THE AVIATION MAGAZINE

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Nº 64 July-August 2019 Volume 10, Issue 4

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AVALON 2019
CL-215 - Defending the Balearen Islands
Exercise INIOCHOS 2019
Exercise NATO Tiger Meet 2019
And so much more ...



Nº 64 July-August 2019 Volume 10, Issue 4

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Invasion Stripes for the Aircraft of the Belgian Air Force

Rafale Solo Display - Interview with Captain Nativel, France

Exercise FRISIAN FLAG 2019, Leeuwarden, The Netherlands

This page: Exercise INIOCHOS - USAFE F-16CM of the 480 FS with mission markings © 2019 Peter Thivessen





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THE AVIATION MAGAZINE is published six times a year, by a Team of Volunteers interested in aviation. We are devoted to cover a wide range of aviation events ranging from air shows, air base visits, military exercises, civilian spotting, pilot and veteran interviews all with exceptional photography. THE AVIATION MAGAZINE is a leader in the e-magazine format since 2009, bringing exclusive and fascinating reports to our global aviation enthusiasts digitally.

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E AVIATION MAGAZINE

Welcome to the 64th edition of THE AVIATION MAGAZINE. The first half of 2019 passed by and we are in the middle of the high season of the event-calendar. In this issue, we extensively feature not only the big exercises INIOCHOS, Frisian Flag and the NTM Tiger Meet. We also look into the operation of the Dutch NH90 helicopter as well as of the Canadair CL-215 airtanker protecting the Balearic Islands. To commemorate the 75th anniversary of the D-Day, the Belgian Air Force applied "Invasion Stripes" to two of their F-16s and to one C-130. We are very happy to show you some stunning air-to-air shots of these two F-16s. However, there is much more in this edition. Just be curious, download it and enjoy reading.

In the next issue, we will feature this year's Langkawi International Maritime and Aerospace Exhibition (LIMA) in Malaysia, a report from onboard the French aircraft carrier Charles de Gaulle, Red Flag 19-2, some events in Eastern Europe, and much more.

Stay tuned for our reports and join us by downloading THE AVIATION MAGAZINE, the BEST and FREE e-based magazine since 2009, imitated by so many, but never surpassed.

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Ralf Peter WALTER Publisher & Editor

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THE AVIATION MAGAZINE

AVALON 2019

The fourteenth edition of the biennial Australian International Airshow took place between 26 February 2019 and 3 March 2019 at Avalon International Airport, Victoria, Australia. Attendances across the event totalled 171,830 and with 371 aircraft on display a new record was set.

For aviation photographers is the Australian International Airshow the major event in Australia to photograph the aircraft and helicopters of the Australian Defence Force in action.

The setup of the airshow was comparable to the previous editions – a big and varied static display and a daily six to seven hours flying display program of current military hardware, warbirds and aerobatics.

The active runway at Avalon Airport is very close to the crowd line, making it perfect for take off, landing and taxiing shots - at least in the mornings, as in the afternoon it is backlit. The display line however is far away. With temperatures reaching 40+ degrees, extreme heat haze and strong winds photography

was rather challenging. The images in this report are a small selection on what was on display.

Target Acquired: Air Power for Australia's Future...

'Target Acquired: Air Power for Australia's Future' was this year's theme as the Australian Defence Force showcased the integrated and networked force being implemented via *Plan Jericho* to transform the Royal Australian Air Force into a fifth generation Air Force.

Australian Defence Force showcase

Highlights in this year's flying display were the Australian Defence Force showcase, the F-35A Lightning II solo display and the first display of *The Roulettes* flying the PC-21.

Reconnaissance, suppression, attack and rescue a sixty minute demonstration of mixed capabilities and skills by a joint task force of Royal Australian Air Force, Royal Australian Army and Royal Australian Navy involving a variety of aircraft and helicopters like the F/A-18A/B, Hawk Mk.127, C-17A, C-130J-30, P-8A, E-7A, KC-30A, Tiger Armed Reconnaissance Helicopter, CH-47F, MRH-90 and MH-60R.

RAAF F-35A Lightning II solo display

The first two Australian based F-35As arrived at RAAF Base Williamtown on 10 December 2018. Royal Australian Air Force's 3 Squadron was able to display both aircraft on static display and in a very impressive flying display.

At a media event, Air Commodore Mike Kitcher, Commander Air Combat Group Roval Australian Air Force briefed The Aviation Magazine and other media about the status of the Australian F-35 Program:

RAAF F-35A Lightning II

Australian International Airshow and **Reorpace & Defence Exposition**

Article and photography Jeroen Oude Wolbers

'We are testing the aircraft in Australia's unique operating environment to ensure everything works in the lead-up to Initial Operating Capability in December 2020. Our first two F-35s at RAAF Base Williamtown are going well and they are flying five to six sorties a week, primarily for aircrew training. We will add another two to the fleet in early April and we will have another four by the end of 2019. So that will be eight F-35A aircraft operating at RAAF Base Williamtown'.

'2 Operational Conversion Unit, which is our current Classic Hornet training unit, does its final Classic Hornet operational conversion in the last six month of 2019 and then ceases Classic Hornet operations. In 2020 2 Operational Conversion Unit will convert to the F-35A and will also commence technician and aircrew training in earnest'.

'We have actually started our first F-35A technical training at 2 Operational Conversion Unit. Next month [April 2019] we start our first aircrew training for 3 Squadron. They will be experienced aircrew who have significant time on Classic Hornets or Super Hornets and they will be our Australian training trial'.

'Training will ramp up between now and the end of 2020 and in January 2021 we should have our first young men and women from 76 Squadron, straight off the Hawk Mk.127, who will be trained on the F-35A in Australia. That is the key part of our Initial Operating Capability – to be able to train technicians and aircrew on the F-35A locally'.

Australia has committed to 72 F-35A aircraft for three operational squadrons at RAAF Base Williamtown and RAAF Base Tindal and a training squadron at RAAF Base Williamtown. The first F-35A aircraft was accepted into Australian service in 2018 and the first squadron, 3 Squadron, will be operational at the end of 2020. All 72 aircraft are expected to be fully operational by 2023. In the future, a fourth operational squadron will be considered for RAAF Base Amberley, for a total of 100 F-35A aircraft.

The Roulettes

The Roulettes gave their final display in their trademark PC-9A marking the end of 30 years in service. The



PC-9A is being retired and will be replaced by the PC-21. Roulette Two, Flight Lieutenant Daniel Price, about the PC-21: 'It looks like a fighter jet and flies like a fighter jet. It goes faster, turns harder, is pressurised and flies harder than the PC-9A'.

The PC-21 has a more powerful engine than the PC-9A and it offers an 8g experience in the turn for its pilot. A greater top speed but a little slower getting there will see The *Roulettes* make changes to their display. The *Roulettes* PC-9As have moved from RAAF Base East Sale to RAAF Base Pearce and sit out the remainder of their time with the RAAF.

Other Australian Defence Force flying displays Besides the aircraft and helicopters in the Australian

Defence Force showcase, the F-35A solo display and *The Roulettes* Australian Defence Force representation in the flying display included a F/A-18A solo display, a four-ship formation display of 2 Operational Conversion Unit F/A-18A/Bs and a Hawk Mk.127 solo display. Unfortunately there was no F/A-18F Super Hornet solo display or E/A-18G Growler solo display.

Other flying displays by international participants

Besides the United States Air Force F-22A solo display and C-17A solo display foreign participation in the flying display was limited to a flyby of a United States Air Force B-52H, a solo display of a Royal New Zealand Air Force C-130H and a solo display of a Japanese Air Self Defense Force C-2 mainly to impress the decision makers within Royal New Zealand Air Force as a replacement for their ageing C-130H fleet.

Static Display

Highlights of the static display included a Royal Malaysian Air Force A400M, two Republic of Singapore CH-47D's, a United States Air Force B-52H and a United States Navy P-8A amongst others.

Unfortunately the setup of the static display made Jeroen Oude Wolbers / The Aviation Magazine would photography nearly impossible. like to thank the Australian Defence Force Media Team, the United States Air Force Media Team, Media 2021 Operations Australian International Airshow 2019 Planning for the 2021 edition of the Australian and Nikon Professional Services Australia for their International Airshow has already started and it is assistance and support prior, during and after the expected that 2021 will see the biggest Australian Australian International Airshow 2019.

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International Airshow to date as on 31 March 2021 the Royal Australian Air Force will mark 100 years as an independent air force.

Acknowledgements





5-2-18

US Navy Lockheed P-8A Poseidon (top left) USAF Boeing KC-135 Stratotanker (top right) RAAF Airbus KC-30A MRTT (main picture)

























DEFENDING THE BALEARIC ISLANDS

During the summer period at the height of the firefighting campaign at the Balearic Islands (Mallorca, Menorca, Ibiza and Formentera) one CL-215T of 43 Grupo is based at Pollensa Airbase on the island of Mallorca. The firefighting campaign typically runs from 1st of June until 30st of September. This deployment is supported by 43 Grupo stationed at Torrejon Airbase. The unit is responsible and sole user of the two types of firefighting aircraft currently in service with the Spanish Air Force, (Canadair Ltd, now Viking Air) CL-215T's and CL-415's. The main challenge is to deploy aircraft all over the country to meet up with the demand of firefighting tasks during the summer period.

43 Grupo (Air Force Group) is organically dependent on the MAGEN (General Air Command), operationally of the UME (Military Emergency Unit) and functionally of the Ministry is MAPA, Ministerio de Agricultura, Pesca y Alimentación, literally, Ministry of Agriculture, Fishing and Food. "The first request for us to fight a fire comes from MAPA, but since we are a military unit, the final order has to come from a military command, in our case, the final order for us to go to

a fire comes from UME" Captain Maroto explains. "Less fires have occurred during 2018 mainly due to the weather circumstances. We call this a good firefighting year" is the conclusion of Captain Maroto, one of the pilots deployed to Pollensa Airbase. Captain Maroto has been serving over 12 years with 43 Grupo.

"We only had one small fire on the Islands here, that has been different in previous years" Captain Maroto continues. "Deployments of the CL-215's to Mallorca already started many years ago; People in Pollensa are familiar with the yellow and red aircraft. Only tourists from the beaches or boat owners look a little bit strange when they see our aircraft land on the water" Captain Maroto points out. "Pollenca does not

have a landings strip, so landing on the water is the only option".

During the deployments to Mallorca two crews are present for a period of at least 15 days. After these Currently the inventory of 43 Grupo consists of eighteen aircraft, fourteen CL-215T's (UD-13) and 15 days the crews are changed, but also the aircraft. "It can also be that the period will be extended to a four CL-415s (UD-14). UD-13 and UD-14 are the month, as it is in my case" Captain Maroto adds. internal Spanish Air Force naming for them, U stands The first two CL-215s were procured in 1971 and for utility aircraft and D for SAR aircraft. Only three CLstationed at Getafe with 803 squadron. The first 415 are property of the Spanish Ministry of Defense. mission of the CL-215 was a search and rescue The other fifteen aircraft (14 CL-215T's and one mission, west of Cape Finisterre on March 11th, 1971, CL-415) are property of the Ministry of Agriculture, and the first firefighting mission was conducted on fishing and food, MAPA, formerly also environment July 9th, 1971, in the province of La Coruña, with Ministry (MAPAMA). a mixed crew (Canadian and Spanish). The first The unit is rather small in its organic structure. A firefighting mission with Spanish crew was made on total of 58 pilots are available for operational duties



REPORT AND PHOTOGRAPHY BY CARLO KUIT & PAUL KIEVIT



March 23rd, 1972, in the province of Cantabria.

In 1980 43 Grupo was established at Torrejon AFB. After refitting to turbo prop engines (CL-215T) the unit marked its 100,000-flying hour in 1999. Due to the demand of fire fighting capabilities in 2006 the first CL-415s entered service. A year later The Emergency Military Unit (U.M.E) takes Operational Command of the 43 Grupo. In 2013 the Ministry of Environment and Rural and Marine Affairs (MAGRAMA) acquired a CL-415. This year marks 175,000-flying hours with the fleet of CL-215s and CL-415s.

supported by 28 flight engineers and about 63 supporting staff members.

The main tasks or role during the deployments is forest fire fighting, the secondary role is that of Search and Rescue (SAR) support. "The SAR Support role contains of being eyes in the sky, but we can also drop a line of rafts as the CN235 does, we also practice this during SURMAR exercises" explains Captain Maroto. For this secondary role exercises are being executed during the deployment of 43 Grupo in Mallorca. These SAR missions are being practiced together with the aircraft of the 801 Squadron which are stationed at San Joan Airbase, Palma de Mallorca International Airport. During a SAR Support mission

two extra persons will be onboard of the CL-215T/ CL-415, except for the three crew members, two lookers or 'spotters' will be present.

Except for the deployment of 43 Grupo, Pollensa Airbase is also being used for "SURMAR" exercises. These exercises are mandatory for Spanish Air Force pilots. The purpose of this training is to learn how to handle survival in the water. Pilots are dropped in the sea, simulating a plane crash, and learn how to survive and how to request for help. After this request for help a CN235 or a CL-215T drops a line of life rafts near the communicated position. After following the protocol how to enter the life rafts they are being

scene, and is already present on the ground or in the air with a helicopter or small fixed wing aircraft picked up by a Puma helicopter of the 801 squadron is telling us where to drop the water. After finding a out of Son San Joan Airbase, Mallorca. It the early good scooping spot the CL-215T has to fly around days the CL-215T's assisted in dropping the pilots to see if the water is clear of any objects that can into the sea, simulating a plane crash. Nowadays a damage the aircraft while scooping water. Things boat is used for this purpose. that have to be thought about are rocks in the water, "A typical firefighting mission can have a duration boats, swimmers, buoys and other floating objects. up to 4.5 hours, with a maximum to 9 hours in two The CL-215T needs a clear pass way of 1.3 kilometer parts. "The two main reasons to call the CL-215T's is and at least 410 meters of water to scoop water, first of all the rapidly reach of the fire by air and the within 12 seconds the compartments are full (2x6000 aircraft can reach places that are not possible by the lbs. (pounds) of water, approximately a total of 6000 ground" Captain Maroto explains. "After reaching the liters or kilograms of water). The pilot together with fire the aircraft has to look for the nearest possibility the crew chooses the way to fight and engage the to scoop water. The fire director who is first on the fire, all depends on the local circumstances. These

REINO DE ESPAÑA

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Canadair CL-215T

Maximum operating speed Minimum control speed Maximum speed on water, probes extended Maximum take-off weight (land operations) Maximum take-off weight (water operations)

8 June 1989 28,6 m / 19,82 m / 8,9 m two 1,775 kW P&W PW123AF 187 kts IAS 84 kts IAS 90 kts IAS 43,500 lbs 37,850 lbs

These two tanks contain the foaming agents for the foam injection system

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rom May 13th until May 24th, the 55th edition of the famous NATO Tiger Meet (NTM) took place at base aérienne BA 118 *Colonel Rozanoff* Mont-de-Marsan. The airbase is located in the southwestern part of France.

Although for the first time at Mont-de-Marsan, this was the 10th Tiger Meet hosted in France. Of the nine previous French Tiger Meets, two were at base aéronautique navale BAN Landivisiau with the French Navy (2008 and 2017) and seven at the now closed BA 103 Cambrai with the former EC 1/12 *Cambresis* (1964, 1972, 1979, 1986, 1994, 2003 and 2011).

BA 118 Mont-de-Marsan is now home to both French Air Force Tiger units. The first one is Escadron de Chasse et d'Expérimentation ECE 1/30 *Côte d'Argent* with its first Escadrille (flight) BR 127 *Tigre Menacant*. The second one is this year's host Escadron de Chasse EC 3/30 *Lorraine* with SPA 162 *Tigre* as one of its three Escadrilles.

Since the legendary EC 1/12 *Cambresis* had to stand down in 2012, the traditions of the 1961 founding member of the NATO Tiger Meet survived as one of its flights; in April 2012 SPA 162 *Tigre* moved on to a new unit, finding its new home as one of the flights of the EC 1/7

Provence based at St. Dizier. However, this was only for a short period of time. In summer of 2016, EC 1/7 *Provence* had to move to Al Dhafra in the United Arab Emirates. SPA 162 had to relocate again, but not to the UAE. This time it joined EC 3/30 *Lorraine* coming back to France from the UAE and being reestablished as a second Rafale squadron at BA 118 Mont-de-Marsan. Interestingly, EC 1/12 was established exactly at this base 64 years earlier as it stood up in May 1952 at Mont-de-Marsan. It consisted of the two flights SPA 162 and SPA 89 *La Guêpe* before it headed to Cambrai a year later in 1953. The Tigers of SPA 162 found their way back home again.

Nowadays, real life missions often involve different units or even more than one nation at the same time. Pilots and mission commanders are required to increase their knowledge and skills with the joint operation of different types of aircraft and often aircrews used to different French E-3F AWACS (plus the EC725s taking Standard Operating Procedures. To train part in only one mission) was a big plus in adding under just these circumstances is a very valid options for the benefit of the exercise. opportunity often granted during a Tiger Meet. Each flying day usually consisted of two missions, NATO Tiger Meet exercises have always been one being flown in the morning and a second well-known for their excellent multi-national comission in the afternoon. operation and highly realistic simulated battle With the focus of the exercise traditionally scenarios. To increase the level of realism, lying on planning and debriefing of missions, this year's exercise was supported by the participation from land based air defence units this year's NTM took advantage of the DMOC (Crotale, Mamba, Scribe, SA-6, SA-8) along with (Distributed Mission Operation Center). Missions naval assets in form of an anti-air frigate from were animated and analyzed in real time by an the French Navy, the D 615 Jean Bart, in the experienced pilot called the "Airboss" and two Gulf of Biscay. To optimize the missions, three, other aviators known as Range Training Officers usually civil used, air spaces were temporarily (RTOs). A software called "JEANETTE" visualizes closed for civil traffic and reserved for the Tiger the aerial situation during the fight in real time missions for the duration of the Tiger Meet. by accessing the aircraft's Link 16 data, thus The integration of external assets such as the sharing the same information as the aircraft Alpha Jets from the "Aggressor" Squadron 3/8 involved. So real time assessments are possible *Côte d'Or*, the GFD Learjet, French Army Tigre e.g. the decision if a simulated air to air "kill" attack helicopters and last but not least the was successful or not, enabling the team to

F-16A MLU, 31 Squadron of the Belgian Air Force

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remove a crew from the fight in nearly realtime if they were declared "dead".

To show their pride of being a member of the NATO Tigers, traditionally each squadron taking part in a Tiger Meet has at least one of its aircraft in a special "Tiger" paint scheme to prove the real "Tiger spirit" is in them. Of course, the special painted Tiger Jets were once again in the focus. The host unit EC 3/30 Lorraine took its design back to the 6th of June, 1944. This was to pay tribute to the 342nd Squadron (back then the "Lorraine" squadron) providing cover for the ships during D-Day with "Operation Smoke Screen". In the very early morning of D-Day ("Jour J" in French speaking), the squadron with its twelve Douglas Boston IIIA bombers dropped smoke bombs over the coast of Normandy at very low level. They successfully blinded German coast defences and prevented the allied fleet from being spotted and attacked by the German forces earlier out on the Channel. The "Dark Tiger" is a hommage to the men who carried out this mission and a symbol of both the heritage of the French squadrons and of the Tiger spirit.

EC 3/30 Lorraine managed to win the prize for the best painted aircraft with Rafale C No. 135 30-GN in the "Dark Tiger" livery. 3/30 squadron also took the award for the best flying unit. The Silver Tiger Trophy for the overall best squadron was awarded to the 301st Squadron from Monte Real AB, Portugal (taking part for the first time after eight years of absence). They will also be the host for next year's NATO Tiger Meet 2020 in Beja, Portugal.

Acknowledgement

The Aviation Magazine thanks Capitaine Laebens, Lieutenant Bruillon and their team from SIRPA Air for making this report possible.

Country	Unit	Aircraft	Remarks
Austrian Air Force	1 JTS	3 x Saab 105Öe	
Belgian Air Force	31 smd	6 x F-16A/B MLU Fighting Falcon	
French Air Force	EC 3/30 Lorraine	4 x Rafale C/B	
French Air Force	ECE 1/30 Côte d'Argent	4 x Rafale C/B & 3 x Mirage 2000D	
French Air Force	EE 3/8 Côte d'Or	4 x Alpha Jet E	External Asset
French Air Force	EDCA 36 Berry	1 x E-3F	External Asset
French Air Force	EH 1/67 Pyrénées	2 x EC725 Caracal	
French Army	3 RHC	3 x SA 342 M Gazelle	
French Army	5 RHC	1 x EC665 Tigre HAP	External Asset
German Air Force	TaktLwG 51 'I'	4 x Tornado ECR & IDS	
Italian Air Force	21° Gruppo	2 x HH.212	
Italian Air Force	XII Gruppo	4 x EF2000 Typhoon	
NATO	1 AEW&CS	1 x E-3A Sentry	
Portuguese Air Force	Esq 301	5 x F-16A/B MLU Fighting Falcon	
Royal Air Force	230 Sqn	2 x Puma HC.2	
Royal Navy	814 NAS	2 x Merlin HM. MK21	
Spanish Air Force	Ala 15	7 x EF-18+ Hormet	
Civil	GFD	Learjet	External Asset
Royal Neth Air Force	313 Sqn	2 x F-16A/B MLU Fighting Falcon	Visitor over weekend
German Air Force	TaktLwG 74	2 x EF2000 Typhoon	Visitor over weekend

EF-18A+ with Tiger tail of the 2016 NTM from Ala 15 of the Spanish Air Force

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Mirage 2000D from ECE 1/30, French Air Force (above) Saab 1050e from 1 Jet Sqn, Austrian Air Force (below)





















HUNGARIAN DEFENCE DAY REPORT AND PHOTOGRAPHY BY ISTVÁN KELECSÉNYI

On May 18th and 19th, 2019, the Hungarian Defense Day was held at the Budaörs Airport near Budapest. On the Day of Defense, the Hungarian People commemorate the soldiers of the 1848 Revolution and War of Independence and the liberation of the city of Buda in 1849 from the imperial troops of Austria.

About two years ago, Hungary initiated the program Z2016, named after the famous Hungarian commander Miklós Zrínyi (1647 - 1664), one of the generals of the European war against the Turks. Based on the Z2026 program, Hungary intends, after 20 years, to buy again a large number of weapon systems and equipment.

On the Defense Day, many of these vehicles and aircraft were presented to the public. The event started with the display of the aircraft of the Hungarian Air Force (Hungarian Defence Force, Air Arms). One Zlin 242L, two Mi-24P combat helicopters and one Mi-17 transport helicopter were followed by three JAS-39C/D Gripen combat aircraft. After that, one Dassault Falcon7X and Airbus A319 transport aircraft were demonstrated. The highlight was a tactical demo: two Mi-24P combat helicopters and a

Mi-17 transport helicopter deployed Special Forces with Polaris and HMMWW M1151A1 vehicles and neutralized an enemy missile complex. This was followed by displays of a Mi-17 and a German Air Force Airbus H145M Special Forces helicopter.

The static display featured Mi-8, Mi-17 and H145M multipurpose transport helicopters, Yak-52 and Zlin 143-LSi training aircraft and restored aircraft like the MiG-21 and MiG-23 combat aircraft, Mi-2 and Mi-8T helicopters, AN-2 and Li-2 aircraft. Also on display were many other current and withdrawn weapon



Mi-17 approaching the landing zone during the tactical demo









These Hungarian MiG-23 (far left) and MiG-21 (left) were mocked up as US Air Force aircraft for the 2015 James Bond movie "Spectre"

■ Airbus H145M of the German Air Force



INVASION STRIPES FOR THE AIRCRAFT OF THE BELGIAN AIR FORCE

REPORT AND PHOTOGRAPHY BY KRIS CHRISTIAENS

o celebrate the 75th anniversary of D-Day, several aircraft of the Belgian Air Force were marked with the well-known 'invasion stripes#. These famous markings were five alternating black and white stripes painted on the fuselages and wings of Allied aircraft during World War II to reduce the chance that they would be attacked by friendly forces during and after the Normandy Landings. The stripes were put on fighter aircraft, photo-reconnaissance aircraft, troop carriers, twin-engined medium and light bombers, and some special duty aircraft, but were not painted on four-engined heavy bombers. One month after D-Day, the stripes were removed from planes' upper surfaces to make them more difficult to spot on the ground at air bases in France. The stripes were completely removed by the end of 1944. The painting of the invasion stripes on two F-16 fighter jets and one C-130 Hercules transport aircraft is a tribute to all pilots deployed during Operation Overlord in Normandy, France.

Operation Overlord was the codename for the invasion in Normandy which consisted of massive air landings, air-to-ground attacks of hundreds of aircraft followed by the largest amphibious assault in history. The first day of Operation Overlord later became known as D-day. During the Second World War, several Belgian pilots joined the Royal Air Force of the United Kingdom to fight for the liberation of Belgium and Western Europe. Within the Royal Air Force these young Belgian pilots were part of the 349th and 350th fighter squadrons and carried out their aerial battles with the famous Supermarine Spitfire aircraft. While the 349th Squadron was established in 1942, the 350th Squadron was established a year earlier. Pilots who flew military transport aircraft such as the Douglas C-47 Skytrain were part of the

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525th Squadron. After the Second World War, these squadrons came to Belgium and were involved in the founding of the Belgian Air Force in 1946. While the 349th and 350th Squadrons retained their names and numbering, the 525th Squadron became part of the 169th Wing which was renamed in the 15th Wing in 1948.

To commemorate the Belgian pilots who were part of the Royal Air Force during Operation Overlord, two F-16 fighter jets of the Belgian Air Force received invasion stripes and a special tail paint. These two fighter jets (FA-57 & FA-124) are part of the 349th Squadron and 350th Squadron each based at the Kleine-Brogel and Florennes airbases. The beautiful design of the painted tails consists of a Supermarine Spitfire fighter aircraft flying over the coast of Normandy and the text '75 Years D-Day'. The registration of the Supermarine Spitfires on the painted tails (MN-L & GE-S) was also painted at the fuselage of the F-16 fighter jets. The third aircraft of the Belgian Air Force that received invasion stripes was a C-130 Hercules transport aircraft (CH-11) from the 15th Wing Luchttransport (Airlift Wing).

To bring the 75th anniversary of D-Day even more in the spotlight, the Belgian Air Force carried out a special fly-by on June 6th, 2019. During this fly-by seven F-16 fighter jets from the 349th Squadron and the 350th Squadron flew in a V-formation over Belgium and special landmarks so people could look up at the sky and think of all those heroes who gave their lives for our freedom. The F-16s flew at a height of 1,000ft over important cities as Antwerp, Bruges, Ghent, Charleroi, Namur and Liège. At the end of the fly-by, two F-16s flew together with a Supermarine Spitfire over the city of Brussels after which they returned to their base.

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he exercise *INIOCHOS* is an annual medium scale exercise (type INVITEX) based on the facilities of the Air Tactics Center at the Greek Andravida AB. The duration of the exercise is 15 calendar days and operations make use of the majority of Athena FIR. The Exercise scenario adopts a Single Base Concept (execution of operations from a single Air Base), with the participation of all branches of the Armed Forces.

HISTORY

The INIOCHOS exercise was first conducted in the late 1980s, as a small scale tactical level exercise, tailored to the contemporary necessity for training in combined air operations in accordance with the Hellenic Air Force Doctrine. Over the next years, the success of the exercise led to the decision on establishing it as an annual event.

The exercise objective was to train personnel in planning and execution of Combined Air Operations (COMAO) in accordance with the HAF Doctrine and National Plans in a realistic environment, in order to test and evaluate operational plans and tactics. For the execution and conduction of the Exercise, the Hellenic Fighter Weapons School was deployed to Larissa, so as to form the White Cell in the facilities of

the National Center for Air Operations. Aircraft were also deployed to Larissa, at 110CW, from where they launched for their missions.

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In 2005, the Exercise was decentralized, thus the participating aircraft were operating from their mother bases, while the White Cell, the planning and the coordination were taking place in the Air Tactics Center and the Fighter Weapons School facilities, in Andravida Air Force Base, implementing newly acquired means of Command and Control.

In November 2013, the decision was made to adopt a Single Base Concept, upgrading the exercise scale to medium and expanding the spectrum of operations with the objective to create a more realistic and Demanding environment, with an intensive and prolonged 24/7 battle rhythm, significantly increasing the level of training.

In April 2015, the exercise is being held for the first time in the form of INVITEX (Invitation Exercise), with the participation of the IAF and the USAFE Special Forces as Joint Terminal Attack Controller (JTAC).

EXERCISE SCOPE

Exercise Objectives The exercise is divided into four phases: Provide REALISTIC training, which is achieved by Phase 1: Preparation creating a realistic Battle Environment. Phase 2: Force deployment Participating personnel are exposed to an intensive Phase 3: Operations battle rhythm with realistic attrition rates and Phase 4: Redeployment - RTB challenging scenarios which include multiple modern

threats and real time live injects, tailored to produce **Command - Control** the fog of war and the friction effect (per Clausewitz), Tactical Command of the participating air forces is which is expected to dominate the modern battlefield assumed by the Chief of HTAF and it is exercised through a cell established at the ATC specifically for and test both the physical and psychological endurance of the modern fighter. the exercise. Tactical Control is being delegated to the ATC Commander.

Accurate Shot/Event Assessment

This is achieved with the use of onboard and off board tracking data, sensors and specialized debriefing In order to achieve the objectives of the exercise, software, which is leveraged for the reconstruction of the Hellenic Fighter Weapons School oversees the missions from scenario planning to debriefing and the mission by experienced Fighter Weapons School instructors, who oversee the debriefing process. makes certain that they cover the full spectrum of



REPORT BY RALF PETER WALTER AND PHOTOGRAPHY AS NOTED



Phases

Missions





missions currently performed by the HAF such as:

- Air operations versus Integrated Air Defense System (IADS)
- Offensive Counter Air •
- Airfield Attack •
- Battlefield Air Interdiction / Special Targets (bridges, power, stations, vehicles, etc.).
- Anti-Surface Warfare
- Slow Mover Protection (SLOMO)
- Escort-Sweep
- Combat Search and Rescue (CSAR).
- Dynamic Targeting (DT)
- Strike Coordination and Reconnaissance (SCAR)
- Close Air Support (CAS)
- Tactical Air Support fo maritime operations
- Time Sensitive Targets (TST).
- High Value Airborne Asset (HVAA) Protect/Attack

Participation

Since the first INVITEX in 2015, INIOCHOS exercise has attracted participation from many countries with increasing interest for participation by even more. Given the high level of the HAF personnel and our capability to conduct exercises, involving a variety of weapon systems within one of the largest exercise areas in Europe, the exercise «INIOCHOS» aspires to become the one of the most competitive exercise in Europe and the Mediterranean region, and provide participants with a high level of training and unique experience of participation.

Source: Hellenic Air Force

INIOCHOS 2019 PARTICIPANTS

The IAF participated in *INIOCHOS* for the fifth 77 combat aircraft from five nations participated in consecutive time. They only took part in the first week of the exercise, this time with thirteen F-16c/D this year's INIOCHOS. A total of 863 sorties were flown during the exercise. Barak from the 109th ("Valley") and 117th (First Jet") Squadrons.

Hellenic Air Force (HAF)

Each of the F-16 fighter squadrons deployed four aircraft to Andravida for the exercise. The two Tanagra-**F**or the fourth time in a row the UAEAF participated based Mirage 2000 squadrons sent two aircraft each. in the exercise. As in the previous year they were Andravida-based F-4E Phantoms also took part. with five Mirage 2000-9 from the 71st Squadron in Andravida.

U.S. Air Force Europe (USAFE)

The 480th Fighter Squadron deployed six F-16C *Fighting Falcons* from their home base Spangdahlem The ItAF was with three different types of aircraft in Andravida: three Tornado IDS from the 154° Gruppo AB in Germany to Andravida AB. The 480th Fighter CB, three Tornado ECR from the 155° Gruppo ETS, Squadron is Europe's only "Wild Weasel" squadron, providing expeditionary forces with capabilities in and six F-35A *Lightning II* from the XIII Gruppo Caccia. This marked the first operational deployment SEAD (Suppression of Enemy Air Defense), CAS (Close Air support), air interdiction and counter air. of ItAF F-35As to an air base outside Italy.

Israeli Air Force (IAF)

United Arab Emirates Air Force (UAEAF)

Italian Air Force (ItAF)









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DUTCH NHSO: FROM PIONEERING TO A CAPABLE PLA

Tn 2000, a production contract for 20 NH90 NFH (NATO Frigate Helicopter) maritime helicopters was signed by the Dutch Ministry of Defense. The so-called N2 helicopters were bought to replace the aging fleet of Westland Lynx helicopters that has been in use by the Royal Netherlands Navy since 1976. The NH90 was developed and is manufactured by NHIndustries, a collaborative company, which is owned by Airbus Helicopters, Leonardo and Fokker Aerostructures. The first prototype conducted its maiden flight in December 1995. The NH90 first entered operational service in 2007. In 2010, The Netherlands became the first country to receive the NFH variant.

All 20 NH90s are stationed at the De Kooy Naval Air Station. There are two squadrons: 7th Squadron for training and the 860th Squadron, which is the operational NH90 squadron. Both squadrons are covered by the Defense Helicopter Command (DHC), which consists of both Air Force and Navy personnel. The Navy indicates where they want capacity and the DHC can make an offer based on availability. In the planning cell, supply and demand are coordinated.

We spoke to 860th Squadron Commander Niels Kleingeld and Captains Gerwin and Thijs. Commander Kleingeld explains: "We look at the importance of deployments. Of course, the Navy wants to have a helicopter in the Dutch Caribbean and for anti-piracy missions, but also for large preparation moments of ships to get ready for the mission area." There are people from the Navy as well as from the Air Force who will fly the NH90 or work as a crew member.

EDUCATION

How do you become a NH90 pilot in The Netherlands? Commander Kleingeld describes the process: "A NH90 pilot starts training at Woensdrecht Air Base on the PC-7, which is identical for the Air Force and



Navy pilots. For the Air Force, you are then assigned to a type of aircraft, the Navy students will become a NH90 pilot. After Woensdrecht, they go to Bückeburg Air Base in Germany. It is one of the most modern international helicopter training centers in Europe. After they have had their initial basic training of helicopter flying at Bückeburg, the students come to the 7th (training) Squadron and get a type rating." Captain Thijs adds: "Then, it still takes a year before you are fully trained to step in as a co-pilot." The pilots have to work from being a co-pilot to being a full pilot, and it always comes with 'a trip'. That 'trip' could be a deployment to the Caribbean for counter drug missions, to Somalia to fight piracy, or a NATO trip to the Baltic Sea.

SIMULATOR

Kleingeld: "We actually do the type rating, the mission training, the training to land on board of a

ship, tactical training of the tactical coordinators, the hoist training of a pilot or operator. We all train this at our home base. We have a procedure trainer to train how to follow certain procedures but we also have a full mission flight trainer. The simulator is currently still in Milan but will be relocated to the Netherlands early next year. It is a fantastic trainer, consisting of a flight simulator and a virtual sensor trainer. We can both link these to a full mission flight trainer so we can prepare crews at a high level."

Captain Gerwin, who is also an instructor pilot on the **CREW SETUP** NH90, notes the advantages of having it at NAS De To fly the NH90, the setup of the crew varies. Besides Kooy: "The simulator was purchased by the Dutch the pilot and co-pilot, there are various other tasks MoD, it will be useful to have it on location. Now we to be fulfilled. When operating tactically, there is are spending a lot of time on traveling, people who the need for someone who takes care of the tactical are over there cannot be tasked otherwise. It will give situation, who coordinates with the ship. This is a huge reduction in work pressure." Captain Thijs adds: "The power of the simulator is that cameras done by a tactical coordinator (TACCO). He sets the 🧕

REPORT BY JEROEN VAN VEENENDAAL AND PHOTOGRAPHY AS NOTED

are aimed at you everywhere, and it is flawlessly recorded how the crew works together. If you have done your mission, you can immediately look back. That is super valuable."

DUMMY DECK

A dummy deck is also being constructed at NAS De Kooy, a replicated ship deck to get the pilots qualified on deck operations. Kleingeld emphasizes the importance: "A helicopter deck is relatively small, the NH90 has a weight of 11 tons, at night we fly with night vision goggles. With the ship's movement, this requires a lot of piloting skills. I think it's one of the most risky things we do. With the dummy deck, we can train in a controlled environment first." The deck will be the size of a Landing Platform Deck, training to take-off and landing can be done on two spots at the same time. The dummy deck will be finished later this year.



helicopter based on orders from the ship and he provides the information it requests.

The sensor operators also play a very important role, especially in warfare configuration. There are two sensor consoles in the back of the helicopter. Depending on the mission, one or two operators can be on board the helicopter. Commander Kleingeld explains why: "At the very beginning, we flew with one sensor operator, who had to operate the radar, who had to operate the sonar, FLIR, electronic warfare, sonar buoys, and uplink. That task load was too high for one sensor operator, so we are now in the process of doubling sensor operators."

Then, there are mission essential people, for counter piracy and counter drug operations, a Rescue Operator Aerial Marksman (ROAM) can be taken on board the helicopter. He operates the sniper gun, for example to take out the outboard motors of a drugs boat. He is also trained as a rescue operator. During a Search And Rescue action, he is the man who goes down first. He ensures that the patient is well packed in the stretcher, accompanies the doctor and provides medical assistance.

to set up sensors, how to get the most out of the radar." There is also an extensive cooperation with the Belgians. Spare parts are shared with Belgium. This reduces costs as the Belgian Navy operates the same N5 variant of the NH90.

There are different versions of the NH90 and that makes sharing and updating difficult. Eventually, almost every country has developed their own version of the helicopter. There are all kinds of options, for example with sensors you could choose from a German, French or Italian version. Countries tried to protect their own industry, including orders. The fact

INTERNATIONAL PROJECT

The NH90 arose from the idea of developing a joint NATO helicopter. There is still a close collaboration with other countries. The Netherlands is a lead nation in the project, together with France. Commander Kleingeld names some sharing examples: "All kinds of data are shared, varying from maintenance data to various procedures, how to deal with sensors, how

that the companies in the NHIndustries consortium are competitors does not help.

TEETHING PROBLEMS

The Westland Lynx flying with the Royal Netherlands Navy had to be replaced. The first NH90 helicopters that were delivered in 2010 were ready to fly but did not have fully developed mission equipment. Kleingeld recalls how it went: "We got MOC (Meaningful Operational Capable) helicopters, and during the time that helicopters were delivered, they were delivered in different versions. When those helicopters had to be brought to the contractual final version, they had to go through retrofit programs.

These are very long-term projects." Meaning that the **ROLES AND TASKS** Defense Helicopter Command deployed helicopters The N5 version The Netherlands has purchased can that have not received the full update package yet. be used in two roles. Twelve NH90 helicopters are Captain Gerwin: "The Netherlands had deliberately equipped as NATO Frigate Helicopter (NFH). They are chosen to use it to absorb experience, knowing that equipped with all systems necessary for the maritime combat task. Eight are used as Tactical NATO Frigate there might be consequences. A deployment was done like this and more corrosion than usually was Helicopter (TNFH). As a tactical transport helicopter, detected." Captain Thijs adds: "An open sea, an they are used both on land and at sea. To carry out ocean, you cannot have much worse conditions for the transport task, systems have been removed, such your equipment. That is really a big challenge. The as the sonar and the control station of the sensor Netherlands was the first nation to take an NH90 on operator. This provides space and a weight reduction. board of a ship for an extended period of time." Despite In the TNFH role, the aircraft is equipped with a \overline{a} missile warning system for the occurrence over land. \ddot{a} the fact that the image of the helicopter continues to haunt the NH90 in the media, the commander and Depending on the missions, the NH90 can be ©

both of the pilots agree that the corrosion problem is not an issue anymore. The production of flying hours starts to boost, the availability of the helicopters is getting better, experience and confidence is growing. According to Kleingeld, "in the beginning, the engineers did not really dare to make the decisions, can you fly with them or not. We had to contact the industry. We now know exactly how to treat the helicopter and what we have to do during the trip to prevent corrosion."



converted into an amphibious version or a version that is capable of maritime warfare but the base is the same for all 20 helicopters.

Kleingeld sums up some of the tasks the NH90 can perform: "Everything we did with the Lynx, we also do with the NH90. One of the largest tasks is surface warfare. The NH90 is very suitable to perform reconnaissance at sea, to protect trading routes and to perform anti-piracy operations. We can execute anti-submarine warfare by mapping the underwater areas. Other tasks we carry out are counter drugs operations in the Caribbean, we can perform SAR missions with the NH90, it can be used for fast-roping. We use it to carry external loads but also internal loads or troops. It is a very multi-role, capable helicopter but the unique part is the warfare capabilities."

EMERGENCY AID

The helicopter is already intensively used for emergency aid and disaster relief. For Captain Thijs, it was an experience he will never forget: "On September 6th, 2017, hurricane Irma struck Saint Maarten island. We were the first on the spot. The Dutch Navy ship (ZMS Zeeland) was about 100 miles south of the island because the weather was still very restless. We flew in the afternoon with a combat camera team and took the first pictures. It was still very turbulent. We took the combat camera team with us to make images to send into the world and to see what the situation on the island was. The day after, it was all over the media, and the emergency aid started because of the severity of the situation over there. That was a very memorable flight because you can really make a difference." Thijs not only provided medical flights, food and water

to the local community, but he also helped to keep were also in Dominica for two weeks. After that, the island safe. "We flew at night because there was the roads were free and large planes could land at the airport again. Then the big help started and the looting, people felt unsafe, so we flew a lot with the searchlight. Looters had invaded a building where the hospital was up and running again." police stood and we were there with the searchlight and all our sensors to observe and provide support. **COUNTER DRUGS OPERATIONS** With the infrared camera, you can see exactly where Drugs are a big problem in the Caribbean. The NH90 people are walking. Everything we see is then passed plays an important role in large drug seizures in the on to law enforcement on the ground. For the people area. Captain Gerwin: "We can detect something living there, it makes an impression, something is on a long range with the sensors we have on board being done about the situation and they feel safer." and because we have a good endurance with the They flew support missions for two weeks. Then the helicopter, we can also apprehend the suspect. The U. S. helicopters are not able to do this. We fly a lot of exact same thing happened, hurricane Maria struck the island of Dominica, leaving immense damage. surveillance; we do not have a wait-and-see attitude Thijs: "Because Dominica has a lot of mountains, to wait until the call comes." Commander Kleingeld there have been landslides, there were a lot of trees specifies: "It is the combination of elements: the ship, on the road, so you really came into situations where the helicopter and a boarding team. The helicopter people have not seen food or drinks for a week. We can search a large area and can forcefully stop a







drug boat if necessary. You need a boarding team, often from the Americans because we are doing the prosecution in the USA, who can apprehend such a drug boat. And of course, the ship as a command and control platform but also with the airport facilities in it. Those three elements are crucial." The Dutch Navy has close ties with the USA, a lot of intelligence is provided by them, but sometimes own intelligence is used as well.

WARFARE

Twice a year, an exercise in submarine warfare is held on RNAS Culdrose in the United Kingdom. The helicopter differs from its predecessor, the Westland Lynx, in a coherent mission system. The NH90 is equipped with a helicopter long-range active sonar (HELRAS) but it can also work in combination with sonar buoys. As a weapon platform and as a sensor platform, it is perfect for anti-submarine warfare. Besides the HELRAS, the NH90 is equipped with an inverse synthetic aperture radar (ISAR). Thanks to the radar and sonar, the crew can look over water over long distances and also under water. Among other things, the thermal imaging equipment (FLIR) allows to perform the tasks in the dark, with bad weather and poor visibility. The FLIR can also visually identify the long distance targets with the radar.

The NH90 can be armed with a MAG or M3M as a door gun but there is also the possibility to carry torpedoes. With the Lynx, the Royal Netherlands Navy was very experienced in deploying torpedoes and now they try to apply the tactics and procedures to the NH90. Kleingeld is already looking towards the future: "We have the Mk46 torpedo but it is at the end of its lifespan. A number of torpedoes are in the market to replace it, and I expect, that in 2021, we will also have a new modernized torpedo to be more effective against more modern submarines." He is also exploring the possibility of implementing a helicopter air-to-surface missile: "We are the extended arm of the ship. You must also be able to carry a missile under a helicopter. That is a wish for the long term." The NH90 has provisions for a Marte anti-ship missile

but the Norwegians have already tested the Naval Strike Missile with the NH90.

MIDLIFE UPDATE

Commander Kleingeld has a long-term vision: "The NH90 is never fully developed, the technology is moving forward with incredible speed. We are already thinking about a midlife update after 2025. You have to think now, start planning, see if we can find partner countries to work with to reduce costs. It is a very long process with the industry, it all has to be engineered. The Netherlands and Belgium are at the forefront of this. Hopefully Germany, Norway, France and Italy can be motivated for a joint block upgrade / midlife update." Kleingeld also receives a lot of feedback from commanders of ships: "We would like to have video uplink and downlink for when you fly 150 miles in front of the ship, the personnel on board of the ship can see what is happening way ahead of them. We still have HF (long distance) bonding problems, possibly caused by a composite material, so we would very much like satellite communication on the helicopter. A daylight camera is also on the wish list. We have FLIR (Forward Looking InfraRed) but there are some drawbacks."

Looking ahead does not mean he is not happy about how things are going now: "After we have made a difficult start, we can now be really proud of what improvement measures are taken, and how we presently operate. As a commander, that is very nice to see. I can do this for three years and you see the build-up. You will soon see the NH90 is a very capable platform and we are still going to try to expand that further." Both the pilots agree: "Negative stories are actually no longer applicable to us. Where you enter a start-up phase there are hiccups. We are always learning more, and we know more and more about the helicopter and how to handle it. We are very happy with the capabilities of the helicopter, what we can do with it, and what we will be able to do with it in the future."



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EXERCISE DARK BLADE

Dark Blade 2019, the 13th helicopter exercise, organized under the umbrella of the European Defence Agency Helicopter Exercise Programme, took place from 13 May until 1 June 2019 at the Czech Republic Namest 22. Helicopter Base.

In 2009, the European Defence Agency (EDA) established a Helicopter Exercise Programme (HEP) program in which European military forces can jointly engage in crisis management and other military operations. EDA member countries are: Austria, Belgium, Czech Republic, Germany, Greece, Finland,

Great Britain, Hungary, Italy, Luxembourg, The Netherlands, Norway, Portugal, Sweden and Slovenia The countries participating in the HEP have developed common procedures and simulations for personnel training, technical equipment and logistics. Since 2012, eleven multinational helicopter exercises have been carried out under the lead of the EDA. These exercises met the urgent training requirements of the participating member countries and greatly enhanced the available helicopter capabilities. As of today, 14 member countries have actively taken part with other European countries sending observers. The exercise in Logroño, Spain - EX AZOR 2010, built on the success of the first EDA Exercise in Gap. Much larger, indeed probably the largest multination helicopter exercise in Europe since the Cold War, AZOR 2010 was an ambitious exercise providing training in hot, high and dusty conditions to a significant number of crews before they deployed on operations. The exercise in Italy continued this process by focusing more on the interoperability and "coalition type" missions.



- HOT BLADE 12 in Portugal introduced Combined Air Operations (COMAO) training and included F-16 surveillance missions to replicate current operational practices.
 - **GREEN BLADE 12** in Belgium was an integrated ground and air exercise that introduced Special Operations to the program for the first time.
- **HOT BLADE 13** in Portugal COMAO planning/ execution/evaluation was further developed. HEP Standard Operating Procedures (SOP) were introduced as common agreed standard for the

CH-53G, German Air Force

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first time. The Mentor Team was introduced, consisting of graduates from EDA's Helicopter Tactics Instructors Course (HTIC).

- HOT BLADE 14 in Portugal focused on joint interoperability training with a setup similar to previous editions. The Mentor Team tasks and responsibilities were expanded.
- ITALIAN BLADE 15 in Viterbo, Italy, continued to develop joint interoperability training through the integration of multinational elements, both in the air and on the ground and in a hot and dusty environment.
- **COLD BLADE 16** in Finland focused on flying in demanding environmental conditions. The exercise was developed to test the helicopters and the aircrew and to teach and learn technics, tactics and procedures in cold and snowy conditions.
- BLACK BLADE 16 in Florennes, Belgium, focused • on joint interoperability training with Special **Operations Forces.**
- FIRE BLADE 17 in Papa, Hungary, focused on live firing. European helicopter units executed national training combined with challenging COMAO scenarios on Hungarian shooting ranges.

DARK BLADE 2019 additionally provides multiple They are ready to support the multinational crews opportunities to practice multinational training with during the preparation and execution of the COMAO the Special Operation Forces (e.g. infiltration and missions. The EDA's Chief Instructor Team manages exfiltration) and enhances crews' skills in using the and supervises the Mentor Team to ensure consistency HEP Standard Operating Procedures and COMAO and the best possible uptake of lessons learned planning procedures in the conduct of tactical coming from EDA helicopter activities (Helicopter missions. Tactics Instructor Course, Helicopter Tactics Course, Six instructors from Austria, Sweden and the United COMAO Planning Course and the Electronic Warfare Kingdom, trained in EDA's Helicopter Tactics Instructors Course) and operational experience. Course and instructors from The Netherlands, trained

on the Dutch Helicopter Weapon Instructor course jointly form the DARK BLADE 2019 Mentor Team.

Mi-117Sh, Czech Air Force (left inset and main image) Mi-17, Hungarian Air Force (right inset)

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PARTICIPANTS

	1		_
Country	Туре	Category	Personnel
Belgum	2 x A-109B 2 x NH-90	light multipurpose helicopter medium multipurpose transport helicopter	88
Czech Repulic	4 x Mi-24/35V 4 x Mi-171 4 x L-159 ALCA	combat helicopter medium transport helicopter light combat aircraft	350
Germany	3 x CH-53G	heavy transport helicopter	100
Hungary	3 x Mi-24P 2 x Mi-17	combat helicopter medium transport helicopter	50
Poland	1 x W-AE	medium multipurpose helicopter	16
Slovenia	1 x Bell 412 1 x AS532 Super Puma	light multipurpose helicopter medium transport helicopter	27

Supporting forces include the four L-159 ALCA light combat aircraft air defense units and subunits and over 800 Czech soldiers. The EU staff also reaches 300 personnel and EDA Mentor teams have arrived from Sweden, Austria, Germany, The Netherlands and the UK. Italy also takes part in the exercise as an observer. All missions (air to ground shooting and various COMAOs) are carried out both during the day and at night by day and night.







AS532 Super Puma, Slovenian Air Force (left inset) A-109, Belgian Air Force (right inset) CH-53G, German Air Force (main image)

PROFESSION: RAFALE SOLO DISPLAY PILOT



On April 26th, 2019, a private ceremony took place to celebrate the 10th birthday of the Rafale Solo display. On this occasion and for the first time, all the former "Tators" (demonstrator in French pilot language) of the Rafale Solo Display (RSD) and the test pilots from Dassault were reunited.

I had the privilege to attend the ceremony and to interview Captain Sebastian Nativel, also known as "Babouc", who has been the official presenter of the Rafale since 2018.

Sebastien Nativel was born on the Reunion Island. In 1999, he joined the French Air Force to make his childhood dream of being a fighter pilot come true. Being a brilliant student pilot of his class, he received his wings at BA 705 Tours. He became a pilot on the Mirage 2000N at BA 125 Istres, AlphaJet instructor pilot at BA 120 Cazaux and then flew the Mirage 2000 D at BA 133 Nancy. In 2011, another dream came true. He qualified as Rafale pilot and joined the Fighter Squadron 01.007 "Provence" at BA 113 Saint-Dizier. Currently, he is attached to the ETR "Aquitaine" squadron and he is in charge of the Rafale conversion training of future pilots. To this day, he has more than 3,000 flight hours, including 1,000 on the Rafale.

Captain Nativel, why did you want to become a fighter pilot?

I have often been asked this question, and I never managed to give a very precise answer. I think it is

my calling. Since my younger age, I've always wanted to become a fighter pilot.

Where does your nickname "Babouc" come from?

It is an allusion to my origins. On the Reunion Island, a "Babouc" is a large spider which hunts bugs but is not dangerous to humans. There is a picture of it on my plane and my helmet.

What does it represent for you to be an ambassador pilot at the RSD?

Firstly, I'm very proud to represent the French Air Force and the know-how of all the pilots in the army. Also, it means that I can demonstrate to my fellow French citizens and to the entire world the incredible machine the Rafale is: an extraordinary plane. The only down-side is that, as an ambassador of the French Air Force, I am not allowed to take part in external operations (OPEX) anymore.

There seems to be a very strong bound between "Babouk" and Marty, your co-pilot?

Yes, totally. The term "binomial" is the one that defines our relationship best. Marty belongs to my



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daily routine. We share the same views on things, and above all, the same way of working. I can tell you that many people are jealous about this total complicity. Marty always has good advice and allows me to push myself and not to do the same error twice.

Tell me, is the Rafale a good plane for demonstrations?

It is one of the best planes in the world for flight demonstrations. The Rafale is, in fact, one of the most agile machines but it is very physical for the pilot. Indeed, it is not unusual to have to bear 10 g even 10.7 g during some looping at the end of a display. The only limitation of the Rafale is the pilot.

Is it easy to be a demonstration pilot?

Honestly, it is very testing. Even if the demonstrations only last 10 minutes, they are intense, and you must surpass yourself not only physically but also mentally. It is necessary to always be in good form and to be aware of one's limitations. Physiologically demands on the body are numerous. You must be able to listen to your body because the plane, and most particularly the Rafale, have no limit. When a part is worn out, we change it and go again. It doesn't work like that with the pilot. It is the man who says stop with the Rafale. I always have to keep control of the situation, with the support of Marty, abide by the security rules, stay in the looping zone of the meeting, avoid the greyout. But the sensations are also very exhilarating; I don't think I will ever have enough.

ssHave you ever felt in danger during a demonstration?

No, never and I hope that it will never happen to me. As I already mentioned, one must always remain concentrated and know his/her limits because there is only a slim margin for errors. This is why I always tried to remain cool, relax and be in good physical health. I also practice mentalization and the warmingup of the neck. These two exercises allow to relax and remove any shape of stress a few minutes before getting into the Rafale.

What advice would you give to a young person who wishes to become a pilot?

I would say that you need to believe in your dreams. It's a job passion. You have to give yourself the means to achieve the dream: be perseverance, be disciplined and be able to make some sacrifices. At



the end of the tunnel there is an incredible and so fulfilling job.

Would you have a story about the last season? Was there an air show that particularly touched you?

There are many but I would say the last flight of the season, in Salon de Provence, when I saw the complete team waiting for me on the taxiway. At this precise moment, all the incredible moments we shared during the 2018 season came back to me. It was very special, we were all very emotional.

You have recently made a display on the Reunion Island, haven't you?

Indeed, it was an exceptional moment for myself but also for the island inhabitants I believe.

It was an air meeting organised by "Des Ailes et des Hommes" of the SIRPA to promote some of the jobs in the French Air Force. I was lucky. This visit coincided with the deployment of two Rafale planes in the area. Therefore, I was able to fly over my island at the command of a Rafale. It's one other of my childhood dreams that was fulfilled. I thank the French Air Force for that.

What is your normal weekly timetable like when you are not in demonstrations?

In addition to my job as a RSD pilot, I am a "world instructor". In that role, I teach future French pilots but also Egyptian and Oatari colleagues. It is very rewarding to meet people from far away. It's also for that that I love my job.

How many persons are there in the RSD team?

The team is made of 45 persons who accomplish different jobs, but normally seven persons accompany me in each air meeting. There is an incredible interaction between us. I am their pilot and they are my mechanics. We really form a large family.

I had the opportunity to see you several times last season. How do you live the season from the inside the cockpit?

I feel extremely happy obviously. I am going to repeat myself but the Rafale is an extraordinary plane and I'm very proud to present it to the large public. I really enjoyed each time. Meeting fans after a demonstration is also something very special. It is heart-warming to hear documentaries and also their congratulations.

Who decides on the display program?

It's me with the advice of Marty. It is not an easy task since my predecessors have already presented so many figures that it is difficult to innovate. In 2018, I proposed to the public the Extended Gear Roll.

What is the change compared to 2018?

For this new season, I keep the Extended Gear Roll that I like very much and I am adding two new figures in the routine: Edge Dive with push-pull manoeuvres and the Loop coming from my predecessor "Rut".

Do you use flares?

Unfortunately, no, it is not planned. Usage of flairs is not authorised because of the waste that could fall down on the tarmac and on the public. It is a potential risk of danger and all risks must be avoided in my area of expertise. The only place where I could use some would be above a firing field.

I believe you are the only display pilot on Rafale. Is it correct?

Yes indeed. I'm currently the only one but maybe not for much longer given the commercial success of the plane abroad.

pilots?

Yes, indeed. Imagine the first demonstration of 2019 in front of the best Rafale pilots. I spoke earlier about Are you in regular contact with other demonstration self-control and stress management. So today, I am under pressure. If I miss a Yes, of course, I have contacts with several of them, manoeuvre, my mates will notice it some French ones but also some foreigners. You will immediately and they will tease me afterwards. I am be in fact able to meet some of them today: "Zippo" and "Saisai" from the AlphaJet Solo Display, or also going to have to forget about all that and concentrate



"Vador", who is present with us today to celebrate the 10 year birthday of RSD. My friend Vincent, demo pilot F-18 Hornet is also present. It is always with pleasure that I meet other pilots during aerial events.

What is your favourite manoeuvre?

Alright, this is a difficult question, there are so many. I would say without specific order, satured Barell Roll, Square Loop or slow and fast Barrel Roll. They are manoeuvres that I really appreciate.

Today, you're going to fly in front of former Tators and Dassault test pilots for the first time. Isn't this a special moment for you?



on a perfect demonstration. Unfortunately, the Rafale has not yet received its upgrade.

If you could choose an air show, which one would you like to do?

Each air show is special but I will say that's the Royal International Air Tattoo at Fairford because this is the largest one in Europe. It is the opportunity to meet with colleagues from around the world. There is also the Courchevel meeting because it is a real pleasure to fly over mountains! There is no specific meeting that I would like to attend because the French Air Force as allowed me to fly all of other world.

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When do you start your training and where do you train?

Normally, the new season starts at the end of January early February and finishes in October. Trainings normally take place in Saint-Dizier but there are also camps in the South of France in Solenzara. There is a full timetable that awaits the RSD team. We often will be away from home. Fortunately, my charming wife is very accommodating (laughs).

Which other plane would you like to fly apart from the Rafale?

Without hesitation, the F 14 Tomcat!

What will you do when you stop being a RSD pilot? I will coach the future display pilot for 2 years. Afterwards? It is difficult to say: I have been a fighter pilot for 20 years so maybe I will go back to a civil life but still in the world of aviation. Flying is my life. It is a true passion that I will not be able to do without. Maybe I could become commercial pilot (smiles).

readers?

I would say that I'm uncompromising, but is it really Would you have a special message to our Belgian a failing? I like to be in contact with people. This this is a major asset in my job as a display pilot. A failing? I am not going to talk about beer because that would I would say that I'm not really a physiognomist be too much of a stereotype (laughs). More seriously, (someone who doesn't recognize people). Sometimes, I love the Belgium spirit. This is why I get on so well I can't recognise people I already met several times.

with "Vador". We are wired the same way. We are both able to step back from the demands of our job. I have a great respect for the Belgian pilots and it's always with pleasure that I've joined them for international exercises such as the Tiger Meet.

A quality and a failing of Babouc?



LIGHTNINGS OVER GERMANY F-35 DEPLOYMENT TO SPANGDAHLEM AB

REPORT BY MATHIAS LEISCHNER & RALF PETER WALTER



The 421st Fighter Squadron "Black Widows" from Hill AFB, Utah is the newest F-35A Lightning II squadron of the U.S. Air Force. About six months after having received their first F-35A, this is the squadron's "inaugural deployment" with this new, multi-purpose, 5th generation fighter aircraft. The squadron, designated 421st Expeditionary Fighter Squadron (EFS), started its deployment with the first jet arriving in Aviano AB in Italy on May 23rd. Down there, they participated in "Astral Knight" which was a large integrated air and missile defense (also called defensive counterair) exercise conducted over the Adriatic. Flying missions together with other U.S. Air Force units/aircraft (F-16 Fighting Falcon, KC-135 Stratotanker and E-3 Sentry) and other European Air Forces (Italian Air Force Typhoon and Croatian Air

Force Mig-21) improved partnership and helped to strengthen interoperability between partner nations.

Beginning June 11th, the 421st EFS arrived with twelve F-35As at Spangdahlem AB in Germany. The aircraft are mix of both the 388th FW at Hill, Utah and the 56th FW from Luke, Arizona. Besides the aircraft, the deployment group comprises about 300 people, including 26 pilots. It is a mix of active duty from 421st FS, 4th FS, 34th FS and of the 466th FS (Air Force Reserve Command).

Lieutenant Colonel Richard C. Orzechowski, commander of the 421st EFS, said "we are excited about the opportunity to fly with other European countries as well as the other U.S. aircraft that are based here in Europe to continue building on the partnerships as well as to continue building on our ability to integrate and operate together." He continues: "So far, we have been to Italy, Spain, Germany, Finland, and Norway. We have already done a bit of a roadshow with the F-35."

Assisted by Colonel Miles, Commander of the 388th Maintenance Group at Hill AFB, one of the goals of allies, how to share and distribute these information the deployment is to detect and solve any issues in and data. the supply chain. This is far more effective carried As multinational exercises and deployments ensure out "on the road" than on the home base. It will to improve the overall organization and coordination effectively strengthen the whole F-35A community as between NATO and friendly forces, this deployment the communication between USAF F-35A units is very will not only do so but also help to introduce the 5th strong and continuously. generation fighter aircraft F-35 into the allied fleet of fighter aircraft in NATO and coalition forces.















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F-35A Lightning II

Mission

The F-35A is the U.S. Air Force's latest fifthgeneration fighter. It will replace the U.S. Air Force's aging fleet of F-16 Fighting Falcons and A-10 Thunderbolt II's, which have been the primary fighter aircraft for more than 20 years, and bring with it an enhanced capability to survive in the advanced threat environment in which it was designed to operate. With its aerodynamic performance and advanced integrated avionics, the F-35A will provide next-generation stealth, enhanced situational awareness, and reduced vulnerability for the United States and allied nations.

Features

The conventional takeoff and landing (CTOL) F-35A gives the U.S. Air Force and allies the power to dominate the skies – anytime, anywhere. The F-35A is an agile, versatile, high-performance, 9g capable multirole fighter that combines stealth, sensor fusion, and unprecedented situational awareness.

The F-35A's advanced sensor package is designed to gather, fuse and distribute more information than any fighter in history, giving operators a decisive advantage over all adversaries. Its processing power, open architecture, sophisticated sensors, information fusion and flexible communication links make the F-35 an indispensable tool in future homeland defense, Joint and Coalition irregular warfare and major combat operations.

The F-35's electronic sensors include the Electro-Optical Distributed Aperture System (DAS). This system provides pilots with situational awareness in a sphere around the aircraft for enhanced missile warning, aircraft warning, and day/night pilot vision. Additionally, the aircraft is equipped with the Electro-Optical Targeting System (EOTS). The internally mounted EOTS

provides extended range detection and precision targeting against ground targets, plus long range detection of air-to-air threats.

The F-35's helmet mounted display system is the most advanced system of its kind. All the intelligence and targeting information an F-35 pilot needs to complete the mission is displayed on the helmet's visor.

The F-35 contains state-of-the-art tactical data links that provide the secure sharing of data among its flight members as well as other airborne, surface and ground-based platforms required to perform assigned missions. The commitment of JSF partner nations to common communications capabilities and web-enabled logistics support will enable a new level of Coalition interoperability. These capabilities allow the F-35 to lead the defense community in the migration to the net-centric war fighting force of the future.

The F-35 is designed to provide the pilot with unsurpassed situational awareness, positive target identification and precision strike in all weather conditions. Mission systems integration and outstanding over-the-nose visibility features are designed to dramatically enhance pilot performance.

Source: U.S. Air Force

Length	51.4 ft / 15.7 m	
Height	14.4 ft / 4.38 m	
Wingspan	35 ft / 10.7 m	
Wing area	460 ft2 / 42.7 m2	
Horizontal tail span	22.5 ft / 6.86 m	
Weight empty	29,300 lb	
Internal fuel capacity	18,250 lb / 8278 kg	
Weapons payload	18,000 lb / 8,160 kg	
Standard internal weapons load	 25 mm GAU-22/A car Two AIM-120C/D air-t Two 2,000-pound GBI 	
Maximum weight	70,000 lb class	
Propulsion (uninstalled thrust ratings)	F135-PW-100 40,000 lb Max. / 25,000	
Speed (full internal weapons load)	Mach 1.6 (~1,200 mph)	
Combat radius (internal fuel)	>590 nm / 1,093 km (U	
Range (internal fuel)	>1,200 nm / 2,200 km	
Max g-rating	9.0	





nnon -to-air missiles 8U-31 JDAM guided bombs
0 lb Mil.
)
USAF profile)
(USAF profile)

Source: Lockheed Martin, 04/2019

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PHOTO-REPORT EXERCISE FRISIAN FLAG 2019





April 1st until April 12th, 2019 Date: **Location:** Leeuwarden AB, The Netherlands

Participating Countries:

The Netherlands (host), France, Germany, Poland, Switzerland, USA, NATO

Type of exercise:

Training of complex, multi-national composite air operations to implement NATO tactics, techniques, procedures and standards

Types of mission:

- or at sea
- defensive counter air





PHOTOGRAPHY AS NOTED

• protection of friendly, slow moving aircraft • protection of high-value air assets such as AWACS and tankers

• strikes on static and moving targets on land

• offensive counter air

As an average each mission lasts 1.5 to 2 hours and involves up to about 50 aircraft.







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General Dynamics F-16A/B MLU Fighting Falcon

Royal Netherlands Air Force 312th Sqn, 313th Sqn and 322nd Sqn



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General Dynamics F-16CM Block 50-CF Fighting Falcon

USA Minnesota Air National Guard 148th FighterWing / 179th Fighter Squadron















NSE





Polish Air Force 2.SLT / 6.ELT



Main image © 2019 Felix Ma

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German Air Force TaktLwG 31 "Boelcke"



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Dassault Mirage 2000D

French Air Force EC 03.003 "Ardennes"

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RESTORED BELGIAN AIR FORCE MIRAGE 5BD





REPORT AND PHOTOGRAPHY BY PATRICE DOCHAIN

A former Belgian Air Force Mirage 5 – the only one two-seater preserved - is being restored at Brustem AB, Belgium. The aircraft, serial BD09 and construction number 209, was delivered in March 1971 to the Belgian Air Force. It flew for more than twenty years with the Operational Conversion Course. It is with this type of aircraft that young pilots performed their Mach 2.2 flight. With about 3,930 flight hours, BD09 made his last flight on January 13th, 1994. It then was stored in Weelde, Belgium pending a hypothetical second life.

After long months of storage, in 1998, the Mirage 5 was finally sold to the French company Sagem and moved to the southwest of France. In 2013 it was auctioned in Paris. Not having found a buyer, the aircraft was again stored at Bordeaux, France. It is there that the former Mirage 5 pilots Marcel "Celle" De Petter (3,200

BD 09

flying hours) and Jacques Waldeyer inspected it. The plane was in very good condition and almost

complete. After long negotiations, the purchase was finalized at the end of 2017. On February 1st, 2018, BD09 arrived at Brustem under the eyes of former Belgian Air Force members and aviation enthusiast from all over Belgium. Lead by "Celle", the team quickly unloaded the two semi-trailers, reassembled the aircraft and put on its wheels in just a few hours. Since then, the team is restoring the plane with some painting works and will try to start the engine in the mid-term.

Every two weeks, the restoration team opens its doors to the public. Go visit them, they are doing an excellent job! Check the *Mirage 5 BD09 Restoration Group* on Facebook for the exact dates.



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