a picture-perfect air show.

As often happens with air shows, the flying schedule is subject to change. Wings Over Houston this year was no exception to that rule. Some of the aircraft which were expected either failed to materialize or did not fly both days. Serious air show enthusiasts know well enough to schedule

attendance for both days, and some even include arrival, rehearsal and departure days into their calendars to ensure that they see the aircraft they really wanted to see. Because of differences in the flying schedule over the course of the weekend, our review is a composite of both Saturday's and Sunday's flying.

The gates opened promptly at 0800. Many attendees had already been lining up in the early-morning darkness, eager to claim a spot along the fence or view the static aircraft without crowds of people. This year, even more so than in years past, this strategy paid off. The record crowds caused backups and some delays for those arriving later in the day. Similar delays were experienced at the end of the day, particularly on Saturday when a car fire closed one of the two exits and slowed the exodus of vehicles to a crawl. Again, experienced show-goers will stick around at the end of the day's flying to tour the aircraft on static display, get autographs or just speak with the Blue Angels or other performers and otherwise occupy their time until the surge in the parking lot has passed.

The RE/MAX Parachute jumpers flew in the flag to start the show at 10AM and returned later in the day for another performance. Jeremy Holt started off the aerobatic demonstrations, flying a very nice routine in the Steen Skybolt biplane.



Tora! Tora! Tora! (Val, Kate and Zero replicas)



He was followed by a search and rescue demonstration by Coasties from the local Coast Guard Air Station Houston. They deployed a rescuer from their hovering MH-65D Dolphin helicopter, then circled around, zeroed in on his smoke and lowered a cable to winch him back on board. The demonstration taking place under gorgeous blue skies with calm winds may not have seemed that impressive, but when one considers that the Coast Guard will deploy during hurricanes to rescue boaters in distress their commitment to duty is worthy of respect. Semper Paratus. Local legend Debby Rihn-Harvey, one of the highest ranked aerobatic competitors in the United States, then showed the crowd the skills that earned her the U.S. National Aerobatic Champion title in 2006, 2008 & 2009. She flew her CAP 232 known as "Hurricane 2" through a routine that had many in the crowd gasping in amazement. The Marines of VMM-268 "Red Dragons" from MCAS Miramar then combined the best of both the airplane and helicopter worlds by demonstrating the capabilities of the MV-22 Osprey tiltrotor aircraft. Matt Chapman in the beautiful Embry-Riddle Eagle 580 finished out the morning's aerobatic flying in style.

Just before noon the sounds of air-raid warning sirens filled the air as a wave of airplanes flew in from behind the crowd. Sharp-eyed observers could see the bright red hinomarus on the fuselages and wings as the aircraft suddenly dove in at steep angles and began their attack on the airfield. Tora! Tora! Tora! The surprise was complete, just as it was on the morning of December 7, 1941 in Hawaii. Dive bombers, torpedo bombers and fighter escorts made numerous passes

over the field, accompanied by pyrotechnics which soon filled the sky with smoke. A P-40 Warhawk managed to get airborne to defend against the attackers, replicating the heroic actions of 2nd Lts. George Welch and Ken Taylor on that fateful morning. A B-17 flew low over the runway, its single main gear extended, looking for a place to land, reenacting Major Truman Landon's return from a training mission to find Pearl Harbor under attack. "Damn it! What a way to fly into a war unarmed and out of gas!"

The World War II Airpower Demo started off with a large number of liaison, observation and trainer aircraft from primary to advanced. This was followed by the European Theater demonstration, featuring bombers (B-25 and B-17), attack (A-26) and fighters (P-40 and P-51). In the middle of one of the bomber passes the first jet of the day started its takeoff roll. The world's first operational fighter jet, the Messerschmitt Me262 was particularly vulnerable during takeoff and landing, when pilots needed to carefully adjust the throttle to avoid flameouts. Just as the new-build jet took off it was bounced by a P-51. Once it became airborne, however, the Mustang was no match for its speed. The Me262 made several strafing passes on the B-17, easily outpacing the fighter escorts. The demonstration ended with the jet making several high-speed passes, concluding with a scene perhaps never seen before: the Me262 and P-51D flying by in close formation in a beautiful banana pass. The Pacific Theater flying featured a F4F Wildcat, TBM Avenger, SB2C Helldiver, F4U and FG-1D Corsairs and a rare Lockheed PV-2 Harpoon, "Attu Warrior." Opposing these was one of the very few original A6M Zero fighters still flying. Warren Pietsch flew an amazing routine, putting the warbird through some incredible maneuvers, concluding with a dogfight with the Corsair.



Boeing B-17G Flying Fortress "Texas Raiders" with the P-51



Boeing B-17G Flying Fortress with the Me-262B



Me-262B



Curtiss SB2C Helldiver



P-51D Mustang "Bum Steer" with a Me 262B



P-51C Mustang "Tuskegee Airmen"

Lockheed PV-2 Harpoon "Attu Warrior"

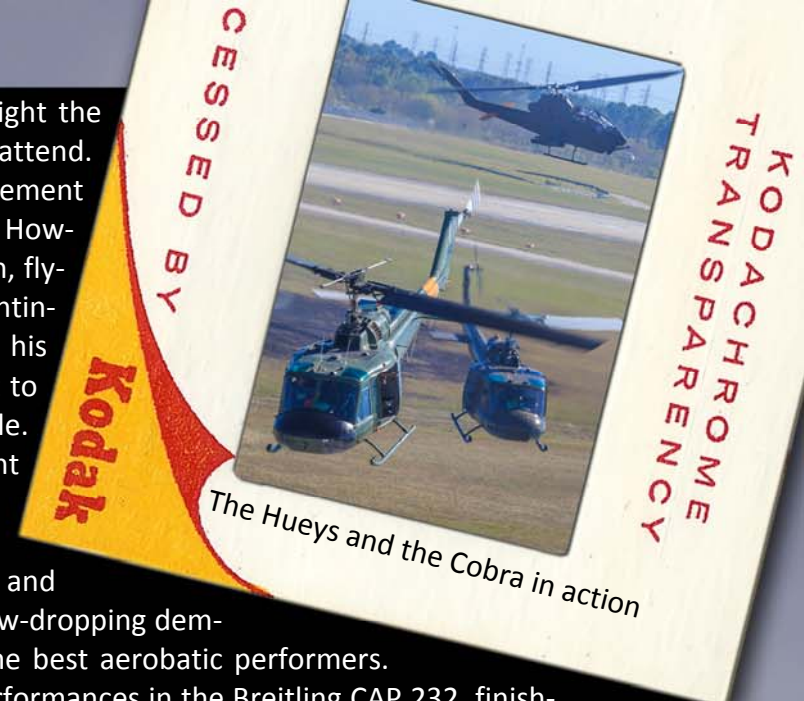
FG-1D Corsair

B-25J Mitchell "Betty's Dream"

Douglas A-26 Invader



The iconic F-86 Sabrejet originally scheduled to highlight the Korean War segment was unfortunately unable to attend. Steve Hinton, the 2014 Lloyd P. Nolen Lifetime Achievement in Aviation award winner, flew an F8F Bearcat instead. However, a beautifully polished natural metal T-33 stood in, flying in the guise of a P-80 Shooting Star. Randy Ball continued the vintage jet parade with a spirited display in his silver MiG-17. The Fresco was the first operational jet to employ an afterburner, and Randy showed it off in style. Knifedge passes showed off the long tongue of bright orange flame to advantage.



Sean D. Tucker ended his air show season at Houston and he pulled out all the stops, putting on a high-energy jaw-dropping demonstration of why he is considered one of the all-time best aerobatic performers. David Martin later concluded the civilian aerobatic performances in the Breitling CAP 232, finishing by racing the Shockwave jet truck. It was a stellar lineup.

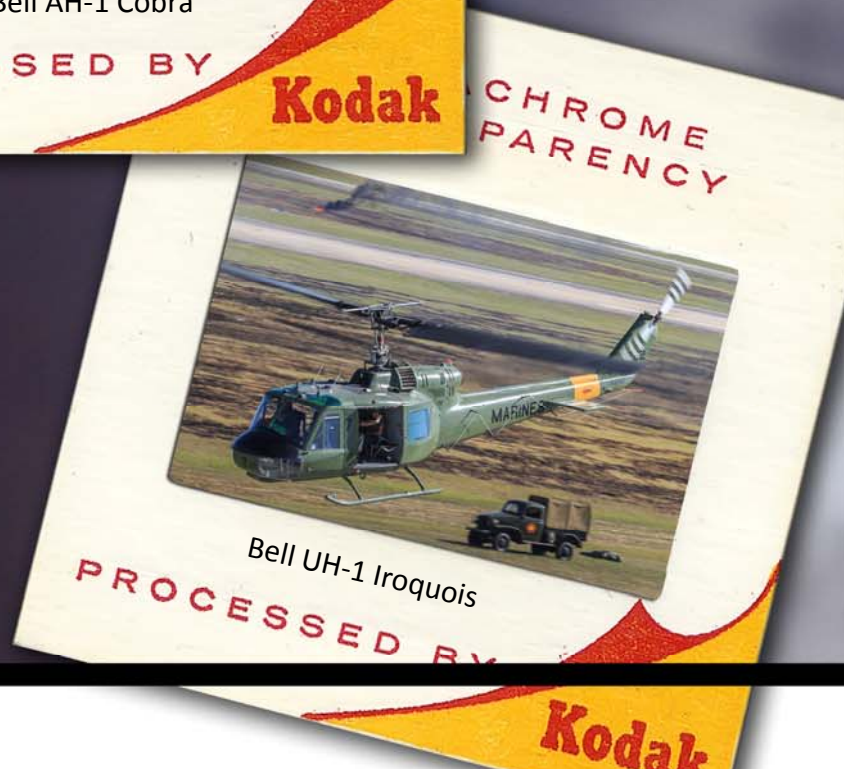
Last year's show featured a very nice assembly of Vietnam War-era aircraft on static display. This year those aircraft took to the skies to recreate the aerial jet dogfights, air-to-ground attack support and the air mobility of the ground troops in that theater of operations. An armored infantry column, composed of jeeps, trucks and M113 armored personnel carriers took off down the taxiway, simulating a resupply mission. Behind them, reenactors dressed as Viet Cong and North Vietnamese Army regulars set up to ambush the column on their return. A circling Cessna O-2A Skymaster spotted the enemy combatants and called in close air support. An A-1 Skyraider and T-28 Trojan quickly appeared on the scene and the "Oscar Deuce" directed them to perform a number of strafing runs. They soon attracted the attention of a MiG-17 which threatened to shoot them down. The aerial engagement escalated with the appearance of an F-100 Super Sabre in South East Asian markings. This, in turn, caused a MiG-21 Fishbed to be scrambled. The call went out to carrier based Navy aircraft. The iconic F-4 Phantom II was unfortunately grounded by delays in getting its engines repaired. In its place, a Navy A-4 Skyhawk joined the fight, dogfighting with the Fishbed. As this aerial engagement was playing out high overhead, the signature "whop, whop, whop" of the Bell UH-1 Iroquois could be heard and a pair of Huey slicks soon appeared, swooping in low to disgorge a platoon of air cavalry. All the while an AH-1 Cobra circled low overhead, covering the troops with its nose-mounted 20mm cannon. It was a very realistic demonstration of the classic air assault which was so characteristic of US Army tactics during that conflict.



Bell AH-1 Cobra



M113 Armored Personnel Carriers



Bell UH-1 Iroquois



Mikoyan Gurevich MiG-21 Fishbed



Cessna O-2 Skymaster

Kodak

KODACHROME
TRANSPARENCY

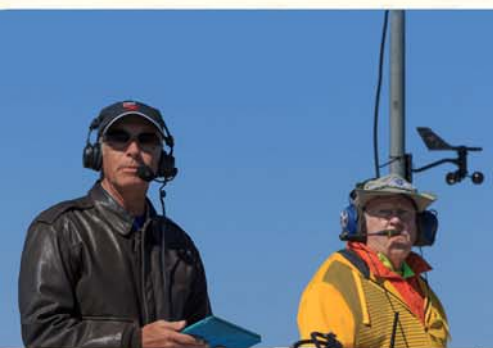


Douglas A-4 Skyhawk

PROCESSED BY

Kodak

KODACHROME
TRANSPARENCY



Rob Reider and Air Boss Ralph Royce

PROCESSED BY

Kodak



Pyro

Having defeated the enemy aircraft, the Navy Skyhawk and Air Force Super Sabre returned for several simulated ground attack runs, dropping napalm on the retreating enemy. At the conclusion of the re-enactment, both aircraft flew by in review, their beautifully banked banana passes delighting the many photographers in the audience. The narration by Air Boss Ralph Royce, himself a Vietnam veteran, was spot-on and added substantially to the realism of the demonstration.

Closing the show were Fat Albert and the Blue Angels, flying their penultimate show of the 2014 season. The perfect weather conditions allowed them to put on their full high show and from wheels-up to touchdown the spectators were focused on the precision maneuvers. According to their Facebook page "Weather was so nice we decided to put on our yellow flight suits." Afterwards, the pilots and crew approached the crowd line to sign autographs and answer questions from their many fans.

Ralph Royce and Rob Reider teamed up once again as Air Boss and Announcer, respectively. Together they entertained and informed a record crowd of almost 100,000. Photographers had the option of purchasing a Sunrise Photo Tour Pass or Photo Pit Pass to gain early access or elevated risers, tent area, drinking water, and restrooms in a chalet area. The viewing area is west of the 17/35 runway, meaning that the afternoon sun is behind you, making for perfect conditions for photographers. The only complaint was the large amount of smoke during the reenactments. The action, especially taxiing, takes place quite close to the audience; a 300mm lens is sufficient to capture all but the smaller aerobatic planes in detail.

The Aviation Magazine would like to thank Scott Tims for organizing the media opportunities and all the staff, sponsors and volunteers for making Wings Over Houston one of the world's premier warbird air shows.



MiG-17

C-130 Fat Albert

F/A-18 Hornets of the Blue Angels

Your online wingman

Patches



Challenge Coins



Zap Stickers



T-Shirts



Ceramic Mugs



Briefing Sticks



Custom Aircraft Models



Tail Flashes



Report and photography by Captain Heikki Tolvanen



Helsinki-Malmi Airport after five years of absence hosted a major air show on August 16-17, 2014. Finland's largest aviation and entertainment event returned to Helsinki-Malmi Airport heralded as the Finland International Air Show, offering entertainment for the whole family.

The event's highlights included breathtaking aerobatic displays and plane rides offered to the public. Visitors had a unique opportunity to take rides on a passenger plane, helicopters and hot air balloons. Helsinki-Malmi Airport is one of the world's best preserved civil airports from the early days of commercial aviation, giving a charming backdrop to take images of such aircraft as the venerable DC-3. The ground display presented a wide variety of airplanes, helicopters and other avionics, as well as simulators.

The weather was a bit on the damp side (alternating rain and sunshine) which gave a dramatic backdrop to the aerial action. The performers included Phil Lawton's Hawker Hurricane, in WWII Finnish Air Force Markings, the Flying Bulls' XA42s, an Embraer 500 Phenom, military NH90 helicopters, the airforce's Pilatus PC-12 NG, Flybe Airline's ATR ATR-72-500, the legendary Royal Aircraft Factory S.E.5, Jurgis Kairys terrific display with his Sukhoi SU-26, Aalto University's Short SC-7 Skyliner 3A-100, Fouga CM170 Magister the only jet flying and a whole lot more.

Skycat Wingwalkers, above Sukhoi SU-26, below.





Bengt Andersson in the Wasp Pitts S2B



Royal Aircraft Factory S.E.5



Fouga CM170 Magister above, Hawker Hurricane, in WWII Finnish Air Force Markings below.



Army NH90 transport helicopter

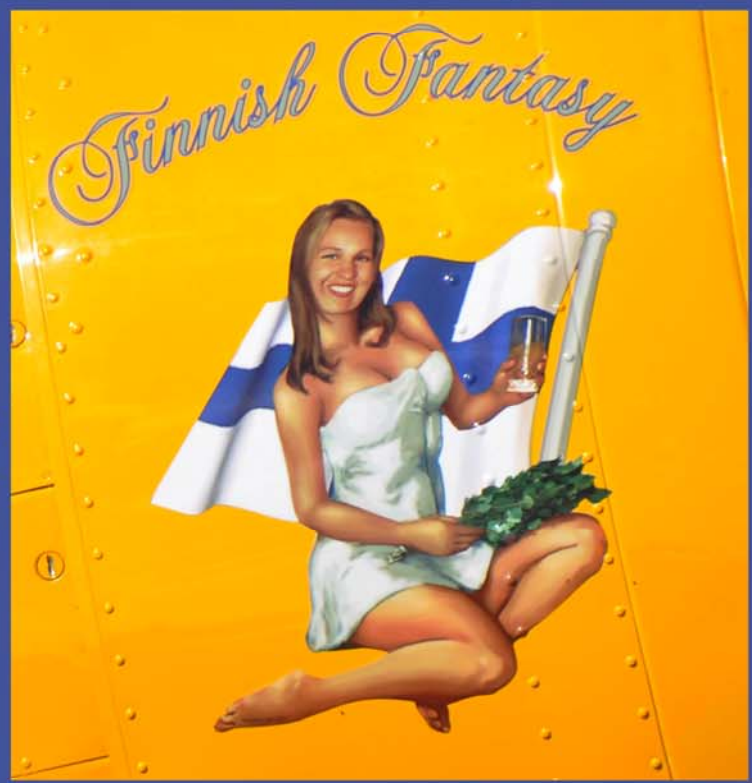




The Swedish Skycat Wingwalkers in the Grumman G-164A Ag-Cat SE-KXR



Flying Bulls Aerobatic Duo, above and the Victors formation Team from Belgium, below.



The sexy nose art of the SNJ-5, above Hawker Hurricane, below.



Finnish Air Force's Pilatus PC-12NG



Short SC-7 Skyliner 3A-100





Finnish Border Guard helicopters: Agusta Bell AB-412. (l) and AgustaWestland AW119 Koala (r) top
North American T-6 SNJ-5, above
MODEL 12-S ® "VIKING" SE-XZA flying side ways while the Su-26 takes off at a very steep climb, right.

I WANT YOU



TO ADVERTISE



IN THE AVIATION
MAGAZINE!

Images from Yesteryear!

Images by Brian R. Veprek

The Blue Angels flyby at the Freedom Tower, New York, on December 13, 2013. Taken from the Jersey City water front park directly across from the tower. The B/A had taken off from Teterboro Airport and was to do 2 flybys of the Freedom Tower and call it a day.





The Space Shuttle Enterprise (NASA Orbiter Vehicle OV-101) was the first space shuttle it was built to perform test flights in the atmosphere aided by a modified Boeing 747. It was constructed without engines or a heat shield and therefore not capable of space flight.

The shuttle was being transported from the Bayonne Boat Yard to the Intrepid Museum in Manhattan on June 6, 2012.



AIRPORT SPOTTING



Sky Lease Cargo McDonnell Douglas MD-11F above
TAM Boeing 787-300ER below at MIA / KMIA ©2014 Gustavo Corujo



Cayman Airways Boeing 737-36E at MIA / KMIA ©2014 Gustavo Corujo



AmeriJet International Cargo Boeing 727-233(A)(F), above
Bahamasair De Havilland Canada DHC-8-311A Dash 8, below at MIA / KMIA ©2014 Gustavo Corujo





World Atlantic Airlines McDonnell Douglas MD-82, at MIA / KMIA ©2014 Gustavo Corujo



Lufthansa Airbus A380-800 at MIA / KMIA ©2014 Gustavo Corujo



Avior Airlines from Venezuela, Boeing 737-401, above, DHL (ABX Air) Boeing 767-281 (bottom left) DHL Aero Expreso Boeing 757-200 (bottom right) at MIA / KMIA ©2014 Gustavo Corujo



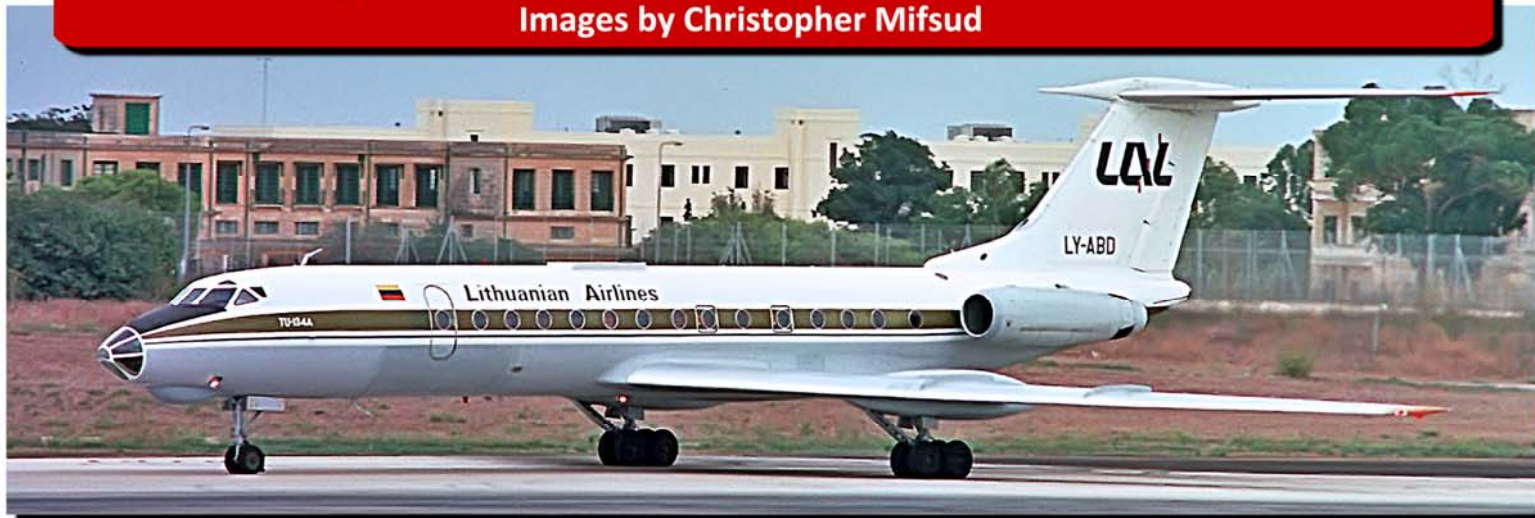
Libyan Wings Airbus A319S above, at MLA / LMML ©2015 Christopher Mifsud
Ryanair Boeing 737-800 below, at MLA / LMML ©2015 Ray Biagio Pace



You will never see these flying again!

Rare images from spotting and previous air shows in Malta.

Images by Christopher Mifsud



1994 Lithuanian Airlines Tupolev Tu-134A, note the glass "bomber nose".



1995 RAF Hawker Siddeley Nimrod MR2, above
RAF SEPECAT Jaguar GR1A, "The Saint" in 16 Squadron Markings of the Cross Keys, below.

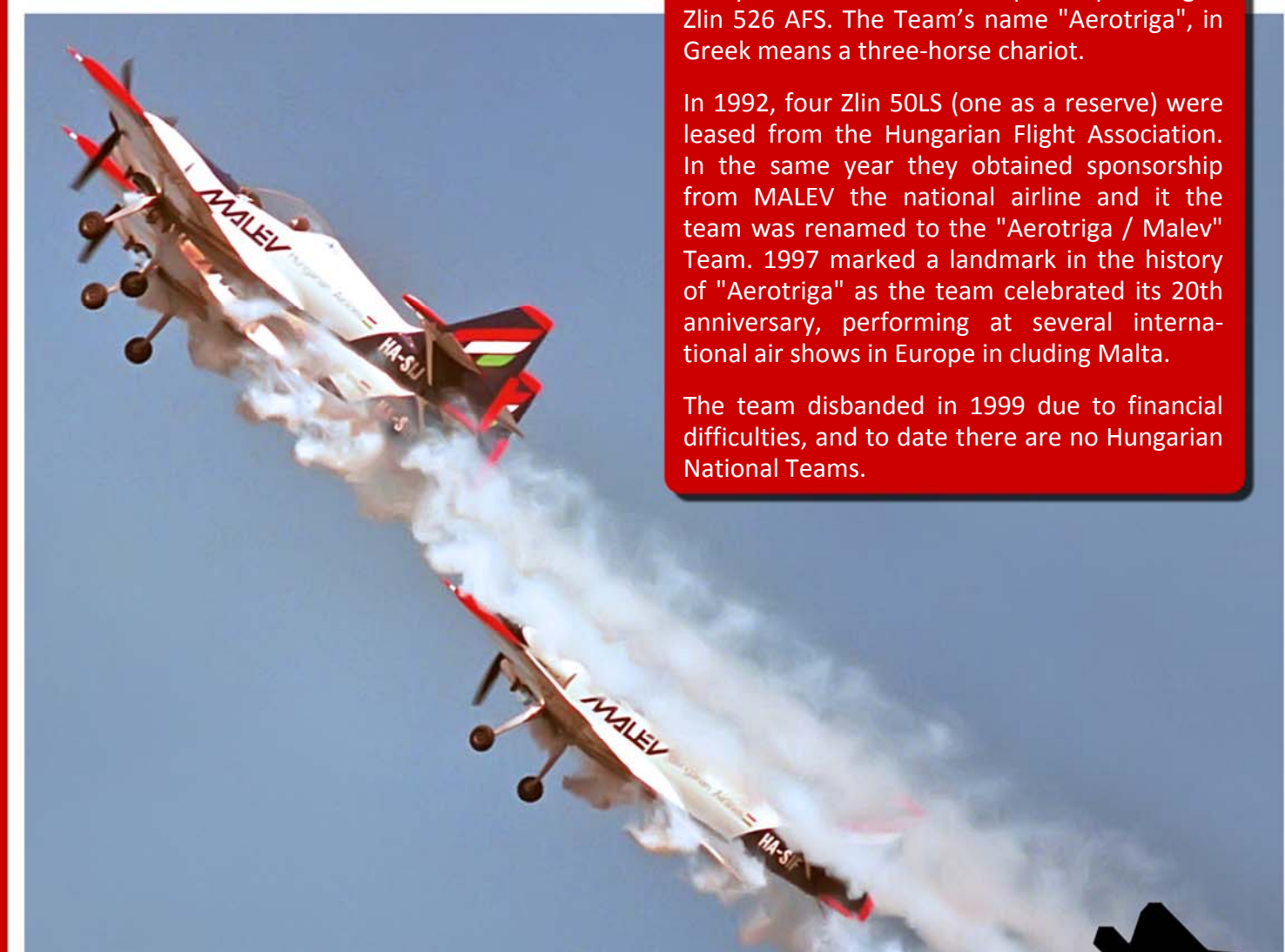


1997 Finnair McDonnell Douglas MD-83



1997 Malev: Hungarian Airlines Tupolev Tu-154, above
"Aerotriga / Malev" Team Zlin 50, the team celebrated its 20th anniversary in 1997.





The Hungarian National Aerobatic Team, formed in 1975. Initially the Hungarian National Aerobatic Team and participated in displays in several socialist countries and also in the 1976 European and World Championships using a Zlin 526 AFS. The Team's name "Aerotriga", in Greek means a three-horse chariot.

In 1992, four Zlin 50LS (one as a reserve) were leased from the Hungarian Flight Association. In the same year they obtained sponsorship from MALEV the national airline and it the team was renamed to the "Aerotriga / Malev" Team. 1997 marked a landmark in the history of "Aerotriga" as the team celebrated its 20th anniversary, performing at several international air shows in Europe including Malta.

The team disbanded in 1999 due to financial difficulties, and to date there are no Hungarian National Teams.

THE BREGUET ALIZÉ UP CLOSE AND PERSONAL

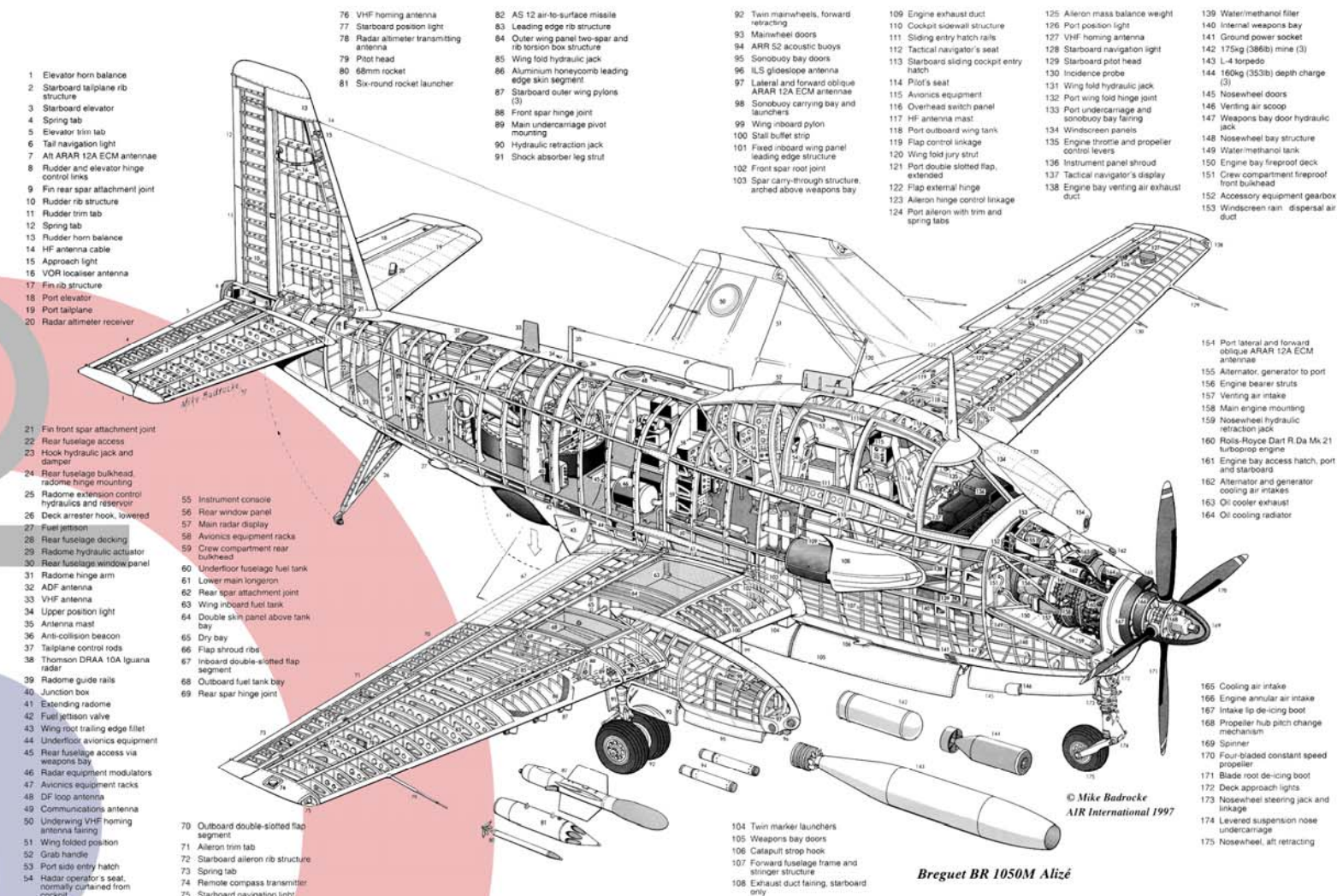
PHOTOGRAPHY BY PATRICE OLIVIER UNLESS NOTED AND THE REPORT WITH THE COLLABORATION OF ASSOCIATION 'ALIZÉ MARINE'



The Breguet Br.1050 Alizé ("Tradewind") was a French carrier-based reconnaissance and anti-submarine warfare aircraft. It was developed in the 1950s, based loosely on the second prototype Breguet Vultur attack aircraft which had been modified into the Breguet Br.965 Épaulard anti-submarine warfare aircraft.

In 1947, the French Air Ministry announced that they were looking for a new type of aircraft for multi missions: anti-ship, attack, close air support, and against enemy submarines at that time, the Naval Aviation used Grumman TBF Avenger for its anti-ship missions and anti submarine warfare. Several manufacturers responded to the call among them Breguet. The proposal by Breguet included a unique aircraft that had an innovative propulsion system consisting of a turbojet and turboprop. The turboprop was supposed to allow to have a good and economical cruising "patrol", while the same turboprop coupled to the jet engine would then boost the speed when it was necessary to escape an enemy fighter aircraft. On paper, the project seemed interesting. Breguet decided to make one Br.960 and baptized as the Vultur. Two prototypes were built for evaluation.

The Br.960 Vultur was a low-wing monoplane with a conventional stabilizer in horizontal planes having a dihedral accentuated. The cockpit had a two-seat tandem configuration for the pilot



and a weapons specialist. Armed with air-to-rurface missiles carried under the wing and under the fuselage. The prototype was not intended for the carriage of an internal armament. The aircraft was powered by an Armstrong-Siddeley Mamba turboprop and a Rolls & Royce turbojet Nene, both of British origin. The Br.960 first flew on August 3, 1951.

The mixed propulsion seemed to show some deficiencies, especially when turning it on during flight of the turbojet. This dual engine configuration also had issues with sea spray that might reach during certain phases of flight at low altitude over the sea. In 1953, one of the Br.960 was used for a few months for technical evaluation by the flight test center under the designation Br.963 however, it was shelved. But the second prototype was used for another program that would give birth to a French aircraft with longevity: the Breguet Alizé Br.1050.





Breguet 1050 Alizé No.01 was displayed at the 1957 Paris Air Salon to the public for the first time.

21st 1957 (No.04) and August 1st 1958 (No.05). The first production aircraft was delivered March 20th 1959, and the last one in June 1961. A total of 92 examples of the Alizé were built between 1957 and 1962, including five preproduction prototypes. 75 production aircraft were acquired by the Aéronavale, with initial service delivery in March 1959. Initially, 100 aircraft were planned, but eventually the order was cut to 75 planes in 1958 (a first batch of 50 and a second batch of 25). Twelve aircraft were exported to India. Production aircraft were also equipped fitted with the Thomson-CSF DRAA-2B retractable radar, instead of the APS-33, right behind the weapons bay.

A typical Alizé mission would last 4 hours, the plane had to carry min. of 2000 litres of fuel, the typical consumption rate was 500 litres per hour. After each of these missions (during which the airframe was limited to 3.5Gs) the plane required 30 hours of maintenance (including major operations). To help fight salt-water corrosion, the plane was thoroughly washed, every 3 weeks at sea and 6 weeks when land based.

The Aéronavale provided the Alizé with a series of upgrades.

Thirty airframes (No.10, 12, 13, 16, 17, 18, 19, 25, 26, 28, 29, 31, 32, 33, 36, 37, 39, 40, 41, 42, 43, 44, 48, 49, 60, 61, 64, 72, 74, 76) were overhauled in 1964-65 and received the following equipment:

- Jezebel sonobuoy system.
- Mk. 43 torpedo.
- AS-12 anti-shiping missile.

In November 1974, the French Navy decided it would use the Alizé until 1990, and a vast upgrading program was launched at the Cuers-Pierrefeu aviation workshops in 1978, and ended in 1983. The 28 airframes involved (No.11, 12, 22, 24, 25, 28, 31, 34, 36, 41, 42, 47, 48, 49, 50, 51, 52, 53, 55, 56, 59, 60, 64, 65, 73, 76, 80, 87), were designated **ALM** (*ALizé Modernisé* / Modernized Alizé, Br.105M standard), and were fitted the following equipment:

- Thomson-CSF DRAA-10A Iguane radar, same as used on the Atlantique NG ocean-patrol aircraft.
- ARAR-12A RWR.
- ARR-52 sonobuoy system.
- Omega Equinoxe navigation system.

The Breguet Br.1050 Alizé was created making sure that it can fulfill its anti-submarine warfare missions. The cockpit was modified to carry a crew of four, with extra seats behind the pilot and the navigator for the radar operator(s). The pilot was seated in front on the left, the navigator in front on the right, and the radar operator(s) behind them.

The Alizé was powered by turboprop engine only, a Rolls-Royce Dart RDa.7 Mk 21 turboprop, yielding 1,975 hp, a search radar ARAD 2A mounted in a retractable platform in the former jet engine bay instead and sonobuoys were placed in fairings of the main retractable landing gear.

The first Alizé made its initial flight in October 1956. The prototype Breguet 1050 Alizé No.01 was displayed at the 1957 Paris Air Salon to the public. The two pre-production planes made their maiden flights on June

Another upgrade program in the early 1990s fitted 27 of these aircraft with a new decoy system; a micro-computer-based data processing system that could have hardly been imagined when the aircraft was new; a datalink system; and other new avionics.

The last major upgrade took place in 1996-97, again at Cuers-Pierrefeu, and concerned 15 planes (former ALMs) which were now called **ALH** (*ALizé mis à Hauteur* / Upgraded Alizé). They received a new automatic pilot, new heading system and ESM. Despite the upgrades even with the Thomson-CSF TTD Optronique Chlio forward-looking infrared (FLIR) imaging sensor, the Alizé was clearly not up to the task of hunting modern nuclear submarines, their task was reduced to ocean surface patrol.

As late as 1997, the Aéronavale was still operating 24 examples for surface patrol, though they were clearly on their way out by then. The Alizé was used operationally during the NATO air campaign against Yugoslavia over Kosovo in the spring of 1999, with the aircraft flying off the carrier Foch. The last Alizé squadron was finally disbanded on 15 September 2000 at NAS Nîmes-Garons, with the retirement of the aircraft carrier Foch. The squadron was replaced by three E-2C Hawkeye II. India, which was the only other user of this naval aircraft in the world, decommissioned their aircraft in April 1991.

During the Alizé's operation history the aircraft operated from the French aircraft carriers; Arromanches, Clémenceau and Foch, and were also used in shore-based training. The Indian Navy operated the Alizé from shore bases and from the light carrier Vikrant. The Alizé was used for reconnaissance and ASW patrol during the Indo-Pakistani War of 1971, during which one Alizé was shot down by a Pakistan Air Force F-104 Starfighter.

The Alizé main missions evolved with the passing years were:

- Anti-submarine warfare
- Maritime situation control
- Surface surveillance
- Air-to-ground observation and guidance
- Electronic Intelligence
- Radio relay
- C-SAR airborne relay
- Sea rescue
- Maritime pollution prevention.

Alizé warming up on the deck of the carrier Foch.
Courtesy of Association 'Alizé Marine'



The aircraft carrier Foch (R-99) during exercise Dragon Hammer '92, with 6 Alizé onboard. It was the second Clemenceau class aircraft carrier of the French Navy. In operation from 1963 to 2000. The vessel was sold to Brazil and renamed São Paulo.

US. Navy photo



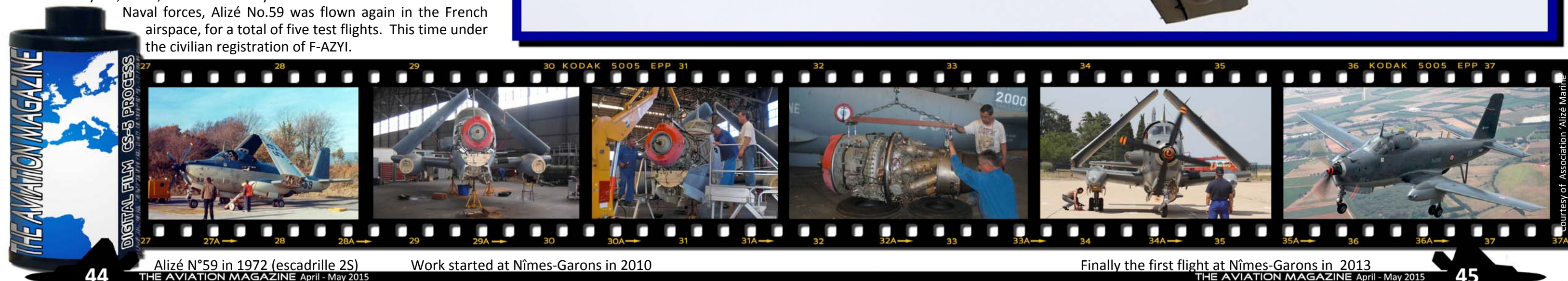
Alizé serial N°59

Built in 1961, in the Breguet factory at Biarritz Parme it was delivered to the French Navy in July 1962. During its career it was used in flotillas 4F, 6F and 9F and the squadrons 2S, 3S and 10S. In 1982 the aircraft was refurbished to ALM standard (Alizé Modernised) and in 1997 became the first ALH (Alizé high level standard) delivered to the Navy. On 9 March 2000 it made its last flight in flotilla 6F and was put in storage. In September 2000 flotilla 6F was dissolved and Alizé officially decommissioned. It was stored with six other similar Alizé in a shed for sale to a potential South American country, after upgrading by Thales. In 2003, the contract failed to be completed and the seven aircraft unfortunately were left outside where they suffered the ravages of time and souvenir hunters for several years.

In 2006 the Association 'Alizé Marine' was formed by Patrick Hilbert (former Navy pilot and currently flight instructor at Eurocopter) to acquire and restore a Br.1050. With about fifteen members, all former navy personal. In the same year, after intensive negotiations with the French Naval authorities, the Alizé Marine Association obtained from the Heritage Commission two Alizés, numbers 56 and 59 as these two air frames had the best potential for restoration. Both aircraft were put in storage before the restoration work commenced in 2010.

In February 2010 a long period of hard work to get the plane back to life began. Technical and administrative problems resulted in the association keeping only No.59 that was officially donated by the Navy in late 2011. At the beginning of 2012 the work was done and the static tests could begin, along with the work to get the clearance from the French Aviation Authorities to fly the aircraft. The first taxi tests were held in August 2012 and it was not until early 2013 that the DGAC allowed the aircraft to perform five test flights under the registration FW ZYI, thus obtaining CNRAC certification.

On May 18, 2013, more than 13 years after its retirement from the Naval forces, Alizé No.59 was flown again in the French airspace, for a total of five test flights. This time under the civilian registration of F-AZYI.



Alizé N°59 in 1972 (escadrille 2S)
THE AVIATION MAGAZINE April - May 2015

Work started at Nîmes-Garons in 2010

Finally the first flight at Nîmes-Garons in 2013
THE AVIATION MAGAZINE April - May 2015

Piloted by Jean Ivars, former Navy Alizé and Super Etendard pilot assisted by Philippe Perez former Navy radar navigator. On May 28, 2013 the DGAC granted the CNRAC certificate for the Alizé No.59 with registration FA ZYI, as noted earlier.

Alizé No.59 should provide many years of flying pleasure due to the low service hours in the flight history log book for the frame, with the three new engines and the parts inventory available to the Alizé Marine Association.



Courtesy of Association 'Alizé Marine'

No. 59 receiving some tender loving care above.
The Alizé Marine Team members in front of No. 59. with Philippe Perez (left flight suit) and Jean Ivars (right flight suit).



Courtesy of Association 'Alizé Marine'

Of course the association still has to have a budget in place to cover related expenses; the flight insurance, hangar rent (Nîmes airport Camargue) and the replacement of some parts that have exceeded their expiry date such as hydraulic hoses for example. They are actively looking for sponsors who can help with the operating and maintenance costs of €20,000 annually. This amount would allow the association to maintain Alizé No. 59 in flying condition and enable the aircraft to participate in major air shows in France and Europe.

In 2014 the Br1050 Alizé ALM No. 59, participated in four air show and more than likely will be at the Paris International Air Show in June, 2015.

Contact information: ALIZE MARINE
240 route de la foret
40180 Saugnac et Cambran
France

Email: alize-marine@orange.fr
Facebook: <https://www.facebook.com/pages/Aliz%C3%A9-Marine/374738642658150>

BR 1050 Alizé - ALH SPECIFICATIONS

LENGTH	13.86 m [45 ft 5 in]
WINGSPAN	15.6 m (7 m folded) [51 ft 2 in or 22 ft 11.5 in]
HEIGHT	4.75 m [16 ft 5 in]
WING AREA	36 m² [387. 5 sq ft]
EMPTY WEIGHT	5,700 kg [12,566 lb]
MAX. TAKEOFF WEIGHT	8,200 kg [18,078 lb]
INTERNAL FUEL (no inflight refuelling capability)	2100 litres [462 imp gal]
EXTERNAL FUEL	490 litres [108 imp. gal] drop tanks for a total of 2500 litres [550 imp. gal]
ENGINE	ROLLS-ROYCE DART RDA7 MK21 TURBOPROP - 1975 hp
PROPELLER	4 blade 3.4m diameter [11 ft 2 in]
MAX SPEED AT SEA LEVEL	460 km/h [248 knots]
MAX SPEED	520 km/h [280 knots]
CRUISE (PATROL) SPEED	240-370 km/h [130-200 knots]
CLIMB RATE	421 m/min [1,380 ft/min]
SERVICE CEILING	6,5250 m [20,500 ft]
ENDURANCE WITH RADOME EXTENDED AT NORMAL PATROL SPEED	5 h 12 min
ENDURANCE WITH MAX FUEL	6 h 55 - 7 h 40
MAX RANGE	2,500 km [1,349 miles]
CREW	1 pilot + 1 navigator, 1 or 2 radar operators
ARNAMENT	1 x MK46 torpedo or 3 depth charges internal bay, 6 x 127 mm rockets , 2 x AS-12 ASM air-to-surface missiles, underwing pylons, 14 x sonobuoys. Thomson-CSF DRAA-10A Iguane radar, same as used on the Atlantique NG ocean-patrol aircraft, ARAR-12A RWR, ARR-52 sonobuoy system, Omega Equinoxe navigation system.
ELECTRONIC EQUIPMENT	



Flotilla 6F emblem





Performing at the AERONAUTIQUE NAVALE la BAN d'Hyères, June 15, 2014

No.59 is the only flyable Alizé in the world!



The cockpit of the No.59 which is the only flyable Alizé in the world, right. Image courtesy of the Association Alizé Marine.



There are a few non-flying survivors left and on public display, in France apart from the one in India, Most of these survivors are stored outside in aviation related museums or private collections exposed to the elements. Unfortunately a few of them are in many ways nothing more than glorified junkyards.

No.1, (?) and 15 are at the "Musée de l'Aéronautique Navale Rochefort (Association Nationale des Amis du Musée de l'Aéronautique Navale – ANAMAN) preserving and showcasing the naval heritage.

No. 4 is at the "Musée de l'Aviation Château de Savigny-les-Beaune" in Burgundy, on a 12 hectare park of the castle. In the private collections of Michel Pont there are 70 aircraft.

No. 5 is at the "Association Ailes Anciennes Toulouse" Ailes Anciennes Toulouse, since January 2012.

No. 8 is displayed at the "Rond-point Albert Bignon, Rochefort-sur-Mer"

No. 10 is at the "Musée de l'Air et de l'Espace Le Bourget" not on display but stored in a storage facility of the museum.

No. 47 is at the "Espace expositions animées E.A.L.C - Association Espace Aéro - Lyon Corbas"

No. 49 is at the "Musée Européen de l'Aviation de chasse Montélimar" image right below.

No. 50 is at the "Conservatoire de l'Air et de l'Espace d'Aquitaine" near Bordeaux, however it is closed to the public for viewing, according to their website information.

No.55 is at the "Musée aéronautique d'Orange" in the industrial section of the city.

No. 86 is at the "Base Aéronautique navale De Lann-Bihoué"



©2014 Patrice Olivier

KODACHROME
TRANSPARENCY



No.15

Kodak

KODACHROME
TRANSPARENCY



No.5

Kodak

KODACHROME
TRANSPARENCY



No.55

Kodak

©2014 Peter Moose





2015 RACE CALENDAR

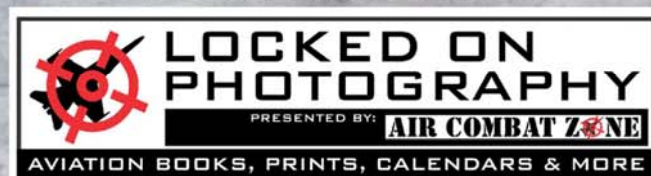


REDBULLAIRRACE.COM

YOU KNOW YOU WANT IT...



**SUFFERING WITH
JET ADDICTION?
GET YOUR FIX FROM**



**VISIT
WWW.LOCKEDONPHOTOGRAPHY.COM**

RAF Museum visit



Visit on November 23, 2014 and photography by Ray Biagio Pace

The RAF Museum London is located in Grahame Park Way, Colindale, London. It can be reached from Junction 4 of the M1 in 10 minutes or around 45 minutes by tube from Central London and either a 7 minute bus ride or a 15 minute walk from the Colindale Underground station. The Mill Hill Broadway is the nearest railway station and is a 15 minute walk away whilst the nearest airports are Heathrow and London City. The Museum caters to people with Special Needs and the staff members are happy to assist. Entrance is Free, however there is a charge of £3 / £4 for on-site parking.

The Museum opened on the 17th December 2003, and since then thousands of aircraft enthusiasts and their families have visited it. It is very large and impossible to visit in just one day unless you want to just skim through it. There are 5 main hangars, namely the Milestones of flight at the entrance hall, the Bomber Hall, The Historic Hangar, The Battle of Britain Hall and the Grahame-White Hangar. The Historic Hangars are scheduled buildings dating back to the Hendon Aerodrome. There are also the Wings Restaurant, the Wessex Café and the Museum Souvenir Shop. The Aeronauts Interactive Centre is a hands on flight science centre where the children discover how aircraft fly. Children must be supervised by an adult at all times whilst at this centre.

There are over 100 historic and ground breaking aircraft on view including the F-35 Joint Strike Fighter Jet (mock-up) which is the only one on display in Europe. Other aircraft include the Buccaneer, the mighty Vulcan, Avro Lancaster, Canberra, Southampton, Spitfire, Hurricane, Messerschmitt Bf 109, Bleriot X1, North American P51D Mustang, Messerschmitt Me262, Eurofighter Typhoon, Boeing B17G, Augusta Westland Merlin, Hawker Hunter FGA9, English Electric Lightning, Sunderland and much more.

Upon entering the Museum you will be able to watch a 10 minute Century and the Timeline giving different views on the development of flight. There is also a 3D Aviation cinema. The Museum hosts a number of exhibitions and displays namely; the Boeing Chinook, the Air Traffic Control, the Princess Mary RAF Nursing service and the First World War in the Air. Our Finest Hour is a 13 minute audiovisual presentation on the Battle of Britain which should not be missed.



The Milestones of Flight Exhibition covers the achievements in the first 100 years of flight. The Museum has two simulators – The Black Hawk Simulator and the Historic Hangars Simulator which give you the opportunity to experience the thrills of flying various aircraft including the Eurofighter Typhoon, the Red Arrows and a Tornado Jet for just £3 per person.

Group Visits, Tours and Educational Visits are accepted via Booking in advance. At the RAF Museum Shop you will surely find something to buy as a souvenir including specialist books, DVDs, models, toys, RAF and vintage themed gifts and much more. The Wessex Café is located exactly opposite the Royal Wessex helicopter and ideal for a light snack and tea or coffee.

We highly recommend a visit, and further details about opening hours and exhibits can be found on their website: <http://www.rafmuseum.org.uk>



Blériot XI above in the foreground, a Eurofighter Typhoon in the background.



Hawker Hart II above and the North American P-51D Mustang below.



Hawker Tempest V above and below are the Gloster Meteor F9/40, Britain's first jet fighter foreground with the German Me-262A-2a in the background.





Sikorsky R-4B Hoverfly, was the first helicopter used by the Royal Air Force and entered service in 1945, above. BAe Harrier GR3, the Harrier is the first jet fighter capable of vertical take off and landing, below.



+ CAP MISSIONS OVER DAVOS +

Article and photography by Alberto Celsan and Ruggero Piccoli

Every year the most influent personalities from all around the world, such as managers of industry and finance, intellectuals, researchers and political leaders, meet together at the World Economic Forum (WEF) in Davos, a popular mountain resort in Graubünden in the eastern region of Switzerland, to discuss the main issues facing the world, with a particular interest for this year about the global geopolitical security. And every year, during the summit, the Swiss Air Force (SAF) ensure the protection over Davos establishing a "no-fly zone" with a radius of 46 km and a range between ground to 19500 feet on height.

This year WEF was held from Wednesday 21 to Sunday 25 January and during these days SAF provided a continuous air coverage from 8:00 am until 6:00 pm, while a couple of F/A-18s was maintained on Quick Reaction Alert (QRA) for the night hours, ready to take off on few minutes if requested. In addition to ensure the air policing, the Air Force carried out also surveillance flights and air transport of people and materials with helicopters, which were available to support the cantonal police if it needed quick transportation of police units in case of emergency. About 4488 military personnel were deployed to cooperate with the cantonal civil authorities, providing assistance mainly in the setting up and managing of the security's infrastructures, in the protection of the people involved into the Forum, in the control of the access points and in the management of the logistics.

The air base involved for Combat Air Patrol (CAP) operations is decided with an annual rotation between the Air Force's bases and for 2015 the main role for WEF operation was the home of Flugplatzcommando 13, the Meiringen-Unterbach Air Base, one of the most beautiful military airport in Europe due to its location into a narrow valley surrounded by high mountains.

Both the squadron of Flugplatzcommando 13 provided air coverage: the Flieger Staffel 11, with its F/A-18C/D "Hornet" flew by professional pilots, and Flieger Staffel 8, equipped with the F-5E/F "Tiger II" flew by both professional and reservist pilots. The participation of the F-5s was uncertain until the last days because at the beginning of the year a crack was found during the routine checks on a structural component of a single seater "Tiger". All the single seater fleet was grounded in order to check all the airframes, but fortunately some fighters were ready just in time for operational use, while the checks on the remaining 13 jets will be completed in the second quarter of 2015. Due to this event, some F-5E from "Patrouille Suisse" national demo team were involved into the patrols, a rare opportunity to see the fighters with the special red/white livery carry live missiles under their wings.

The main role in defending the no-fly zone was completed by the fast jets which provided the control of the upper air space, with F/A-18s flying on the restricted area in particular, while the F-5s covered the rest of Switzerland. Protection of the lower part of the no-fly zone and "slow-movers" interception were guaranteed by PC-7 trainers and EC-365 helicopters. The surveillance was integrated also with the anti-aircraft artillery and the radar stations located on the ground. As the no-fly zone area covered a little part of Austrian territory, the CAP missions involved also the Österreichische Luftwaffe with its EF-2000 Typhoon based in Zeltweg that worked in close cooperation with the SAF.

The F-5s flew only daily missions, armed with two AIM-9Ps on the wingtips and a ventral tank. The F/A-18s were instead employed for both night and day flight and a typical mission, flown with a pair of aircrafts, lasted

between one hour and an half and one hour and three quarters. The standard configuration of the couple of F/A-18s was composed by two AIM-9Xs on the wingtips for both the jets, two AIM-120C on the rails, one of which (left station) was replaced in the second aircraft by the AN/ASQ-228 pod, used for targets' tracking. Both the fighters carried a ventral tank with the "STBY 121.50" words in red, which was the emergency frequency in use. During a typical mission the two F/A-18s, once reached the operation area, separate themselves and begin to flight straight parallel and opposite routes so, flying in the opposite direction, they can cover with the APG-73 radar all airspace assigned and, if necessary, they can achieve the target by performing at most a 90° turn. The pilots are assisted during the CAP with the information's received by the troops operating on the ground on radar stations, mobile radars and STINGER antimissile warning system. In case of an unauthorized airplane would penetrate into the controlled airspace, the procedure was to approach the intruder to get visual contact with it and to order to switch the VHF radio frequency into 121.50, where it would receive instructions to fly it back into authorized areas or even to force it to land. In the extreme case, they can also use the weapons to shot down the intruder, but the final decision was up to the Department of Defense's Chief.

Fortunately, this year there were no violation of the restricted airspace over Davos were recorded and thanks to the great efficiency of the military personnel and to the well-established safety procedures between the Army and the local police forces the protection to the World Economic Forum ended successfully without any sort of problem or incident. As underlined by Colonel Walter Schlegel, commander of the Graubünden cantonal police "The collective use of police forces from all over Switzerland and the Army is a great example of the concrete operation of the integrated network for safety of Switzerland".





2015 Military Team Schedules for North America CF-18



Snowbirds



download your copy by clicking here
THE AVIATION MAGAZINE



15-1

Article and photography by
Steve Bigg and
Norman A. Graf

For forty years, Red Flag exercises have taken place at Nellis AFB and in the skies above the Nevada Test and Training Range (NTTR). Since 1975 the exercise has given its participants the opportunity to gain experience in an environment and with scenarios that have been developed to be as close as safely possible to those they are expected to fight in. While this still remains the primary goal of Red Flag, the scope of the exercise has expanded significantly beyond the original Air Combat Manoeuvring (ACM) and Surface to Air Missile (SAM) threat training. Now Red Flag incorporates nearly every aspect of the type of coalition operations that participants expect their forces to be ready to face, including air to ground strike attack, suppression of enemy air defences, ground troop insertion, communications and GPS jamming, all levels of operational command and control, night time operations and even space and electronic warfare.

Red Flag 15-1 was a three-week exercise which attracted around 120 aircraft, with roughly 3000 personnel temporarily deployed to Nellis AFB. USAF units from across the US and Europe were joined by Air National Guard and Air Force Reserve Command units, as well as squadrons from the US Navy and Marine Corps. Coalition forces included air and ground assets from the Royal Air Force and the Royal Australian Air Force. Over the course of the three-week exercise, 29 missions were undertaken, one per day during the afternoon and another under cover of darkness. More than fifty fighters and up to 10 “heavies” (bombers, tankers and ISR aircraft) were involved in each flight. From a targeting perspective, the target sets are largely the same. The kind of threat picture which is presented to the warfighters is normally a bit higher at night mostly because a lot of the junior flyers (“Blue Fours”) will fly the day missions simply to become mission qualified. The more experienced fliers on the night missions are presented with tougher threats. It is also at night that most of the Intelligence, Surveillance, and Reconnaissance (ISR) aircraft are engaged. The AWACS, EC-130s, (E)P-3Cs and RC-135s are rarely seen flying during the day. It was a treat, therefore, to see the two RAF Sentinel R1s, which made their Red Flag debut this year, fly day missions. The Sentinel R1 is the RAF’s only long-range wide area battlefield surveillance asset, providing critical intelligence and target tracking information. They were joined by a number of Navy EA-18G Growlers, to provide active electronic attack capabilities such as jamming.



An F-15E Strike Eagle from the 4th Fighter Wing 335th FS, Seymour Johnson AFB, NC, on the way to Red Flag, image taken from an KC-135R of the 916 Air Refueling Wing.



"The Spirits of Louisiana and Pennsylvania" B-2s from the 393rd Bomb Squadron at Whiteman Air Force Base, Missouri.



Deployed against these Blue Forces were the resident Red Forces under the command of the 57th Adversary Tactics Group. Most visible of these were the boldly painted F-16s and F-15s of the 64th Aggressor Squadron. This was the penultimate Flag for the last six operational Aggressor Eagles, which are scheduled to be retired at the end of March, 2015. The nature of the exercise has grown significantly beyond the original tactical dogfighting exercises and other units, such as the 547th Intelligence Squadron, provide improved tactics and present threats of a different nature, such as cyber, space or informational. "From an intelligence perspective, I'm studying things that are real world and in our shop we're putting together the Lego pieces so the guys and gals can come here and fight the war they might be doing for real overseas," explained 1st Lieutenant Paul Heins, the Deputy Targets Chief with the 547th Intel Squadron at Nellis. "We train towards future wars. We take what we know about our adversaries at large as a coalition, we study their tactics, and then we fight against it. It's a dynamic planning cycle. We're making changes to Red Flag right now. If the operator sees something that is within our capability to change for the next day we will do that. We're constantly working to give the warfighter the best [training] experience."

This expansion of the exercise's scope offers valuable insight to the participants well beyond their specific duties. "It's not just about the other fighter aircraft in the air and the bombers, it's also about the non-kinetic effects that you can get through space, through cyber, through all these different facets that we're learning are out there that we might actually be able to use,"



All images on page 66-67 © Steve Bigg



F-16Cs of the 158th Fighter Wing, 134th Fighter Squadron, Burlington, VT ANG aka "Green Mountain Boys"



explained Captain Brendan "Bloc" Bond, a B-2 bomber pilot with the 13th Bomb Squadron from Whiteman Air Force Base. "For me that's really been eye opening. Other than just dropping bombs there's a lot of different ways to do things to effect change as required and I think that's where Red Flag is really good." He went on to say "Normally, day to day, we're primarily operating the B-2, flying missions and doing air to air refueling (AAR) but we don't do a lot of integration with assets. Here at Red Flag we're down the hall from the F-22's, the AWACS, working with all the different resources the Air Force and coalition partners have and that's been a really useful experience."

As the level of sophistication of combat systems increases, Red Flag organizers ensure the exercise incorporates elements to challenge all aspects of these systems. The Raptor is a perfect example. Technical Sergeant Guillermo Salcedo, an F-22 aircraft maintainer supporting the 94th Fighter Squadron, pointed out that the exercise is constantly improving. "The biggest difference I've noticed from the maintenance perspective is the addition of cyber threats." During Red Flag 15-1 their reliance on network connectivity to support their aircraft was challenged. "The Raptor for example is very integrated and a lot of our systems have to be imported over for us to be able to support flying and (at Red Flag) they have introduced specific threats to simulate scenarios in which we won't have specific things we typically have to work with." The result is that the maintainers are forced to undertake and develop the kind of problem solving skills that they will need on operational deployments. This level of training represents how far the exercise has evolved from its early days of ACM and SAM threats.

Those who will bear the responsibility of commanding future real world operations gain experience at Red Flag that can't be found elsewhere. "The exercise extends beyond the aircraft in the air and the crews supporting them on the ground." said 1st Lieutenant Paul Heins. "Red Flag operations are run through a Combined Air Operations Center (CAOC) that commands both the real world assets at the exercise as well as additional simulated assets that run in parallel with them in a larger conflict scenario. Overall the exercise involves the "live fly" that happens locally at Nellis, the virtual and the constructive elements that are all integrated into the CAOC. This area is definitely one of several that Red Flag have their sights on for further development in order to expand the exercise scope to be able to provide a training platform that is as realistic and challenging as possible for not just the pilots and crews that attend but also for those who are likely to be tasked with commanding them on coalition operations."



B-2 Spirit of Louisiana, above. The rarely seen RAF Sentinel R1 is a modified Bombardier Global Express taking off, middle, and one of the RAF Typhoons, taking off below.



Beyond the challenges Red Flag presents to the individual capabilities of participants, they will tell you that a major benefit of such large force coalition based exercises is the experience gained and the relationships built by working directly with partners they may join on future operations. Wing Commander (WC) Darren Goldie of the Royal Australian Air Force (RAAF), the Commanding Officer of #37 Squadron flying C-130J Hercules at Red Flag 15-1, commented that "the RAAF is a very technically advanced air force but a small air force so generally we're going to participate in multinational operations as part of a coalition so Red Flag is a very important step in us understanding how to operate as a coalition." In times of crisis, whether it be disaster relief, humanitarian assistance or combat operations, knowing how to work together prior to being called to act allows forces to hit the ground running and not be bogged down figuring out how to work together. WC Goldie continued the point to say "from an Australian perspective the integration with a coalition force often happens on operations for the first time so it's critical that we're prepared to participate in operations and mutually speak the same tactical language and apply the same tactics, techniques and procedures as our colleagues and partners." A testament to the value the RAAF sees in such experience is provided by the fact that the RAAF has been a consistent participant at Red Flag for 30 of its 40 years.

The Royal Air Force (RAF) believes in the benefits of attending as well. Flight Lieutenant Andrew North, an Aerospace Battle Manager with 1 Air Control Center, from RAF base Scampton said "the training is extremely valuable with the amount of integration we've had with our allies, and the assets they bring as well, has been extreme, we've learnt a lot through doing this exercise that we couldn't necessarily have done at home." He pointed out that one of the major differences between the level of training units can do at their own bases with their own resources and participating in an exercise like Red Flag is the opportunity to train with a vastly more complete set of assets that fully represents those that would be involved in the conflicts participants are training to be ready for. He pointed out that at Red Flag "we've got the whole spectrum of integration here from unmanned vehicles to space assets, to air to air fighters and many other elements as well." The eight Typhoons operated primarily in the swing role, performing several missions simultaneously such as firing missiles in the air-to-air role and dropping bombs in the air-to-ground role. Flight Lieutenant North: "We've been doing the whole spectrum of warfare as the RAF fights it. We've been pushing through, attacking the enemy, dropping the bombs and then heading back out. The Typhoon is dropping Paveway IVs that we brought from the UK, both live and inert. We've had some air-to-air fights as well, especially integration between fourth and fifth generation jets. We haven't been tanking just yet, but we'd like to do that at some point as well."

Although the mass departures and returns of fighter, bomber, tanker and ISR aircraft is the most visible part of any Red Flag exercise, the feedback and interaction during the post-mission debriefs is a crucial part of the learning process. It is for this reason that units deploy to Nellis for the duration instead of simply flying in and meeting over the range for the missions. "It would be a pointless exercise if we couldn't get feedback from the ground. They're giving us feedback, for instance, that manoeuvre did or didn't work, or we don't think that is world's best practice, or maybe you need to go and talk to these guys [and find out] how they would do that. So that's a critical part, that closed loop feedback on whether what we're doing in fact makes any sense," explained WC Goldie. Captain Christy Ashby, an electronic combat officer with the 963d Airborne Air Control Squadron from Tinker AFB reinforced this sentiment. "For most of our crews this is their first Red Flag, also their first major exercise of any sort. It's a big integration piece for them. Where we're stationed in Oklahoma we're not collocated with any fighters; there's just AWACS there. Being able to go down the hall and put a face to a name and talk to them face-to-face and see exactly what they're bringing to the fight [is important]. The big piece is being able to debrief with them afterwards and get those lessons learned so that we can improve next time. That's the big piece for AWACS here."

For part of Red Flag 15-1, Nellis AFB was even busier than the typical high traffic that comes with a Red Flag exercise. During the first week the exercise overlapped with another major exercise held regularly at Nellis called Green Flag. The air to ground component of Red Flag continues to grow and does include elements related to ground troop support in the form of airborne troop insertion, but Green Flag specifically targets providing combat training in air - land force integration for the support of troops on the ground. A major goal of Green Flag is to provide pilots and those troops on the ground that guide them during close air support missions, the same benefits provided by Red Flag. Realistic combat simulations, integration with various air, space and cyber assets available to support ground troop operations along with the same valuable coalition integration experience only available through this type of large force exercise are all elements offered to Green Flag participants.

The Aviation Magazine would like to thank the staff of the 99th Air Base Wing Public Affairs Office, in particular MSgt David Miller, for all of their support during our visit.





F/A-18D of the 3rd Marine Aircraft Wing, Marine Fighter Attack Squadron 225 "Vikings" MCAS Miramar, CA



EA-18G of the Carrier Air Wing 17, Electronic Attack Squadron 132, "Scorpions" NAS Whidbey Island, WA



C-130J Super Hercules of the RAAF from 37 Squadron, Richmond, Australia, above and below with the nose art to the left.



EP-3C from the Patrol and Reconnaissance Wing, Fleet Air Reconnaissance Squadron 1, NAS Whidbey Island, WA



©Steve Biggs



©Norman A. Graf



F-16Cs of the 57th Wing, 64th Aggressor Squadron, Nellis AFB, NV, top left and main image, HH-60G, 23rd Wing, 66th Rescue Squadron, Nellis AFB, NV, lower left.

©Norman A. Graf



F-16CMs, of the 31st Fighter Wing, 555th Fighter Squadron, Aviano AB, Italy, with F-22As of the 1st Fighter Wing, 94th Fighter Squadron, Langley AFB, VA, top left image.

F-22s taking off from Nellis AFB to join the exercises bottom left and right images.

F-16C "Lobos" of the 114th Fighter Wing, 175th Fighter Squadron, Sioux Falls, SD ANG, mid right.



KC135 from the 916th Air Refueling Wing, Air Force Reserve, located at Seymour Johnson Air Force Base, N.C.



©Norman A. Graf



©Norman A. Graf



F-16C "The Green Mountain Boys" of the 158th Fighter Wing, 134th FS, Burlington, VT, ANG, top left. KC-135 22nd Air Refueling Wing, 931 AFG, McConnell AFB, KA, middle left. RC-135 Rivet Joint from the 55th Wing, 348th Reconnaissance Squadron, Offutt AFB, NE, bottom left, RAF Sentinel, bottom middle, and E-8 Joint STARS from the 461st Air Control Wing, 12th Airborne Command and Control Squadron, Robins AFB, GA bottom right.



F-15C of the 48th Fighter Wing, 493rd Fighter Squadron, RAF Lakenheath, United Kingdom above. F-16CM of the "Buzzards" 31st Fighter Wing, 555th Fighter Squadron, Aviano AB, Italy, below.



©Steve Bigg

©Steve Bigg

©Norman A. Graf



©Steve Bigg



MiG-23 Flogger and MiG-29 Fulcrum displayed inside, above and the MiG-29's cockpit on the right.

"Inside the Petting Zoo" aka the Threat Training Facility, Nellis AFB, NV

Nellis AFB, located outside of Las Vegas, NV, is home to the U. S. Air Force Warfare Center whose mission it is to ensure that deployed forces are well trained and well equipped to conduct integrated combat operations against all threats. Central to this mission are the Red Flag exercises in which Aggressor units employ tactics based on those expected to be used by foreign adversaries. The most familiar of these units are perhaps the 64th and the former 65th Aggressor Squadrons whose aircrew are trained to simulate foreign fighter tactics and whose aircraft are boldly marked in foreign paint schemes. Less well known is the existence of other Aggressor units whose missions, although not as visible, are equally important. Behind them all stands the 547th Intelligence Squadron which is the "Center of Excellence" for adversary tactics analysis for the United States Air Force. The squadron analyzes, refines and disseminates intelligence on adversary air, air defense, electronic warfare, cyber and space tactics and weapons employment, condensing this information into the Air Force Tactics, Techniques, and Procedures Threat Guide: "Threat Reference Guide and Countertactics."

However, the 547th IS does more than just prepare and deliver training documents. Another major focus is to provide hands-on training with real equipment. To do so, it operates and maintains the Air Combat Command Threat Training Facility (TTF). Established in the early 1970s during the last years of the Vietnam War, this collection was designed to amass a broad variety of Cold War threats and targets: aircraft; surface-to-air missiles; early warning, acquisition and targeting radars; anti-aircraft artillery; ground vehicles; and small arms. In addition to being able to test the capabilities of the hardware, the facility has provided hands-on access to generations of military personnel, gaining it the affectionate nickname of the "petting zoo."

"Nellis really is the Air Forces home for adversary tactics. Having foreign military systems here where all the pilots come through for things like the weapons school and the Red Flag exercises and are able to take advantage of the incredible training range we have here, it just made sense to put it here at the home of tactics." was how Lieutenant Colonel Greg Brown, once the Commanding Officer of the 547th Intelligence Squadron, answered the question of why the Threat Training Facility (TTF) has remained at Nellis since its inception. "This facility is a great example of an opportunity to bring anybody in, no security clearance necessary, and show them some of the things we do in the air force and some of the threats we're up against from hostile countries."



©Steve Bigg

This assortment of mostly Warsaw Pact weapons, later supplemented by captured Iraqi equipment from the Gulf Wars, was accumulated through a variety of channels and remained highly classified until 1993. Started as a highly classified program to collect the military equipment of foreign adversaries for the purpose of training USAF war fighters and knowledge of the program and what was going on behind the walls of the petting zoo was at a “need to know” level for many years. Eventually declassification of the facility took place in 1993. Today, although it is not open to the general public, those with access to the base can visit the facility and get up-close and personal with both historic Cold War-era Soviet and current Russian military hardware. In addition to the Warsaw Pact equipment, a number of American and Allied systems are included, since these weapons were either sold to or obtained by governments or entities which are now potential adversaries.

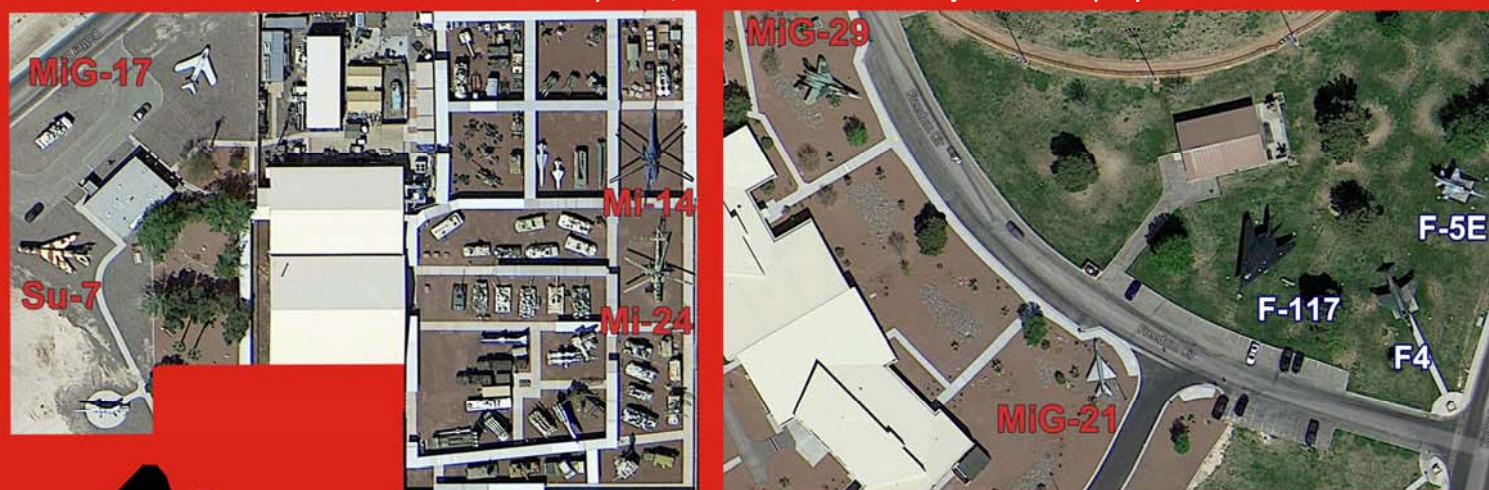
Fighter aircraft include the MiG-17 Fresco, Sukhoi Su-7 Fitter, MiG-21 Fishbed, displayed outside with the MiG-23 Flogger and MiG-29 Fulcrum displayed inside. There are actually two MiG-29s, part of the 21 MiG-29s the U.S. government purchased from the former Soviet state of Moldova in 1997, a deal that kept the jets from being sold to Iran. The one inside is a MiG-29S “Fulcrum-C” and has been repainted in its original “Guards” colors as it was during the fighter’s first posting at Moscow’s Kubinka Air Base.

The Mig-23 Flogger on display is possibly one of the several which were used by the top secret 4477th Red Eagles, who flew MiG-17s, MiG-21s and MiG-23s. The 4477th Test and Evaluation Squadron (4477th TES) was a component of the Tactical Air Command, based out of the Tonopah Test Range (aka Groom Lake or Area 51) north-west of Las Vegas. The program, known as Constant Peg, was active from 1977 through 1988. Information about this unit and its activities remained classified until 2006.

Russian helicopters are represented by the Mi-14 Haze and Mi-24 Hind. Ground threats include a number of surface-to-air missiles, from the SA-2 Guideline, which is believed to have downed the U-2 reconnaissance plane piloted by Francis Gary Powers over the Soviet Union in 1960, to the SA-6 Gainful which downed Captain Scott O’Grady’s F-16C Fighting Falcon over Bosnia in 1995. There is a profusion of radar systems also on display. Many of these acquisition and target radars are simulated in the Nevada Test and Training Range, providing US and allied aviators experience in evading these threats.

Heavy armor runs the gamut from the T-34 to the T-80. Various small arms weapons (e.g. AK-47, RPGs, etc.) are housed indoors, along with a display of large scale models of Soviet/Russian aircraft.

The outdoor exhibit area changes from time to time, but generally speaking, the majority of the equipment remains the same. These photos provide you with a peek inside the “petting zoo.” Below are Google Earth images of the facility with the MiG-17 Fresco and Su-7 Fitter in front of the building. The other MiG-29 is displayed along with a MiG-21 on the north-west side of Kinley Park, where several USAF jets are displayed.



Mi-14 “Haze” a naval variant of the Mi-8 “Hip”, with a large radar dome under the nose for antisubmarine warfare, also note the boatlike fuselage and pontoons to allow operation from water, above. The Mi-24D “Hind” gunship was captured during the first Gulf War, and is still retains the Iraqi markings, below.





left to right, the S-200 (NATO SA-5 reporting name "Gammon") SAM, the P-40 or 1S12 (NATO Long Track) also shown below, the 2S6 Tunguska, (NATO SA-19 "Grison") [mock-up] which combines 30mm guns, short range SAMs and a target acquisition and ranging radar, the 9K31 Strela-1 (NATO SA-9 "Gaskin"), and the P-40 or 1S12 (NATO Long Track) also shown below, and the P-15 1RL13 (NATO Flat Face A) mounted on a Zil-157 truck.

©Norman A. Graf

©Norman A. Graf



The 9K35 Strela-10 (NATO reporting name SA-13 "Gopher") above, and the 2K12 "Kub" (NATO SA-6 "Gainful") mobile surface-to-air missile system is a Soviet low to medium-level air defence system designed to protect ground forces from air attack.

©Norman A. Graf



©Norman A. Graf



Two S-125 Neva/Pechora (NATO reporting name SA-3 Goa) SAM missile launcher trailer, above. The first version of Buk adopted into service was the Almaz-Antey 9K37 (NATO SA-11 "Gadfly") below.



Dual S-125 Neva/Pechora (NATO reporting name SA-3 Goa) on ZIS-151 transporter vehicle, above. The ZSU-23-4 Shilka 23mm SPAAA (Selfpropelled anti-aircraft artillery) below.



NIIP 1S91 Straight Flush Engagement Radar, top left. Su-7 Fitter-A in Iraqi markings, top right, in front of the TTF, as well as the SAM SA-2 "Guideline" bottom right.

The filmstrip is illustrating several of the Cold War-era US and Allied systems as some of these weapons were either sold to or obtained by governments or entities which are now potential adversaries, as well some other Soviet made equipment.





At the heart of the image



I AM FULL THROTTLE

I AM Patrice Olivier Photographer

<http://patriceolivier.photodeck.com/>

85
million
NIKKOR

D4s

PHOTO GEAR FOR AVIATION PHOTOGRAPHY...

Article by the Editor

With beginner's DSLR you do not have to spend a fortune to get good quality images. In fact for less than \$1000 Cdn, much less in US\$, one can get a decent package that can be used for aviation photography. Sure these beginner's cameras have their limitations, for example small buffers and lower frame rates, nevertheless, they offer surprisingly good specifications but what truly counts is good images. Even today's beginner's cameras offer much better image quality than mid priced or even professional ones from less than a decade ago, of course it also depends on the lens and the skill of the photographer.

Nikon D3200

The D3200 is a compact sized camera that is packed inside with serious Nikon power: a 24.2 MP DX-format CMOS sensor that excels in any light, EXPEED 3 image-processing for fast operation and creative in-camera effects, Full HD (1080p) movie recording, in-camera tutorials and much more. With Nikon's optional Wireless Mobile Adapter, you can share your masterpieces instantly with your Smartphone or tablet too. The list is \$399.95 Cdn. It is available with a kit lens the AF-S Zoom-NIKKOR 18-55mm, that is good for static photography but too short in range for anything in the air, list is \$529.95 Cdn.

AF-S DX NIKKOR 55-300mm f/4.5-5.6G ED VR is an all-in-one zoom telephoto lens, designed for DX-format DSLR users. The 300mm telephoto performs admirably thanks to built-in VR II (Vibration Reduction) image stabilization. On the long end at 300mm it will have the effective focal point of 450mm or 9X closer than a standard 50mm lens. It is a compact and light weight lens ideal for aviation photography from behind the flightline. List price is \$429.95



**AF-S DX NIKKOR
55-300mm f/4.5-5.6G ED VR**



**AF-S VR Zoom-Nikkor 70-300mm
f/4.5-5.6G IF-ED**

Another recommended lens would be the AF-S VR Zoom-Nikkor 70-300mm f/4.5-5.6G IF-ED, which is an FX lens, but works equally well on a DX body. It has similar specification as the DX lens, but the main advantage is in case of an upgrade to full frame camera body, the lens will work, while a DX lens will not cover the full frame sensor. Over all it is great lens that can be used for sports, nature, portrait and wildlife photographers that have a tight budget or want to be able to travel light. Sharpness and contrast-wise, it definitely beats any other consumer telephoto lens in the 200-300mm range category. List is \$649.95 Cdn.



**Canon EF-S 55-250mm
F4-5.6 IS STM**

Canon EOS Rebel SL1

The Rebel SL1/EOS 100D is the smallest Canon DSLR, but with a lot of full sized features: it has an 18.0 Megapixel CMOS (APS-C) sensor and speedy Canon DIGIC 5 Image Processor, with a second-generation hybrid AF, giving fast, smooth focusing in both live view and movie shooting. It has a Touch Screen 3.0" Clear View LCD monitor II. The EOS Rebel SL1 is compatible with all Canon lenses in the EF lineup, including compact and lightweight EF-S lenses. The camera can be bought body only or with a 18-55mm Lens Kit and produces excellent quality images, with low noise and good color. The kit lens is not recommended for action oriented photography with aircraft performing in the air from behind the sidelines, a zoom lens is required. The list price of the camera is \$629.99 Cdn body only and with the kit lens is \$779.99 Cdn, from Canon Canada, much less in the USA.

For a compact zoom the Canon EF-S 55-250mm F4-5.6 IS STM lens is a good choice, as long as you do not lift the camera/lens combo by the lens, as the lens mount on the lens is plastic. It has an effective focal length of 400mm on the long end due to the sensor crop of 1.6X. The list price is \$399.99 Cdn from Canon Canada.

SONY Alpha a58 with a 18-55mm Lens DT 55-300mm f/4.5-5.6 Zoom Lens

How about a Mirrorless camera which is very much like a DSLR but some ways better? The Sony A58 has non-moving 'Translucent Mirror' enables its high frame rate which is good for aviation photography, sports, along with focus while shooting movies. The 20.1 MP Exmor® HD APS sensor has 8 FPS continuous shooting, full HD 1080/60i/24p or 1080/30p MP4 movies with Quick AF, SteadyShot INSIDE™ image stabilization that works with any lens. Large 2.7" Tilt-able, 460K dot LCD screen. The sensor's high resolution allows the A58's detail to rival more expensive cameras. Like most DSLRs in this price category the Sony A58 is bundled with an 18-55mm F3.5-5.6 lens. Overall, the Sony A58 is a good-quality substitute for an entry-level DSLR, for the beginner. \$549.99 Cdn or less from Sony.Ca

The DT-55-300mm f4.5-5.6 lens is a compact, lightweight zoom lens that covers focal length equivalent of 82.5-450 mm, excellent for aviation photography. \$229.99 Cdn from Sony.Ca



REACH A GLOBAL AUDIENCE

just like we do at **THE AVIATION
MAGAZINE**

Country / Territory	Downloads
1. United States	241,561
2. Canada	35,908
3. Rest of the world	23,123

1 241,561

Over **300,000** readers in over 124 countries have downloaded*

THE AVIATION MAGAZINE

It makes a **world** of sense to
advertise in **THE AVIATION
MAGAZINE**

**Partner with us to reach our
growing readership globally!**

To place your advertisement at very competitive rates
contact us: INFO@THEAVIATIONMAGAZINE.COM





**Bonhomme triumphs in Abu Dhabi
at Red Bull Air Race season opener**



Matt Hall (AUS), Paul Bonhomme (GBR), Pete McLeod (CAN) - Award Ceremony 14.Feb 2015





Britain's Paul Bonhomme won the Red Bull Air Race World Championship season opener in Abu Dhabi on Saturday, February 14, with a hard-fought victory over Australia's Matt Hall on the high-speed, low-altitude race track.

ABU DHABI – Hitting top speeds of 370 km/h while flying just above the turquoise waters of the Arabian Gulf, Bonhomme mastered the scorching temperatures above 30 degrees Celsius and the changing winds to take top honors with a time of 57.787 seconds in the first of eight races in 2015 of the world's fastest motorsport series.

Hall was a close second on a glorious day for racing, just 0.084 seconds behind in 57.871 seconds, while Pete McLeod of Canada took third in 58.843 seconds in the Fédération Aéronautique Internationale (FAI) official air racing world championship. Defending Red Bull Air Race World Champion Nigel Lamb ended up a disappointing fifth after being knocked out by Bonhomme in the Round of 8.

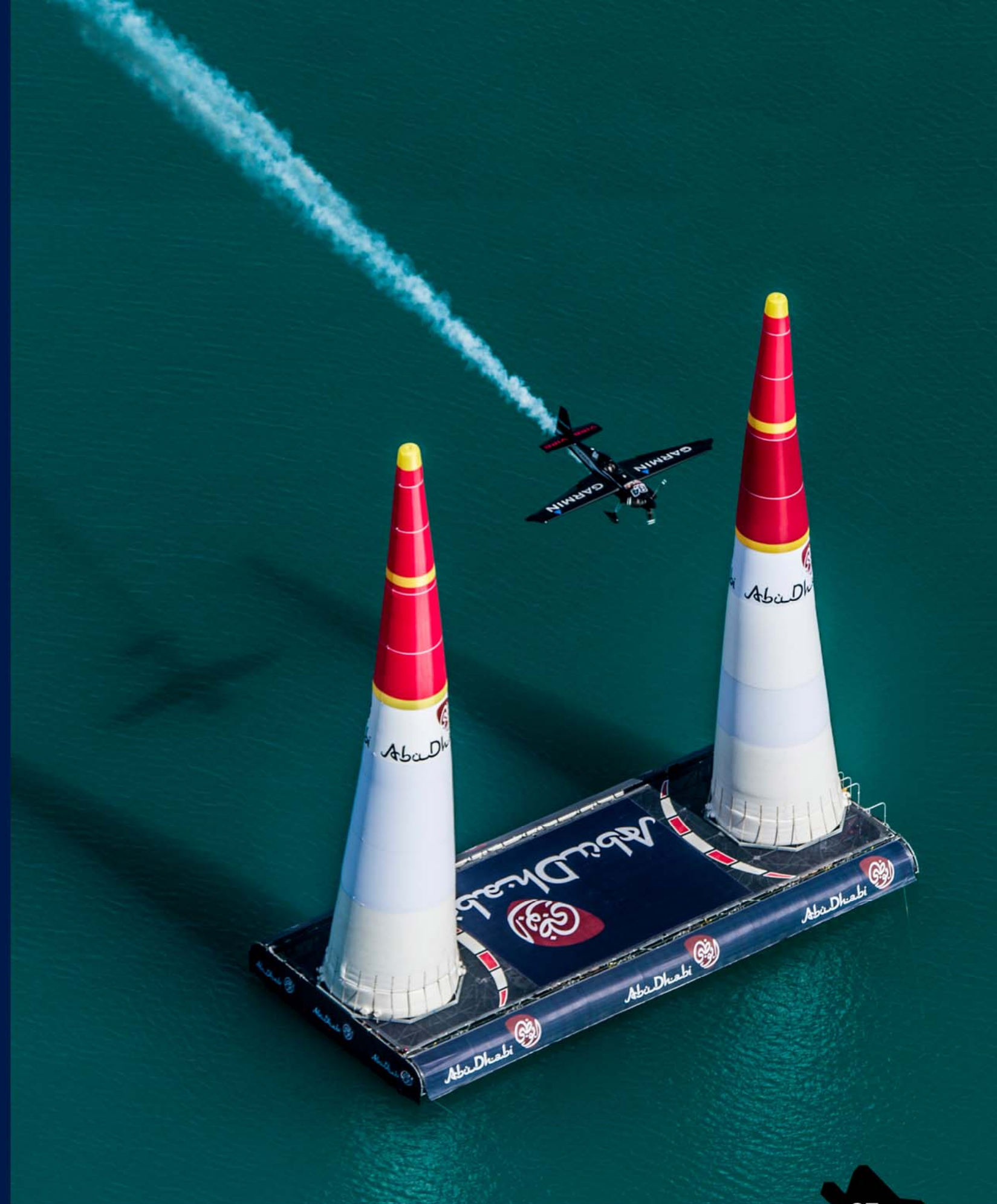
"It was all in a busy day's work," said Bonhomme, who won in Abu Dhabi for the second consecutive year and fourth time overall. "Our whole team has a lot of experience and I think we're able to get out of the blocks faster than the other teams." Hall made the most of his revolutionary new "winglets" -- 750-mm high curved tips on the outer edge of his wings -- and equaled a career-best second place. "I'm happy to be on the podium but it's kind of frustrating to be so close to winning. It was just eight one-hundredths of a second! That's about the length of an airplane that separated us."

Abu Dhabi, with its knowledgeable and enthusiastic motorsport fans, hosted the Red Bull Race World Championship season opener for an eighth straight time. There were 14 pilots from 11 nations battling for championship points in the race in which pilots navigate a low-level slalom track made up of 25-meter high air-filled pylons at high speeds while enduring forces of up to 10G. Many of Abu Dhabi's high-society spectators watched the action in style at the Sky Lounge and Race Club, the official and exclusive hospitality programs. The next race will be in Chiba, Japan on May 16/17.

Results: 1. Paul Bonhomme (GBR), 2. Matt Hall (AUS), 3. Pete McLeod (CAN), 4. Hannes Arch (AUT), 5. Nigel Lamb (GBR), 6. Yoshihide Muroya (JPN), 7. Peter Besenyei (HUN), 8. Nicolas Ivanoff (FRA), 9. Matthias Dolderer (GER), 10. Martin Sonka (CZE), 11. Francois Le Vot (FRA), 12. Michael Goulian (USA), 13. Juan Velarde (ESP), 14. Kirby Chambliss (USA)

World Championship Standings: 1. Bonhomme (12 points), 2. Hall (9), 3. McLeod (7), 4. Arch (5), 5. Lamb (4), 6. Muroya (3), 7. Besenyei (2), 8. Ivanoff (1), 9. Dolderer, 10. Sonka, 11. Le Vot, 12. Goulian, 13. Velarde, 14. Chambliss

Press release and Images courtesy of Red Bull Media Pool



THE AVIATION MAGAZINE

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



© 2015 THE AVIATION MAGAZINE