

Issue File

Proxy Wars: The threat of sectarian militias and their role in Iran's expansionist strategy

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A Specialized Monthly Journal on Military & Strategic Affairs

Sheikh Mohamed bin Zayed attends graduation ceremony of National Service recruits

Calidus B-250, The first multirole military light attack aircraft developed in UAE



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A Dangerous Escalation

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The ballistic missile launched by the Houthi rebels against Saudi Arabia on November 4 as well as the rocket launched on November 30 towards the city of Khamis Mushait in the Kingdom, confirms that certain countries are persisting with their aggressive policy that destabilises the region. They even disregard the UN Security Council resolutions prohibiting the supply of Houthis with such weapons.

Editorial

This became evident after the recent crime of targeting the oil pipeline near Manama. Official accusations have been made against a particular State of involvement in the planning and incitement of this crime.

The experience of the past few years reveals that Hezbollah has become the most important military arm of that state abroad. It employs Hezbollah in its conflicts in the region. It also utilises the party's experience in assassinations and bombings to send messages to the international community and to eliminate its enemies and opponents. The party has proved to be involved in sabotage operations in a number of Gulf countries.

That state's support for the Houthi militia emanates from a purely profiteering, political and strategic logic. It seeks to recruit them into the political struggle in Yemen, where the Houthi militia is a tool in its hands and an integral part of its regional and international struggle. It considers Yemen as an extension of its regional project. Therefore, the key objective of its involvement in the conflict in Yemen, and its support of the Houthis, is to replicate another model of the terrorist Hezbollah on the southern border of Saudi Arabia.

A quick look at recent developments in the region confirms the destructive role played by Hezbollah and Houthi militias. The Saudi Crown Prince, Mohammad Bin Salman, explicitly indicated that a certain state is involved in a direct military aggression on the Kingdom by supplying the Houthis with ballistic missiles targeting the city of Riyadh. He stressed that this engagement "may amount to an act of war against the Kingdom." Saudi Foreign Minister, Adel al-Jubeir, stated that the launch of the missile is a military action, and that the Lebanese Hezbollah "has launched it from Yemen." Bahraini Foreign Minister, Sheikh Khalid bin Ahmed bin Mohammed Al Khalifa, considered that "the attempt to blow up the Saudi-Bahraini oil pipeline is a serious escalation aimed at terrorising citizens and damaging the world's oil industry."

This state sponsoring terrorism is allegedly behind the resignation of Lebanon's Prime Minister Saad Hariri. The resignation came days after Hariri met with the advisor of the leader in that country, who said that Lebanon "is part of the axis of resistance that won in the region." This was understood by Hariri as a message that Lebanon would remain a satellite state in the orbit of that country's policies. Therefore, his resignation was a rejection of its control of the policies of this country on the one hand, and of Hezbollah's control of the Lebanese decision on the other hand.

The danger of that expansionist state has become explicit and unquestionable, and therefore the international silence about its practices entices its regime to aspire to further expansion and to gain time for the implementation of its schemes and conspiracies.

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Sheikh Mohamed bin Zayed attends graduation ceremony of National Service recruits

His Highness Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces, along with the Crown Princes, recently attended the graduation ceremony of the eighth batch of National Service male recruits and the sixth batch of its female recruits, at Zayed Military City, in the presence of the families of the graduates.

Present were H.H. Sheikh Sultan bin Mohammed bin Sultan Al Qasimi, Crown Prince and Deputy Ruler of Sharjah, H.H. Sheikh Ammar bin Humaid Al Nuaimi, Crown Prince of Ajman, H.H. Sheikh Mohammed bin Hamad bin Mohammed Al Sharqi, Crown Prince of Fujairah, H.H. Sheikh Rashid bin Saud bin Rashid





Al Mu'alla, Crown Prince of Umm Al Qaiwain, H.H. Sheikh Mohammed bin Saud bin Saqr Al Qasimi, Crown Prince of Ras Al Khaimah, H.H. Sheikh Hamdan bin Zayed Al Nahyan, Ruler's Representative in Al Dhafra, H.H. Sheikh Tahnoun bin Mohammed Al Nahyan, Abu Dhabi Ruler's Representative in Al Ain, H.H. Sheikh Surour bin Mohammed Al Nahyan, H.H. Sheikh Hazza bin Zayed Al Nahyan, Deputy Chairman of Abu Dhabi Executive Council, H.H. Sheikh Saeed bin Zayed Al Nahyan, Abu Dhabi Ruler's Represen-

tative, H.H. Sheikh Nahyan bin Zayed Al Nahyan, Chairman of the Board of Trustees of Zayed bin Sultan Al Nahyan Charitable and Humanitarian Foundation, H.H. Lt. General Sheikh Saif bin Zayed Al Nahyan, Deputy Prime Minister and Minister of the Interior, H.H. Sheikh Mansour bin Zayed Al Nahyan, Deputy Prime Minister and Minister of Presidential Affairs, H.H. Sheikh Hamed bin Zayed Al Nahyan, Chief of the Abu Dhabi Crown Prince's Court, H.H. Sheikh Omar bin Zayed Al Nahyan, Deputy Chairman of the

Board of Trustees of Zayed bin Sultan Al Nahyan Charitable and Humanitarian Foundation, H.H. Sheikh Khalid bin Zayed Al Nahyan Chairman of the Board of Zayed Higher Organisation for Humanitarian Care & Special Needs (ZHO), Pilot Staff-Brigadier Sheikh Ahmed bin Tahnoun bin Mohammed Al Nahyan, Chairman of the National and Reserve Service Authority, Mohammed bin Ahmed Al Bowardi, Minister of State for Defence Affairs, Lt. General Hamad Mohammed Thani Al Rumaithi, Chief of Staff of the



Armed Forces, diplomats, military attaches and relatives of the graduates. His Highness Sheikh Mohamed bin Zayed expressed his pride of the graduate recruits of the National Service, who answered the call of the nation.

"Our happiness surges as we see their determination and raised heads, full of resolve, will and resolution, which is exactly the same as the volunteers of 1990, who stood in front of the late Sheikh Zayed bin Sultan Al Nahyan. This place contains immortal symbolism and memories," he said.

"There is no better feeling for the leader, father and nation than to see their children graduate to the fields of pride and honour with confident steps while gathering around their leadership proud of their roots, identity and belonging to this great land.

"I trust that this national spirit and zeal

will continue with the graduates as they perform their national duty in all areas, because they can fulfil their responsibilities and are aware of the greatness of their tasks, and they express, in their daily actions, the truest meanings of love and belonging to the nation and loyalty to its leadership, which makes us feel proud and reassured about the nation's future," he added.

He stressed that the UAE, under the leadership of President His Highness Sheikh Khalifa bin Zayed Al Nahyan is working to empower and prepare the nation's youngsters while teaching them the highest level of skills and making them constantly prepared, to continue the nation's advancement and preserve its successes and accomplishments.

H.H. Sheikh Mohamed noted that the UAE Armed Forces is the nation's impenetrable fort and the pride of every Emirati home.

"Through them we will all sacrifice ourselves for the nation, and it will remain, with the help of Allah Almighty, strong and proud, due to their sacrifices, actions, honourable stances and professional military capabilities," he further said.

The ceremony began with the arrival of Sheikh Mohamed to the location, where he was received by Pilot Staff-Major General Sheikh Ahmed bin Tahnoun bin Mohammed Al Nahyan, Chairman of the National and Reserve Service Authority, Mohammed bin Ahmad Al Bawardi, Minister of State for Defence Affairs, Lt. General Hamad Mohammed Thani Al Rumaithi, Chief of Staff of the Armed Forces, as well as other senior officials from the Armed Forces.

After playing the national anthem, H.H. Sheikh Mohamed inspected the graduates' column formation, which was followed by the recital of verses from the Quran.

Staff Major General Faisal Al Shehhi,

Commander of Solitary Training in the Armed Forces, gave a speech welcoming H.H. Sheikh Mohamed and his honouring of the graduation ceremony of the eighth batch of National Service recruits and the sixth batch of its female recruits, after they successfully completed the first stage of their 16-week basic training, where they received instructions on using weapons, shooting, physical fitness, field and battle skills, fighting in urban areas, internal security and infantry training. He added that the field hosting the ceremony represents high moral values, as the site witnessed, in 1990, the graduation of the first batch of recruits; under the generous patronage of the late Sheikh Zayed bin Sultan Al Nahyan. He then pointed out that the ceremony coincides with two great anniversaries, Commemoration Day and National Day, two national occasions that are closely linked to the people's love for the nation. The graduates then took their oath and chanted three times to dedicate their lives to President His Highness Sheikh Khalifa bin Zayed Al Nahyan. Their column passed in front of the main platform in the form of a military parade, which reflected their newly-acquired field skills.

Several military vehicles and armoured cars participated in the demonstration column that included the latest model of NIMR multi-purpose military vehicles, which is the most advanced equipment produced by the UAE defence industries that were launched 10 years ago by the Tawazun Economic Council.

At the end of the ceremony, the audience watched a film that documented the graduation of the first batch of recruits, who answered the nation's call in 1990, and the words of Sheikh Zayed that praised the national spirit of the nation's youth during that period of the nation's journey.



Quality Performance Protection





Multi-Billion Record-Breaking Deals at Dubai Airshow

Dubai Airshow 2017 opened with a magnificent fly-past. It was the first time two Emirates Boeing 777-300ER and A380 aircraft had performed a flying display as a tribute to HH Sheikh Zayed, the late founding father of the UAE.

Under the patronage of HH Sheikh Mohammed bin Rashid Al Maktoum, UAE Vice President, Prime Minister and Ruler of Dubai, and HH Sheikh Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces the 15th edition of Dubai Airshow concluded on the grounds of Al Maktoum International Airport at Dubai Aviation City, Jebel Ali.

Record spending highlights

Innovation, knowledge-sharing and billion-dollar deals characterised the 15th five-day biennial event with close to 80,000 people entering the purpose-built hall.

The moment the doors closed on an-

other record-breaking Dubai Airshow, exhibitors rushed to close their deals and re-book for the next edition of the biennial event in 2019.

By the show's final day, the order book stood at almost US \$113.8 billion.

Airbus-Indigo next-gen partnership

The US \$49.5 billion deal with Indigo Partners to purchase 430 aircraft in its A320neo family was Airbus' biggest ever airshow announcement. Indigo Partners owns four ultra-low-cost airlines: Wizz Air, Frontier Airlines, JetSMART and Volaris.

Meanwhile, the exclusive aircraft provider of Kuwaiti Wataniya carriers, Golden Falcon Aviation, signed a deal to lease 25 Airbus A320neo Family air-

craft. The low-cost carrier Air Arabia agreed to lease six Airbus A321neo aircraft, while AerCap and Egypt Air negotiated a deal with Airbus to lease 15 Airbus A320neo.

Boeing's CST-100 Starliner

Boeing's twin- and single-aisle commercial airplane families debuted their CST-100 Starliner docking and KC-46 refuelling at this year's Dubai Airshow. Boeing's contact with new airline partners mark a major growth in their Middle East business via their most recent business unit, Boeing Global Services. The US company has also signed a US \$27 billion deal with flydubai for 225 aircraft in its 737 MAX family, while SCAT Airlines announced an order for



six 737 MAX 8s valued at \$674 million with purchase rights for an additional five 737 MAX 8s.

Bernard Dunn, President, Boeing Middle East, North Africa and Turkey, was very happy with Boeing's dynamic presence at Dubai Airshow 2017: "This has been a very successful show for Boeing. Our regional customers have maintained their trust in our products and technology, and our partnerships in the Middle East region continue to grow".

Dunn confirmed that, "We have signed agreements with key airline partners including Emirates, flydubai, Azerbaijan Airlines, ALAFCO and Ethiopian Airlines. In addition, Egypt Air became a new customer for the 787. The Airshow was a great opportunity to introduce our newest business unit, Boeing Glob-

al Services, to the Middle East market and reiterate the region's importance to Boeing."

Lockheed Martin's F-16 Contract

The United Arab Emirates Armed and Defense Forces have agreed a deal worth around AED6 billion (US\$1.63 billion) with Lockheed Martin Corp (LMT.N) to upgrade F-16 jet fighters.

Lockheed has sold F-16s to Oman, Bahrain, Iraq, Jordan, Egypt and United Arab Emirates, but remains in discussions with Kuwait, Qatar and Saudi Arabia about other potential opportunities.

Moreover, Lockheed expects a decision in the next weeks or months from Indonesia, where the F-16 is competing for an order of about 15 jets against the Gripen built by Sweden's SAAB, Russia's

SU-35. Lockheed is also gearing up to compete to supply a new Indian fighter promised in the coming years.

Tawazun Dynamics becomes Barij Dynamics

EDIC, the leading integrated defence manufacturing and services platform, announced that it has renamed its joint venture company Tawazun Dynamics to Barij Dynamics as part of the continuous process of transforming the defence industry landscape in the UAE. Barij Dynamics also showcased its latest products at Dubai 2017, including the P3 precision guided munition, a low-cost, precision guided kit designed to improve the range and accuracy of the standard Mk-81 and Mk-82 aerial bombs.

Calidus' Asymmetric Fighter

At this year's airshow, the Abu Dhabi-



based Calidus unveiled its new aircraft, the B250, a carbon fibre aircraft designed to operate in modern asymmetric warfare. The B250 light attack aircraft is capable of multi-role operations and has already generated significant interest amongst regional and international players in the segment.

Leonardo's M-346 FA

Leonardo presented its aerospace, defence and security sectors with a range of solutions on static display and illustrated with dedicated briefings. For the first time in the region, a full scale cabin mockup of the AW609 TiltRotor, configured for search and rescue, and the new fighter attack version of the M-346 jet trainer were displayed. The new M-346 Fighter Attack is equipped with a variant of the Grifo multi-mode fire control radar, designed and manufactured by Leonardo. In the rotorcraft sector the company exhibited the latest generation AW169 and the AWHERO rotary-winged unmanned systems.

CFM's Engine Contract

Gulf Air and CFM announced an agreement for the purchase of 58 LEAP-1A engines to power 17 Airbus A321neo and 12 A320neo aircraft with an additional 7 spare engines in a long-term service agreement order valued at ap-

proximately \$1.9 billion U.S.

Boom's New Concorde

Dubai Airshow demonstrated that the next generation of supersonic commercial aircraft could take to the skies in little over five years, according to Boom Supersonic. The US-headquartered company is seeking to develop a quiet replacement for Concorde with aircraft testing scheduled in 2018 while accepting passengers onboard the as-yet-unnamed 55-passenger supersonic jet in 2023.

Pilatus's Business Jet

The Swiss manufacturer Pilatus shored up its regional business attracting a great deal of interest in the company's latest aircraft offering, the PC-24, as the world's first business jet used on short, unprepared runways.

Safran's Landing Systems

Gulf Air has signed an agreement to equip long-time partner Safran Landing Systems' new incoming fleet of 10 Boeing 787-9 Dreamliners and 12 Airbus A320neo with Safran wheels and brakes that will enter into service in 2018.

Gulf Air has selected Safran for their high dispatch reliability, simplified maintenance, as well as their weight advantage resulting in lower fuel burn.

As a trusted partner of Gulf Air, Safran Landing Systems has opted for wheels and brakes technology with dispatch reliability, simplified maintenance and weight advantage resulting in lower fuel burn.

Commenting on the agreement Gulf Air Deputy Chief Executive Officer, Captain Waleed Abdulhameed Al Alawi said: "We have selected Safran Landing Systems for their high dispatch reliability, simplified maintenance, as well as their weight advantage resulting in lower fuel burn."

He added that, "Safran Landing Systems is a reliable partner of Gulf Air and we are pleased with our choice towards a wheels and brakes technology of renowned quality to equip our new fleet of Boeing 787-9 Dreamliners and Airbus A320neo that will enter into service in 2018."

Telephonics Radar Systems

Telephonics used the opportunity of Dubai airshow to launch its MOSAIC Active Electronically Scanned Array (AESA)-based radar system optimised for maritime, coastal and overland surveillance missions and well-suited for rotary and fixed-wing applications. They also displayed their NetCom vehicle intercommunications and Tru-



Link wireless intercommunications systems, including the Passive Detection and Reporting System (PDRS), the Universal Access Transceiver (UAT) and Mode 5 Level 2 squitter reporting and cueing system.

PAL Middle-East Support

The Emirates' PAL Aerospace LLC and Team JAS of Jacksonville, U.S. announced the signing of a Letter of Intent (LOI) to establish a Spare Parts Distribution Centre located in the Abu Dhabi Airport Free Zone.

Team JAS has been providing support to operators for over 30 years, while Abu Dhabi constitutes an ideal location for the two companies to provide spare-parts and in-service support services throughout the region.

Alsalam Manufacturing Projects

Alsalam Aerospace Industries, Saudi Arabia's premier provider of Civil and Government aircraft MRO, manufacturing and logistics services and Etihad Airways Engineering, has announced their intent to collaborate on several manufacturing projects, involving thermo-forming, tube and pipe fabrication, and machining and fabrication of various aircraft components.

Raytheon's Aerospace Systems

At this year's Dubai Airshow, Raytheon

displayed a selection of its trusted solutions and proven capabilities. With the re-engineered Patriot radar system as its showpiece, these products span integrated air and missile defense, cyber security, land- and sea-based defense systems and air launched weapons.

New generation systems now help control two-thirds of the world's airspace, a fact prompting Raytheon to highlight its air traffic management support and services, including in the UAE, and the global need for greater cyber security across aviation transportation.

In addition, Raytheon introduced a new Joint Precision Approach and Landing System that uses GPS to guide fast jets, helicopters and drones to safe landings.

Embraer's New Legacy

Embraer Executive Jets announced the enhancement of the flight experience aboard its Legacy 450 and Legacy 500 mid-cabin business jets with cabin altitude considered among the lowest on the market and further reduced to a best-in-class 5,800 ft. (1.768 m).

Michael Amalfitano, President and CEO, Embraer Executive Jets was clear that, "With our focus on value, the Legacy 450 and Legacy 500 are setting new standards for the midsize cabin seg-

ments. These aircraft are beautifully designed and brilliantly engineered, and they will continue to elevate the experience that we provide our customers."

L3 Training Solutions

L3 WESCAM provided hands-on customer demonstrations of its fully networked mission rehearsal and simulation training solutions for air, ground, maritime and command stations. This highly scalable product line will enable MX Series operators and crewmembers to train independently or as part of a virtual joint-force team using the latest gaming technology at estimated 70 percent cost savings.

Bombardier's CS300 Order

Bombardier Commercial Aircraft announced that it has signed a letter of intent (LOI) for up to 24 CS300 aircraft with EgyptAir Holding Company. This firm-order contract is valued at approximately \$1.1 billion, or nearly \$2.2 billion should EgyptAir also exercise the 12 purchase rights for CS300 aircraft.

Emirates-Thales Inflight System

Starting in 2020, partner companies Emirates and Thales have signed a new agreement to enhance its Boeing 777X fleet with the Inmarsat GX global network next generation broadband inflight connectivity and entertainment



system.

Rockwell Collins Avionics

The UAE company Calidus unveiled Rockwell Collins' flexible and modular Pro Line Fusion integrated avionics system for Light Attack and Trainer aircraft (LATR). The new Calidus B-250 is a superior light attack and advanced trainer aircraft designed for light combat and asymmetric warfare in counter-insurgency (COIN), Close Air Support (CAS), or Intelligence, Surveillance & Reconnaissance (ISR) missions.

BAE Broadword Innovation

The BAE Systems stand was the debut of the light, flexible single-battery Broadword Spine for armed forces and civil defence. A full-equipment man-worn data and power management system, it is based around a textile engineered by the UK company Intelligent Textile to weave conductive fibres into a material without cables or wires.

Honeywell Aircraft Support

Honeywell has signed a 15-year Component Service Solutions agreement with Emirates Airline for their Airbus A380 and Boeing 777 aircraft. The technology used in this agreement extends through 2031 and covers comprehensive component support solutions

aimed at reducing grounded aircraft time.

CEFA Data Systems

The pilot training and flight safety company also launched its Aviation Mobile Services (AMS), a software solution, described by CEO Dominique Mineo as "a revolution in pilot training" by enabling pilots to review an animation of their flight immediately on landing. CEFA's safety and flight data monitoring systems are used by more than 80 airlines globally, increasing pilot safety and training by offering high-fidelity visualisations to analyse unusual conditions, landing patterns and different aircraft controls.

Atlas Flight Simulator

As a first-time exhibitor, the 100% Emirati company proudly displayed its next-generation digital training device – a universal flight simulator made of touchscreens and flight controls and incorporating the certified two-channel Harris Multi-channel Airborne Networking Radio.

Conferences

Committed to making the Airshow a centre of global thought leadership, Dubai hosted the Space Pavilion and Conference, the UAV Summit, the Car-

go Zone Pavilion, the Airport Solutions Dubai Conference and the Gulf Aviation Training Event.

Space Pavilion Explorers

Astronaut Col. Worden, one of only 24 people to have flown to the moon and performed a deep space EVA on return aboard Apollo 15, delivered a strong message to future space explorers. Dubai's first Space Conference promoting STEM (science, technology, engineering and maths) education, while the Emirates 'Hope' Mission is slated to land on Mars in 2021.

Airport Solutions Debate

With global passenger demand rising rapidly, seamless and enjoyable passenger journeys are key to successful airport operations. Dubai's two-day conference focused on bringing together the entire buying chain of the airport industry to highlight Dubai Airport's drive for increasing capacity (118 million passengers by 2023). A new extension phase destined to open next year and further DXB Plus technological features are set to make the airport "a city in its own right".

Cargo Conference Proposals

The inaugural Cargo Zone conference celebrated the rise of air freight with recognition that the cargo industry is moving towards a specialisation revolution. Emirates SkyCargo analyses every single vertical sector it serves to enable a true supply chain solution. Meanwhile, Glyn Hughes, Global Head of Cargo, IATA, revealed that air freight accounted for \$5.9 billion of cargo in 2016 or 35% of global trade.

GATE Middle-East Conference

The Middle East's aviation industry needs to address challenges in the recruitment, training and retention of both pilots and engineers, according to Dubai Airshow's Gulf Aviation Training Event (GATE). The programme examined how the Middle East region

intends to stay ahead of the industry curve, with education funding a key concern for airlines less likely to pay high fees to train pilots than risk losing to competitors.

The conference heard how Mubadala is looking to inspire the next generation of engineers and operational professionals by expanding its education programme to earlier school years. The Abu Dhabi-based investment firm now runs programmes designed to interest youngsters in the aerospace and engineering fields, taking professionals into schools to offer real world examples of the career benefits.

UAE Armed Forces Deals at the show

The UAE Ministry of Defence and Armed Forces (AF) revealed their purchase of 60 Lockheed Martin F-16s and intention to sign a contract with Dassault and Thales to upgrade their Mirage 2000-9 aircraft.

AF signed contracts with multiple international and local companies, including Abu Dhabi Aviation, Thales, Augusta Westland and Global Aerospace Logistics. The USD 15 billion order book of UAE Armed Forces included the following deals:

- Lockheed Martin Corp to upgrade F-16 jet fighters for AED 6 billion (US 1.63 billion).
- Raytheon to buy GBU-12 and GBU-10 bomb accessories, materials and devices (AED 2.5 billion).
- Global Aerospace Logistics Company to provide helicopter technical services and logistic support (AED 1.45 billion)
- Etihad Airways to provide transport and shipment services
- Airbus Defense & Space Spain to buy five C-295 MW military transport aircraft and technical services
- France's MBDA to provide technical support.
- UAE's Emirates Aviation Supply Center to provide spare parts and technical



support for radars and aircraft.

- Dubai-based Airborne Systems to provide spare parts and logistical/technical support for helicopters.
- South African Denel Dynamics to procure Seeker aircraft.
- UAE's Dhabhi Drilling to provide AF maintenance and technical support.
- T-com (U.S.) to provide radar system technical support.
- UAE's Global Aerospace Logistic to provide technical support, spare parts and inspection.
- Raytheon to procure Patriot spare parts and equipment.
- UAE's Al Tayf Technical Services Company to provide air defence maintenance services.
- Advanced Integrated Systems Company to provide reconnaissance aircraft services, maintenance and logistic support.
- U.S. Goodrich Corporation to purchase and upgrade MS-110 air reconnaissance containers.
- UAE's Tawazun Dynamics Company to purchase P-3 bomb supplements/accessories for Mirage 9-2000 and Black Hawk aircraft.

- Maxims Air to lease air cargo service aircraft.

- German Hawthorn Limited will provide technical support and supply spare parts.

- Time Electro and Contracting Company to install and provide maintenance to a communications tower.

- British Security and Counterintelligence Group to provide services and rehabilitate drones.

- C4 Advanced Solutions to provide 2-year communication and information technology services and logistic support.

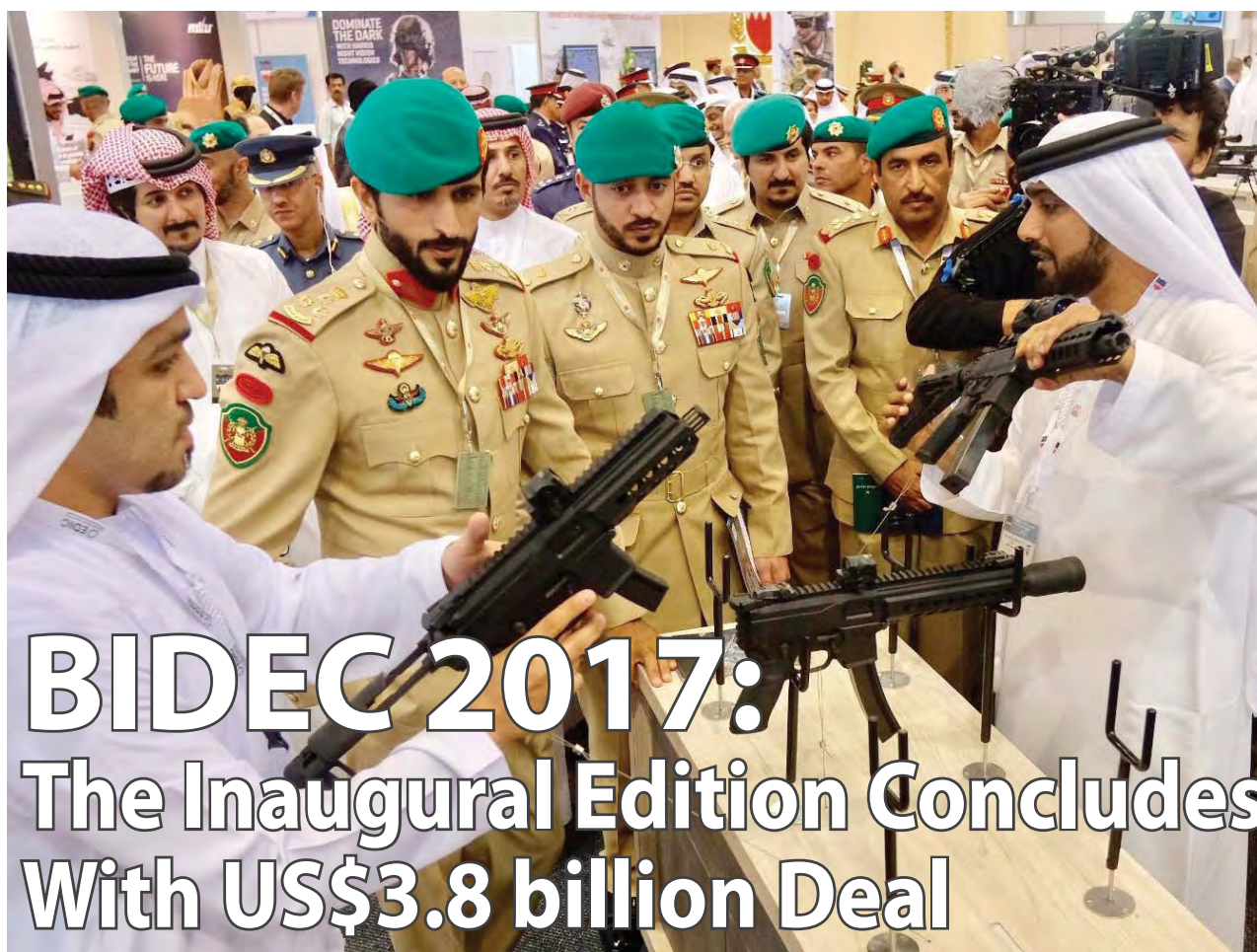
- Beltech Export to provide maintenance and rehabilitation services.

- Turkish Chemical and Mechanical Industries Corporation to purchase MK-82 and MK-84 bombs.

- Swiss Rheinmetal Air Defense to buy 35 mm artillery ammunition for air defence.

- IOMAX to provide and rehabilitate Air Tractor plane maintenance services.

- CAE Maritime Middle East L.L.C to set up a systems training centre.



BIDEC 2017: The Inaugural Edition Concludes With US\$3.8 billion Deal

The first Bahrain International Defense Exhibition & Conference (BIDEC) has concluded successfully with the participation of 189 exhibiting companies from 39 countries.

Bahrain's first Tri-Service Expo - covering Air, Land and Sea was held under the patronage of His Majesty King Hamad bin Isa Al-Khalifa and was officially opened by the Royal Guard Commander, His Highness Sheikh Nasser bin Hamad Al-Khalifa who praised Bahrain's lead in hosting such unique security and military events.

"The reality has become even more beautiful after the remarkable success of BIDEC, which brought together senior military leaders and spokespersons specializing in strategic and political affairs."

HE Dr Shaikh Abdullah bin Ahmed Al Khalifa, Chairman of the Board of Trust-

ees at the Bahrain Centre for Strategic, International and Energy Studies "Derasat" and Spokesperson and Chairman of MEMAC Organising Committee recognized that the Kingdom of Bahrain is a force for peace contributing to stability in the world:

"We had almost 9120 visitors from around the world to see the latest technology and equipment. It was a privilege to have Saudi Arabia as our partner and we are very glad to sign the \$3.8 billion deal for the purchase of Lockheed Martin's F-16 Block 70s."

Caracal's high-tech assault rifle

Chambered in 5.56 x 45mm NATO with a short stroke pushrod gas pis-

ton operating system, the UAE-based firearms manufacturer Caracal presented its CAR 816 in service with the Royal Guard of Bahrain armed forces. The CAR 816 is a center-fire, gas operated and rotating bolt system assault rifle with a full-auto fire control group at 850 rounds per minute including fully ambidextrous controls, a selector switch and ambidextrous magazine release.

iXblue's full range of navigation solutions

iXblue featured prominently in BIDEC covering the entire spectrum of naval and land defense applications for navigation, positioning and underwater



Bahrain Crown Prince at BIDEDEC

Exhibitor highlights

The launch edition of the show at Bahrain International Exhibition & Convention Centre had country pavilions from the UK, USA, Saudi Arabia, Malaysia, Russia, France and Pakistan. Sixty-one official delegations from 26 countries, including big delegations from Saudi Arabia and the UAE graced the event. BIDEDEC 2017 had 38 official defence and security media partners. The event received official support from the Bahrain Defence Force, Royal Bahrain Air Force, Royal Bahrain Naval Force, Royal Guard, National Guard, Ministry of Information Affairs and Ministry of Foreign Affairs.

imaging. At the core of iXblue's retrofit programs is the modernization of navigation and pointing systems, such as replacing obsolete gyrocompass technologies with more modern Fiber-Optical Gyroscopes (FOGs).

Otokar showcases its vehicular range

Otokar presented ARMA 6x6, a modular multi-wheeled vehicle with superior mobility, high mine and ballistic



UAE Chief of Staff at BIDEDEC

protection and wide range of weapon integration options. Turkey's largest privately owned defense company boasts the widest land defense system 4x4 to 8x product range and has now reached an agreement with Tawazun for the supply of 8x8 amphibious infantry fighting vehicles to UAE Armed Forces.

URAL and COBRA undertaking the most challenging missions. Featuring outstanding mobility and

high-level protection, the URAL meets paramilitary users' needs for a high-capacity armored vehicle taking into account driving and personnel comfort. The specially developed suspension allows significant personnel comfort, easy drive and ergonomic interior alongside five doors and different layouts.

Providing one-of-a-kind amphibious mobility, protection and modularity, the COBRA is actively used in 15 countries and is the choice vehicle for the United Nations peace keeping forces thanks to its superior capabilities. In Bahrain, the COBRA is in service in both the police force and national guard.

Saudi Arabia's innovative Skyguard UAV

The Prince Sultan Advanced Tech Research Institute (PSATRI) presented the Skyguard, its latest unmanned aerial vehicle (UAV) fully developed and designed in Saudi Arabia, with customized avionic system units for improved flight control power management and electromechanical systems integration. The Skyguard can fly at a maximum altitude of 18,000 feet and a maximum range of 150 km with a flight duration of 8 hours, with a maximum payload of 50 kg including infra-red night vision and day camera.

Oman's new armored vehicle

Oman's Engine Engineering Company has developed a full range of 4x4 armored vehicles based on a KIA Motors jeep chassis design with two large windows at the front of the crew compartment and one single door on each side, including three small bulletproof windows with individual firing ports on each side. The roof of the NIMR III vehicle can be fitted with open top turret or remote weapon station be armed with a 7.62mm caliber light machine gun.



Armoured vehicles on display

Streit Group's armored vehicle range

The Streit Group's armored Toyota Land Cruiser vehicles feature full vehicle armoring with certified steel to resist external ballistic threats from any angle, with the OEM suspension and brake system fully upgraded to support full weight of armor without compromising the vehicle's performance. The TLC-79 Land Cruiser retains off-road capabilities with armor protection level CEN B6 against firing of small arms 7.62mm NATO caliber and hand grenades, while the Ford F350 Special Duty is a full vehicle armored point vehicle upgraded to support full armor weight, with a 360° view glass turret armed with a 7.62mm or 12.7mm machine gun or automatic grenade launcher.

Theeb's long-range patrol vehicles

The Special Forces of Bahrain Royal Guard unveiled its home-made Theeb long-range patrol vehicle based on a Toyota Land Cruiser chassis carrying a total of five military personnel, with a NIMER circular ring gun mounting system at the center of the vehicle. The commander position is equipped with one swivel station, armed with a 7.62mm machine gun at the rear of the vehicle alongside a 7.62 or 5.56mm

machine gun.

Black Wolf's 4x4 tactical vehicle

A family-owned Canadian business involved in the design and manufacturing of armored trucks for more than 50 years, Cambli unveiled its multi-mission armored intervention vehicle used for SWAT, Special Forces, Armored Personnel Carrier (APC).

Cambli has focused on keeping the Black Wolf as light as possible, using a lightweight high-level ballistic steel to armor the vehicle up to level B6 and choosing the new Ford F-550 chassis for its capacities and its robustness because its front axle can support a weight of 3,400 kg (7,500 lbs) while reducing the maintenance costs of the vehicle.

Zavolzhsky's all-terrain crawlers

The Russian company presented the GAZ-3344-20 consisting of two tracked vehicle units linked by a steering mechanism, running at maximum road speed of 50 km with a maximum cruising range of 450 km. while also being fully amphibious with a maximum speed in the water of 3.8 km/h. Weighing 11 tons with a 3000kg cargo capacity, the crawler can be operated at ambient temperature of +40 to -50 C° on all road & climate conditions, ca-

pable of overpassing water obstacles.

Lacroix's launcher and Qioptiq's thermal sights

The growing need for protection at sea takes place in the age of sophisticated missile homing devices, where airborne countermeasures must be designed to protect combat jets, rotary wings or large transport platforms to defeat laser-guided missiles. In response, Lacroix has introduced the SYLENA MK2 decoy launcher to provide optimal corvette and frigate protection to the Bahrain Navy.

Qioptiq also took the opportunity to showcase its DRAGON-S (Sniper) Clip-On Thermal Sight and the MERLIN-LR at BIDEF's night sniper demonstration. DRAGON-S (Sniper) Clip-On Thermal Sight provides snipers with a 24-hour surveillance and target engagement capability, while the MERLIN-LR replicates the same capability with a high-resolution collimated night sight in front of the existing day sight.

Iguana Pro amphibious mobility

BIDEF found the French boats manufacturer Iguana entering the military sector with its Iguana Pro, a unique amphibious boat with retractable tracks, based on a deep-V carbon fiber hull with shock mitigation con-



struction. Taking only 8 seconds to shift the landing gear while enabling operational safety in strong weather and breaking seas, the boat features Ullman Patrol Jockey Seats and Semi Active Progressive Shock Mitigation allowing the human muscular reflex system to synergize with the mechanical suspension, resulting in mitigation of 76% of the shock force

ECA's all-environment robotic solutions

The ECA Group is recognized for its competence in the air, land and sea robotic field collaborating with unmanned or remotely-operated solutions, to carry out the most complex mine warfare missions. ECA's new

UMIS system can perform full robotic missions using an advanced command and control system to locate, identify and neutralize the underwater threat.

EIMOS mortar system and Colt enhanced carbine

Amongst its for air, land and sea solutions, the EIMOS 81mm mortar system is integrated into a URO Vamtac, a high mobility lightweight 4x4 vehicle utilizing an 81 mm long-range cannon facilitating integration with legacy or other command-and-control systems. EIMOS also offers complete solutions in ammunition for indirect fire support operations from 60-155mm with its 105mm and 155mm Extended Range family ammunition.

Colt also unveiled its new M5 Enhanced Carbine 5.56mm caliber currently available in three-barrel length configurations with a completely redesigned lower receiver and a 6-portion receiver extension adaptable to different-sized and bilateral shooters. It has a low-profile gas block in a carbine length gas system and a free float modular rail system, using a conventional short-stroke tappet piston and chamber barrel modifications to ventilate gas and provide further air circulation.

Cambli's next-gen armored tactical truck

Based on a Kenworth T370 4x4 chassis with Cummins ISC 315hp turbo-charged engine and an Allison 3000 RDS five-speed automatic transmission, Cambli's Thunder 2 offers a high level of mobility and maximum protection against small arms and IEDs blast threats. The hull of the Thunder 2 provides a ballistic protection B7 level, the roof has a small 360° rotation turret, and the bottom part of the chassis is equipped with retractable hydraulic armor plates. The Thunder 2 has been especially designed for extreme climatic conditions in the Middle East and Africa, with a triple AC (Air Conditioning) system and tried tested in 60° C temperatures.

Alakran ground-breaking mobile mortar system

Spain's Everis Aerospace and Defense presented the Alakran mobile 120mm electromechanical aiming system with new Zonal Shooting and Multiple Rounds Simultaneous Impact to simplify operations by increasing the mortar effect over the enemy. Mounted on a Toyota chassis Landcruiser, it is easily integrated into other light or pickup vehicles with a maximum range of 8,250 m and ready to fire in only 30 seconds in a vehicle carrying a total of 40 rounds.



Next-generation Bridgeway protection barriers

Bridgeway Pro-Barriers act as a defense wall built in many configurations to ensure that the entire area of a base camp is secure and vital supplies are protected from attack. They are made of galvanized weld mesh lined with a high UV resistant non-woven geotextile specially manufactured with a product with long life, tested for durability, stack ability and blast attack according to international standards. The barriers come in a range of sizes from the Pro-Barrier 1 to the Pro-Barrier 4 and in white, beige and green colors and requiring limited manpower to construct using an excavator or wheeled loader to fill units with local material.

Cavalier's innovative 6x6 MRAP

At this year's BIDEK, the Cavalier Group

unveiled its new 8x8 armored to respond to the new needs of Pakistani army, accommodating a total of 13 military personnel including driver, commander and gunner. The HAMZA 6x6 has a combat weight of 20-22 tons and a payload capacity of 7 tons maximum, fitted with a full range of weapon systems including small turret or remote weapon station with machine gun or automatic cannon up to 30 mm caliber.

The vehicle features a V-shaped wall monocoque armored hull design, offering advanced protection features and superior off-road mobility, with ballistic protection against the firing of small arms 14.5 mm caliber and a mine blast of 10 kg of TNT. It is motorized with a Cummins ISM 500 6 cylinders Turbo-Charged and Intercooled diesel engine coupled to an Allison 6 speed

automatic transmission, running at a maximum road speed of 110 km and cruising range of 500 km.

Leonardo's modernized tank upgrade

Leonardo presented its M60 tank overhaul and upgrade program, offering a complete cost-effective modernization of crew survivability, mobility and lethality via a modular package integrating a new main gun with a new Fire Control System (FCS). Manufactured with the latest-generation steel, the 120/45 mm gun now has reduced weight and low recoil limiting structural stress on the hull and eliminates integration risks with heritage platforms. The fire control system integrates day and night optronics with high-level ballistic protection and modern on-board equipment, while integrating a new Hitrole remote control weapon system, enabling 360° panoramic surveillance. The M60's up-power capability guarantees a higher power-to-weight ratio alongside the installation of an Automatic Fire and Explosion Sensing and Suppressing system (AFSS), while the improved on-board subsystems enhances the platform's capabilities and extends its operational life.

Katmerciler's armored vehicle range

Turkey's Security and Armed Forces

have benefitted from Katmerciler's wide vehicular defense portfolio, particularly the HIZIR Tactical Wheeled Armored vehicle launched during High Tech Port 2016 by President Erdogan. The NEFER composite-based armoring system is lighter than armor while providing 4x4 off-road features and the same protection level for both countryside and inner-city usage.

Ritter & Stark's high-tech sniper rifle

Austria's Ritter and Stark presented its new sniper rifle SLX .308win caliber as the most flexible precision rifle available on the market, equipped with an adjustable two-stage Remington 700® trigger, an AR-15 style-flat-top grip and a handguard that accommodates M-LOK® mounting interface. Each barrel is supplied with a 12 MOA



MIL-STD-1913 Picatinny rail (20, 30 or 40 MOA optional) fixed directly on the barrel allowing the rifle scope to remain zeroed after barrel change. The SLX's unique proprietary stress-free rifling process allows the unmatched out-of-the-box precision of 1/2 MOA* to be maintained with substantial

gains in barrel life. The adjustable stock allows length of pull, cheek piece height and recoil pad position adjustment, while the optional Ritter & Stark folding mechanism allows the stock to be folded to the right or left side of the receiver.



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UAE–Japan ties:

Getting Diverse and Stronger Every Year

By: Sakha Pramod

Japan displayed the Kawasaki C-2, a mid-size, twin-turboprop engine, long range, high speed military transport aircraft developed and manufactured by Kawasaki Aerospace Company at the Dubai Airshow this year. The C2 flew to Dubai making its international debut at the Airshow underscoring the importance Japan accords to the UAE. Japan is committed to working together with UAE to contain piracy on the high seas which is a major threat to international maritime navigation and also in space, having signed an MoU last May with the UAE Space Agency on space activities for peaceful purposes. Earlier in March, a cooperation arrangement between the Japan Aerospace Exploration Agency and UAE Space Agency was agreed.

The UAE has ambitious projects represented by the Emirates Mars Mission and Mars 2117 Project. Japan will make further contributions through technical cooperation and human resource development. Since a Japanese rocket will be used for the launch of the UAE Mars Probe, Japan will indeed make its best efforts for a successful launch. At the fifth World Government Summit in Dubai, Japanese Prime Minister Shinzo Abe had praised the UAE for its tolerance.

With a highly diversified economy and its status as a business hub covering Central Asia, Africa and the Middle East, the UAE has attracted many Japanese companies over the past few decades. In January 2016, there were about 300 Japanese companies in the UAE, dealing in everything from manufacturing and re-

newable energy to food.

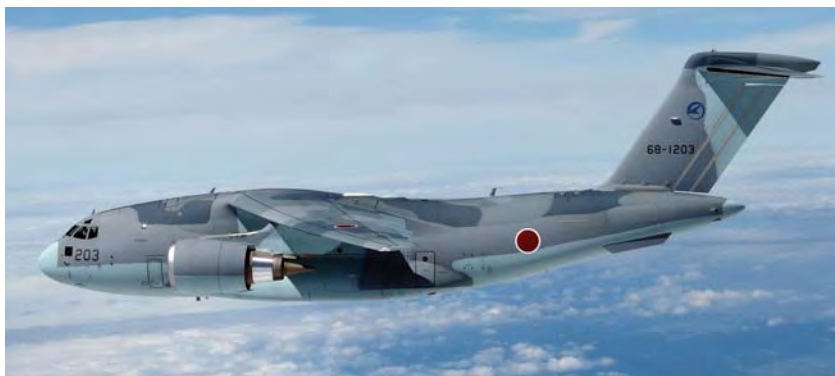
The ties can be extended to culture and sports with prospects of cultural exchanges in falconry, equestrian and judo to connect the hearts and feelings of peoples of both nations. Japan and the UAE are also getting ready to host global events in 2020 — Tokyo 2020 Olympics and Paralympics Game and Expo 2020 Dubai. In a wide-ranging interview the Japanese Parliamentary Vice-Minister of Defense Keitaro OHNO tells Nation Shield how the two way ties have grown exponentially over the years.

How do you assess the current state of Japan-UAE relations?

Japan's ties with the UAE has been going from strength to strength considering that the UAE represents nearly a third of Japan's trade with countries in the Middle East. "We



Japanese Parliamentary Vice-Minister of Defense Keitaro OHNO



The C-2 can be used in tactical situations for playing various roles such as international cooperation and emergency aid operations

have close ties in the energy sector since the establishment of diplomatic relations in 1972 and over the years, the ties have grown to include areas like economy, security and defence, science and technology, education, medicine and space.

Japan is a rather new entrant to transport aircraft as Japan Air Self-Defence Force first deployed Kawasaki C-2 only this year. What potential do you see for this aircraft?

We are very happy to present our C-2 aircraft here for the first time. This aircraft has a long-range capability and

is able to fly from here to Alaska. We are a peace loving country and this is mainly a transport aircraft. We are using the aircraft for non-military purposes as well. Furthermore, we are open to export opportunities of co-operation with other governments.

What are the capabilities of C-2 aircraft?

The C-2 can be used in tactical situations for playing various roles such as international cooperation and emergency aid operations. It is a domestically developed and manufactured aircraft adapting various new aircraft

systems. It is the largest aircraft developed in Japan with twin turbofan engines, high wing and T-tail.

The aircraft is superior to others of the same type in performance, loading and capability and range. The refuelling receptacle is mounted on top of the fuselage, which enables further long distance and long endurance flight.

The C-2 cockpit is compatible with night vision goggles. In addition, C-2 is equipped with Heads-Up-Display (HUD), which assist pilots to accomplish missions by not only showing a flight path with guidance but also indicating threats along the path.

It has a large cargo compartment with a high ceiling, and it is equipped with the ramp door for drive-on and drive-off loading and unloading of vehicles. The enhanced labour saving loading unloading system enables quick and easy loading and unloading ground. With the latest technologies, the C-2 flies faster and has greater range, heavier loading capacity, and a larger cargo compartment than the C-1 and other transport aircraft, thereby fulfilling a wide range of missions such as international support operations.

The aircraft can transport troops, drop supplies and undertake medical evacuation during the day and night, even in hostile environments.

Do you see the Middle East as a major client for this aircraft?

We think this aircraft is of significance to this region since it is capable of landing on many types of runways. Heavier transport aircrafts sometimes need reinforcing the existing runways. In addition, C-2 is suitable for missions, which do not need bigger transport aircrafts. This also helps in cutting the cost of operations.



Japanese Parliamentary Vice-Minister discussed key topics with Nation Shield

R

aytheon

Celebrates 30 proud years in the UAE

By: Deepa Narwani

Nation Shield had an exclusive chat with Christopher J. Davis, President, Raytheon International, on the momentous occasion of the company's 30th anniversary in the UAE.



Christopher J. Davis, President,
Raytheon International

At the recently concluded Dubai Airshow, Raytheon featured its advanced capabilities in air and missile defence, border security, and land and naval systems among a wide range of innovative solutions. On the sidelines of the show, Nation Shield caught up with the affable Christopher J. Davis, President, Raytheon International, who was previously Raytheon's Country Leader and President in the UAE, and lived for more than 15 years in the country.

He said, "It is really nice for me to be back here because I lived in the UAE for almost 15 years. I now live and work in Washington DC. I am really proud of the work the company has done in the UAE to establish a really strong and unique relationship with our customer."

He highlighted that at the Dubai Airshow, Raytheon aimed to reinforce its relationships and partnerships that the company has built with the

UAE in particular as this year Raytheon is celebrating its 30th anniversary in the country.

"We are really proud of our presence in the UAE. Partnerships have been the theme of our time here. Our partnership here started with the Hawk missile system 30 years ago and has continued with what we call the Integrated Air and Missile Defence (IAMD).

"Two of our most enduring relationships are here in the Middle East. Last year we celebrated 50 years in Saudi Arabia and this year is our 30th anniversary in the UAE. The relationships that we have with our partners are extremely valuable and critical for both sides. We provide defence solutions and capabilities that our partners need and we work very closely with them to identify how best Raytheon can assist them by including them in our experience journey."



Raytheon

Raytheon, Forcepoint and the U.S. National Cyber Security Alliance commissioned a global cyber talent survey that also included the UAE

Spotlight on cyber capabilities

Raytheon also showcased its cyber capabilities at the airshow and are looking at how the company can partner with local entities to begin cyber activities in the country as well as in the region.

Davis explained, "A lot of people know that the company creates traditional aerospace and defence capabilities such as radars, missiles, etc. However, we also provide unmatched cyber expertise that protects every side of cyber for governments agencies, business and nations. We are currently exploring how best our cyber solutions can add value to our partners and enable them to benefit from our full suite of cyber capabilities. What we see is that with any type of local presence that we put here with a cyber capability, we would want to work with not only local entities but also education institutions. It speaks of the partnership aspect of how we are trying to approach our relationships here."

Last year, Raytheon had participants from Mubadala, Tawazun, and Khalifa University, and they spent a day discussing how society can better educate young Emirati's in the realm of cybersecurity. The forum was called 'Bridging the cybersecurity talent gap'.

"The idea behind hosting the forum

was that there is a huge gap between the amount of cybersecurity talent available compared to the demands for cybersecurity experts. So we spent a day discussing that with stakeholders from all over the region. The event was so well received that we are doing the same type of event this year in Abu Dhabi, in conjunction with the celebration of our 30th anniversary."

Recently, Raytheon, Forcepoint and the U.S. National Cyber Security Alliance (NCSA) commissioned a global cyber talent survey that also included the UAE, which found that young adults in the country are considerably more likely to choose a career in cybersecurity than their peers elsewhere in the world. The survey also discovered that the UAE has been successful in engaging most youth to try activities that would let them test their interest and aptitude for cybersecurity careers.

In addition, the survey found that young Emiratis hold values that support a strong cybersecurity posture for their nation, saying they think cybersecurity issues are important and offering to serve in national security roles.

Forging strong partnerships

Raytheon has several important partnerships in the UAE, highlighted Davis.

"Our oldest partnership is with Abu Dhabi Ship Building (ADSB). During IDEX earlier this year, we celebrated the anniversary of our 10-year relationship. We have also partnered with Tawazun to create jointly shared intellectual property and we are very proud of that," he added.

Davis pointed out that Raytheon International has relationships and customers in over 80 countries and has offices in 15 countries across the world.

He said, "My current title is the President of Raytheon International, a global business development organisation that generates almost 32 per cent of Raytheon's annual sales, which equates to approximately 30 per cent of 25 billion dollars. It is a very significant organisation that has relationships in Europe, Asia, and the Middle East. Some of the most enduring relationships, of course, come from our Middle East partners."

Message on the occasion of UAE National Day

Davis concluded by saying, "I would like to say that everyone at Raytheon would like to wish a very happy 46th birthday to the UAE and the spirit of the union. We are proud because in the 46 years of the UAE, we have been here for 30 of those and hope to be here for 30 more!"

Elettronica builds on a long-standing relationship with the UAE

Nation Shield sat down with Massimo Antonio de Bari, Head of Elettronica Group - UAE Office and Business Development Gulf, on the sidelines of the Dubai Airshow 2017, to discuss the company's unique relationship with the UAE, its latest products and future plans.

The renowned electronic warfare provider and manufacturer, Elettronica, put the spotlight on a number of their key product offerings at the Dubai Airshow 2017.

Massimo Antonio de Bari, Head of Elettronica Group - UAE Office and Business Development Gulf, said: "The Middle East market is of paramount importance to Elettronica. We are proud to be at the Dubai Airshow and have been participating since its first edition. The company has a long history in this country and our first contract here was in 1984. The UAE represents a strategic partnership for us since then and was the first market we worked with in the region. We keep working with the UAE Armed Forces and institutions on several projects. The relationship that we have with the country is unique because it's more a strategic partnership rather than a set of commercial arrangements."

He added, "For short-term future plans, we are hoping to be part of the new naval projects the UAE is planning to achieve."

Power of systems

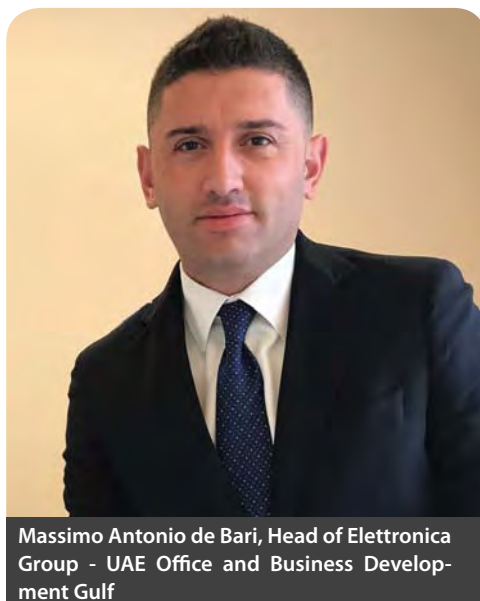
Some of the products Elettronica displayed at the show included the Directional Infrared Counter Measures

(DIRCM) system as well as the Escort Jammer Pod and the Anti-Drone Interception Acquisition Neutralization (ADRIAN) system. The DIRCM system is designed to provide a reliable and effective protection of rotary and fixed wing aircraft against current and future Infra-Red threats (i.e manpads). While the Escort Jammer Pod is a fully integrated system, intercepting and automatically processing radar signals, managing the power transmitters to effectively jam several radar threats with high Effective Radiated Power (ERP).

Massimo de Bari highlighted: "The main task of the Escort Jammer is to perform a comprehensive advanced warning and countermeasures cycle against any hostile threats, which engage the attacking forces and adjacent flight formation and to enhance mission success.

To meet such demanding requirements, EDGE is designed to provide both individual and mutual protection to combat aircrafts. The support we received from the Italian Air Force to develop this system was hugely important."

The ADRIAN system (Anti-Drone In-



Massimo Antonio de Bari, Head of Elettronica Group - UAE Office and Business Development Gulf

terception Acquisition Neutralization) is the company's state of art Counter-UAV solution designed to intercept and neutralise LSS (Low-Small-Slow) UAV in multiple scenarios and environments.

"Traditional sensors and countermeasures may be not effective or not applicable in urban warfare. Therefore ADRIAN is based on multispectral sensors (Radar, EO/IR, acoustic and radio link interceptor) performing data fusion for detection and identification. ADRIAN architecture is modular and can be tailor-made depending on operational, environmental and cost/effectiveness requirements," said Massimo de Bari. "This is something that can have a lot of applications, from the military to the law enforcement perspective.



DIRCM System



So far, the response to it has been very good. We perceived huge interest from different kind of entities, also because the company delivers live demonstrations of ADRIAN showing how the system is able to take the full control of the detected drone. We expect demand for ADRIAN in this country and the entire region."

Highlighting cyber solutions

In 2014 Elettronica and Expert System created a joint venture company, CY4GATE, to address the fast converging market of electronic warfare and cyber intelligence solutions. The joint venture is headquartered in Rome.

"At the core of CY4Gate lies an integrated engineering convergence between the electromagnetic spectrum, wireless, wired networks, and operating systems," said Massimo de Bari.

"Today CY4GATE is able to provide a range of solutions for intelligence, law enforcement and Electronic Warfare Departments for superior, fast and comprehensive analysis of structured and non-structured data streams from ELINT to Tactical/Strategic COMINT and Open Source (OSINT), virtual Humint, Meta Data

Analysis, Data Mining and Fusion, all integrated within both passive and active defensive cyber applications." One of the products Elettronica is promoting in the region is related to the intelligence system called D-SINT (Digital and Spectrum Intelligence Integrated System), an integrated platform using a modular, scalable and open architecture providing all functionalities for analysing and handling structured and non-structured multimedia, multi-format, multi-sensor information.

Massimo de Bari highlighted: "D-SINT has been designed to manage and support the intelligence full cycle, easing the extraction of information from large volumes of data enabling the effective use of human resources and thereby shortening intelligence response time. The presentation and dissemination tool (called AMICO) represents the smartest and fastest way to provide enriched and meaningful information to decision-makers.

"It combines superior text analysis and ontology capabilities with the ability to explore, correlate, merge and manage large quantities of un-

structured data from documents, web pages, social networks, etc."

"D-SINT is very useful not only for intelligence purposes in military and law enforcement environments, but it can also be provided in a different version for business intelligence, allowing companies to exploit the platform capabilities to achieve their informational goals. Many companies, also in UAE, are successfully operating the D-SINT solution and we expect others opting for it," said Massimo de Bari.

The company also has a different approach when it comes to training for cyber products. It has signed a comprehensive agreement with a private university in Rome (LUISS) that offers dedicated academic classes along with lots of hands-on practice.

Massimo de Bari said, "People will be put in real critical situations and provided with the know-how and tools to counteract in order to increase their skills to manage the crisis. The Cyber Academy is addressed to a large variety of parties, from the Armed Forces to the police department, law enforcement agencies and private institutions."

Russian Helicopters Concludes the First Export Contract for the Supply of Mi-171A2

Russian Helicopters (part of State Corporation Rostec) concluded the first export contract for the supply of medium multirole helicopter Mi-171A2 with the Indian company Vectra Group.

In accordance with provisions of this agreement, Mi-171A2 will be delivered to the customer in 2018. Moreover, the contract provides for an option for purchasing of one more helicopter.

"A wide range of potential customers from all over the world are keeping a close eye on the development of this project and I'm sure that certification and successful operation of Mi-171A2 in India will allow them to translate their interest into new contracts," said CEO of Russian Helicopters Andrey Boginsky after signing of the contract.



The multirole helicopter Mi-171A2 is a result of in-depth modernisation of helicopters from the world-famous Mi-8/M-17 series. There are about 80 modifications in the Mi-171A2 design as compared to the baseline model. The helicopter is equipped with the VK-2500PS-03 engines with the digital control system. It also has a power unit with the increased capacity and, therefore, strengthened transmission.

Due to the digital navigation system with data indication on displays, the helicopter can be operated by a crew consisting of only two men. Introduction of equipment for diagnostics and monitoring of essential systems status as a part of airborne avionics has increased the helicopter reliability and made it possible to reduce maintenance time. The Mi-171A2 has a

more effective X-type antitorque rotor and a new main rotor with all-composite blades with the improved airframe configuration.

The supply of new machines and the implementation of a joint project on setting up an assembly line for Ka-226T helicopters in India are subjects intended to be discussed with the Indian partners.

Emirates partners with Thales for next generation broadband connectivity

Emirates and Thales have signed a new agreement to equip its Boeing 777X fleet with the next generation broadband inflight connectivity using Inmarsat GX global network. The partnership will give Emirates customers best-in-class connectivity on its Boeing 777X aircraft due for delivery starting in 2020. Emirates and Thales already have an existing multi-million dollar deal to fit its Boeing 777X fleet with a next generation Thales AVANT inflight entertainment system. The new agreement is part of the Emirates and Thales' plans to



develop and enhance the state-of-the-art inflight entertainment and connectivity (IFEC) on the 777X fleet. Over the years, Emirates has invested over \$200 million dollars to equip its aircraft with connectivity. Demand for Wi-Fi on board has been steadily increasing

and today over 800,000 passengers per month connect while inflight. Emirates, Thales and Inmarsat have invested heavily in the new-generation Wi-Fi solution and will work together to meet increasing demand for Wi-Fi on board.

Embraer introduces 5,800-foot cabin altitude on Legacy 450 and Legacy 500

Embraer announced the enhancement of the flight experience aboard its Legacy 450 and Legacy 500 mid-cabin business jets. The cabin altitude of these two aircraft is already considered among the lowest on the market, but the maximum cabin altitude has been further reduced to a best-in-class 5,800 ft. (1.768 m).

"With our focus on value, the Legacy 450 and Legacy 500 are setting new standards for the midsize cabin segments," said Michael Amalfitano, President and CEO, Embraer Executive Jets. "These aircraft are beautifully designed and brilliantly engineered, and they will continue to elevate the experience that we provide our customers."

The current maximum cabin altitude of the Legacy 450 and Legacy 500 is 6,000 ft. (1.828 m) when flying at 45,000 ft. (13.716 m). The cabin pressurisation differential was increased from 9.3 psi to 9.73 psi to reduce the maximum cabin altitude to 5,800 ft. The aircraft's environmental control system also preserves a sea-level cabin altitude while flying un-



der 27,050 ft. (8.245 m).

Launched in 2008, the Legacy 500 and Legacy 450 entered the market in 2014 and 2015, respectively. Deliveries of these aircraft with the new cabin altitude enhancement will commence in the first quarter of 2018 when the upgrade also becomes available to the installed fleet. The Legacy 450 is a mid-light business jet with a best-in-class six-foot-tall flat-floor cabin. The Embraer DNA Design of the cabin includes four fully reclining

club seats may be berthed into two beds for complete rest in a 5,800-foot cabin altitude. It is the first business aircraft in its segment with full fly-by-wire technology, featuring side-stick flight controls and state-of-the-art Rockwell Collins Pro Line Fusion avionics suite with four 15.1-inch high-resolution LCD displays.

The Legacy 500 has the best-in-class six-foot flat-floor cabin, which is comparable to those of some aircraft in the super midsize category.

Honeywell signs 15-year maintenance agreement with Emirates Airline

Honeywell has signed a 15-year Component Service Solutions agreement with Emirates Airline to maintain aftermarket components on the airline's fleet of Airbus A380 and Boeing 777 aircraft. The technology used in this agreement extends through 2031 and covers comprehensive component repairs and support solutions for Emirates' fleet, thus reducing grounded aircraft time.

Honeywell's strengths in the areas of component exchange and repairs will help Emirates benefit from a strong level of support and expertise, thereby reducing disruptions to operations due to component repairs. Honeywell's services are designed to reduce maintenance costs, lower cost of ownership and provide the highest possible fleet reliability. Aircraft components manufactured, supported

and repaired by Honeywell include avionics and mechanical parts. "One of our goals is to increase the lifespan of Honeywell aircraft components and reduce airline operating costs," said David Shilliday, Vice President, Airlines, Europe, Middle East, Africa and India, Honeywell Aerospace. "With our 24/7 aircraft on-the-ground support and 24-hour critical shipment of Honeywell avionics and mechanical parts, Emirates can benefit from a significant reduction in departure delays and cancellations, which will help Emirates' commitment to on-time arrivals."



Bombardier signs LOI with EgyptAir for up to 24 CS300 aircraft

Bombardier Commercial Aircraft announced that it has signed a letter of intent (LOI) for up to 24 CS300 aircraft with EgyptAir Holding Company, of Cairo. This includes 12 CS300 aircraft with purchase rights for an additional 12 aircraft.

Based on the list price of the CS300 airliner, a firm-order contract would be valued at approximately \$1.1 billion. Should EgyptAir also exercise the 12 purchase rights for CS300 aircraft, the contract value would increase to nearly \$2.2 billion.

In the presence of His Excellency Minister of Civil Aviation of Egypt Sherif Fathi, a press conference was held at the show where Safwat Musallam, Chairman and CEO of EgyptAir Holding Company and Fred Cromer, President, Bombardier Commercial Aircraft celebrated the signature of the letter of intent, which opens a new chapter in the relationship between the two companies.

Musallam said, "It is our pleasure to have this new partnership with Bombardier, which came as a continuation of our fleet modernisation strategy. We undertook a thorough evaluation process of our fleet and realised that the

CS300 would fit perfectly into our business plans and growth strategy.

"We selected the C Series aircraft because its excellent range will allow us to best serve domestic and regional destinations, including neighbouring Arab cities, the Middle East as well as several European destinations. This is in addition to the CS300 aircraft's exceptional economics and outstanding cabin. We look forward to expanding our network with the CS300 and we are happy to see that the partnership announced with Airbus will bring added support to the C Series programme."

"We're thrilled that EgyptAir selected the CS300 aircraft to renew its fleet," said Fred Cromer. "Bombardier's 20-year market outlook foresees demand for 450 airplanes in the 60 to 150-seat category for the region and this LOI confirms the need for right-sized aircraft in the Middle East. We are confident that our small single-aisle C Series is ideally-suited to serve the hot temperature environments of the region and will undoubtedly provide performance and economics that will drive higher profitability."

Bahrain and Kuwait opt for Lockheed Martin's ATP

For Bahrain's Defence Force and Kuwait's Air Force, Lockheed Martin's Sniper Advanced Targeting Pod (ATP) is the pod of choice. As two of the most recent customers to select Sniper ATP for their F-16 and F/A-18C/D (Hornet) aircraft, they join a growing group in the Middle East who utilise the pod's unmatched targeting and non-traditional intelligence, surveillance and reconnaissance capabilities. "With more than 400 Sniper ATPs sold in the region and additional integration opportunities identified, the Middle East is a critical market," said Paul Lemmo, Vice President of Fire Control/Special Operations Forces Contractor Logistics Support Services at Lockheed Martin Missiles and Fire Control. As an electro-optical targeting system contained in a single, lightweight pod, Sniper ATP equips pilots with high-resolution imagery and weapon-quality coordinates. Compatible with the latest precision-guided weapons, Sniper ATP successfully supports the detection, identification and engagement of multiple moving and fixed targets in air-to-air and air-to-ground missions.

With capabilities including long-range detection and identification and continuous stabilised surveillance, Sniper ATP enables aircrews to find and destroy targets outside of jet noise ranges. Additionally, datalinks enable communication with forward-deployed forces, supporting rapid targeting decisions.

Falco EVO surveillance drone touch down in Middle East

Leonardo announced the completion of the first delivery of its Falco EVO Remotely-Piloted Air System (RPAS) to its launch customer in the Middle East. The first of the newly built aircraft was completed in August with the acceptance test carried out at Leonardo's RPAS design and construction facility in Ronchi dei Legionary, Italy. It was delivered in September.

The Falco EVO, the longest-endurance model from Leonardo's Falco RPAS family, is a surveillance and intelligence-gathering platform that can fly for more than 20 hours while carrying a payload of up to 100 kg. The Falco EVO has already been selected by two customers in the Middle East and Gulf region, echoing the success of the original Falco RPAS, which has been chosen by five international customers. Existing Falco aircraft can be converted to the EVO model via the installation of a transformation kit, which adds longer wings and tail booms.

More than 50 Falco family RPAS are currently in operation around the world, with some customers choosing to operate them independently while others, such as the United Nations for its humanitarian MONUSCO mission, opt for Leonardo to own and operate the Falco aircraft and provide surveillance data as a managed service. This latter model is seen as a growth area for Leonardo, which is why the company recently partnered with certified air operator Heli Protection Europe (HPE) with a view to expanding the 'drones as a service' offering into the civilian domain.

Here, Leonardo plans to offer surveillance and reconnaissance services on

behalf of customers such as police and emergency responders.

In addition to the Falco family, Leonardo is a leader in the unmanned rotorcraft domain, offering the 'Solo' and 'Hero' platforms. As part of the systems' ongoing development, the UK Ministry of Defence's Defence Equip-

ment and Support (DE&S) Technology Office recently placed a two-year, jointly funded research and development contract with Leonardo with a key aim being to identify, develop and exploit the opportunities offered by such emerging technologies.

L3 WESCAM introduces mission rehearsal and simulation training solutions



L3 WESCAM has introduced its new mission rehearsal and simulation training solutions product line. With hands-on customer demonstrations of a fully networked solution, including air, ground, maritime and command stations, this highly scalable line of training products will enable MX-Series operators and crewmembers to train independently or as part of a virtual joint-force team using the latest gaming technology at an estimated 70 per cent cost savings over traditional training courses.

Modular in design, the products are deployable as a single part-task trainer or in a full network-centric environment comprising L3's MX-SIM, MX-SIM Lite, Tactical Mission Trainer, and flight and ground stations. Each product utilises integrated Virtual Battlespace 3 imaging technology that allows multiple users, despite their geographical locations, to train within a single virtual world in real time. All battlefield and virtual entities can be preprogrammed to react as they would in actual missions. Predefined weather conditions, terrains, aircraft, vehicles and maritime vessels can also be customised per scenario to replicate the upcoming live missions for which crews are training. The mission rehearsal and simulation product line is the newest component of L3 WESCAM's complete training solution.

NIMR Announces First International Export

NIMR Automotive, a subsidiary of the UAE's Emirates Defence Industries Company (EDIC), recently announced its first international contract to export its vehicles outside of the MENA region through an agreement with the Ministry of Defense and Armed Forces of Turkmenistan.

The announcement was made ahead of the Defense and Security Exhibition 2017, Bangkok, Thailand, where NIMR exhibited a range of its leading vehicles, developed to address the threat landscape of Central and Southeast Asia.

The agreement, which covers an initial order of NIMR's leading special forces platform, the AJBAN Long-range Special Operations Vehicles (LRSOV), is

testament to the company's growing international footprint.

NIMR's CEO Dr. Fahad Saif Harhara Al Yafei said, "Our contract with Turkmenistan represents an important milestone for our company as it validates the quality and competitiveness of our vehicles in the global marketplace. Furthermore, it illustrates the close and enduring relationship between the UAE and Turkmenistan."

The agreement follows the steady growth of NIMR's relationship with the Ministry of Defense and Armed Forces of Turkmenistan. Previously, a number of NIMR AJBAN 440A vehicles, provided to Turkmenistan through a government-to-government arrangement, underwent extensive trials before be-

ing operationally deployed in a border security role.

Receiving high marks for quality, durability and mobility against the rough terrain of Turkmenistan's border region, the Ministry of Defense decided to advance its relationship with NIMR to a formal status, requesting an undisclosed number of AJBAN LRSOVs in bespoke configurations. The vehicles are designed for long-range reconnaissance missions, and are helicopter transportable, capable of accessing all terrains and customisable to accommodate a range of specific equipment. NIMR delivered the vehicles in October where they were featured at the Turkmenistan Independence Day Parade.





Calidus B-250, the first multirole military light attack aircraft developed in UAE

Mohammed bin Ahmad Al Bowardi, Minister of State for Defence Affairs, visited Emirati company Calidus at the recently concluded Dubai Airshow. During his inspection tour, he was briefed on the latest multi-role aircraft produced by the company – the B-250. The Minister of State for Defence Affairs also praised the development witnessed by the company, thereby becoming the focus of the attention of major international companies.

The B-250 is described as a major breakthrough in its category and the aircraft is the first military light attack aircraft to be developed in the UAE. Fully designed from the ground up to address modern asymmetric warfare requirements in terms of capacity as well as operating cost, the aircraft has already generated significant interest among regional and international

players in the segment.

Besides its multi-role operations, the B-250 light attack aircraft is capable of delivering a wide range of capabilities for the modern challenges of today's warfare conditions, and can also be used as an advanced trainer. Calidus brought two such aircraft to the show. One participated in the flight demonstrations and the other was on static display.

Of the several advantages, the foremost is that the B-250 has an outstanding performance in its category and leading-edge avionics and mission systems. It also features a very low operational cost, which is crucial in asymmetrical warfare conditions.

"The B-250 aircraft is also a very effective basic and advanced trainer aircraft capable of giving the required training to pilots engaged in modern and

asymmetric warfare situations," Hamdan Abdulla Al Shkeili, Chief Software Engineer, Calidus told Nation Shield."

"This 100 per cent new aircraft is designed as a multirole platform to address successfully current and future field challenges. The B-250 boasts many unique features within its category, which are also firsts, such as its 100 per cent carbon fibre structure, which gives it unparalleled performance and durability. Our aircraft is not only the first military light attack aircraft ever developed in the UAE but is one that will raise the bar throughout the region through its leading-edge features," he added.

The first Light Attack Aircraft, developed by Calidus, underscores the technological strides the country has made in the aerospace sector over the years.



Boeing Wins Landmark Deals At Dubai Airshow

Boeing won sizable commitments across its twin-aisle and single-aisle commercial airplane families, debuted key capabilities including the CST-100 Starliner docking and KC-46 refueling simulators, and announced services agreements at the 2017 Dubai Airshow.

Boeing and flydubai signed a landmark agreement for 225 737 MAX airplanes with a list price value of \$27 billion. The deal represents the largest-ever single-aisle jet order – by number of airplanes and total value – from a Middle East carrier.

Signed at the airshow in flydubai's hometown, the agreement includes a commitment for 175 MAX airplanes,

and purchase rights for 50 additional MAXs.

"We welcome the continuation of our long partnership with Boeing. Their airplanes have provided a foundation for the success of our business model, providing us with the operational flexibility and range to build a network of 95 destinations in 44 countries," said flydubai Chairman His Highness Sheikh Ahmed bin Saeed Al Maktoum. "We are extremely honored that flydubai has selected to be an all-Boeing operator for many years to come. This record-breaking agreement builds on our strong partnership with flydubai and the other leading carriers of this region," said Boeing Commercial Air-

planes President & CEO Kevin McAllister.

"This has been a very successful show for Boeing. Our regional customers have maintained their trust in our products and technology, and our partnerships in the Middle East region continue to grow," said Bernard Dunn, President, Boeing Middle East, North Africa and Turkey. "We signed agreements with key airline partners including Emirates, flydubai, Azerbaijan Airlines, ALAFCO and Ethiopian Airlines. In addition, Egyptair became a new customer for the 787. Finally the airshow was a great opportunity to introduce our newest business unit, Boeing Global Services, to the Middle East

market and reiterate the importance of the region to the Boeing Company."

The continued growth of the Middle East aviation market was underscored leading customers in the region who announced orders and commitments for 296 airplanes, including 50 options, with a value of about \$50 billion at list prices.

Boeing also celebrated the opening of Emirates Flight Training Academy (EFTA), where it was selected to provide a customised, and integrated software system for managing cadet learning and training using software.

Boeing Defense, Space & Security witnessed great interest in the CST-100 Starliner docking simulator spacecraft which made its debut in Dubai for the first time, highlighting the region's high interest for space travel and exploration. Other defense products on display included the MV-22 Osprey tiltrotor, AH-64 Apache and the CH-47 Chinook helicopters, as well as the F-15 multi-role fighter.

Bringing faster lifecycle solutions to Middle East

Boeing Global Services group successfully wrapped up their inaugural Airshow with four service agreements. Regionally it will provide custom services from the Boeing Global Fleet Care portfolio to Oman Air, as well as

a five-year strategic agreement, which will see Boeing provide Royal Jordanian with a comprehensive training solution, including pilot type-rating and recurrent training at its London Gatwick training campus. Additionally, it agreed with Cathay Pacific Airways to support its 747-8 freighter fleet through the Boeing Landing Gear Overhaul and Exchange Program. Also, Boeing through its subsidiary Aviall, announced it has launched its parts sales and distribution agreement with Rolls-Royce in support of their global fleet of AE defense engines.

The recent launch of Boeing Global Services is a commitment from Boeing to invest significantly in aftermarket service capability innovation. Global Services President and Chief Executive Officer Stan Deal says that Global Services is optimised to respond to customers' evolving service needs quicker than ever before, and to offer increasingly cost-competitive solutions in four main capability focus areas: supply chain; engineering, modifications and maintenance; digital aviation and analytics; and training and professional services.

"Our efforts center on increasing platform utilisation and decreasing operating costs, which may come in the form of tailored training modules, in-

creased availability of airplane parts for faster repair, repurposed aircraft or digital crew scheduling software," added Deal.

Boeing forecasts that the Middle East will need 3,350 new commercial airplanes valued at \$730 billion over the next 20 years for fleet renewal and growth, and that the operating tempo and age of military aircraft in the region will warrant a \$90 billion investment in services over the next 10 years. By advancing technologies and systems that support this level of growth, Global Services plans to change the way airplanes and defense systems are operated, upgraded and maintained throughout the products' lifecycle.

Boeing-Aviall and Boeing-Jeppesen facilities located in the UAE provide local supply chain and digital aviation and analytics expertise, respectively. In addition, Boeing's partnership with Alsalam Aerospace Industries and the Saudi Rotorcraft Support Center provides dedicated support for key defense platforms and helps build a skilled workforce locally.

Global Services also supports the Emirates Flight Training Academy with courseware and training systems, and partners with airlines and in-country defense forces to offer intuitive training technologies for future pilots.



Boeing and flydubai signed a landmark agreement for 225 737 MAX airplanes with a list price value of \$27 billion

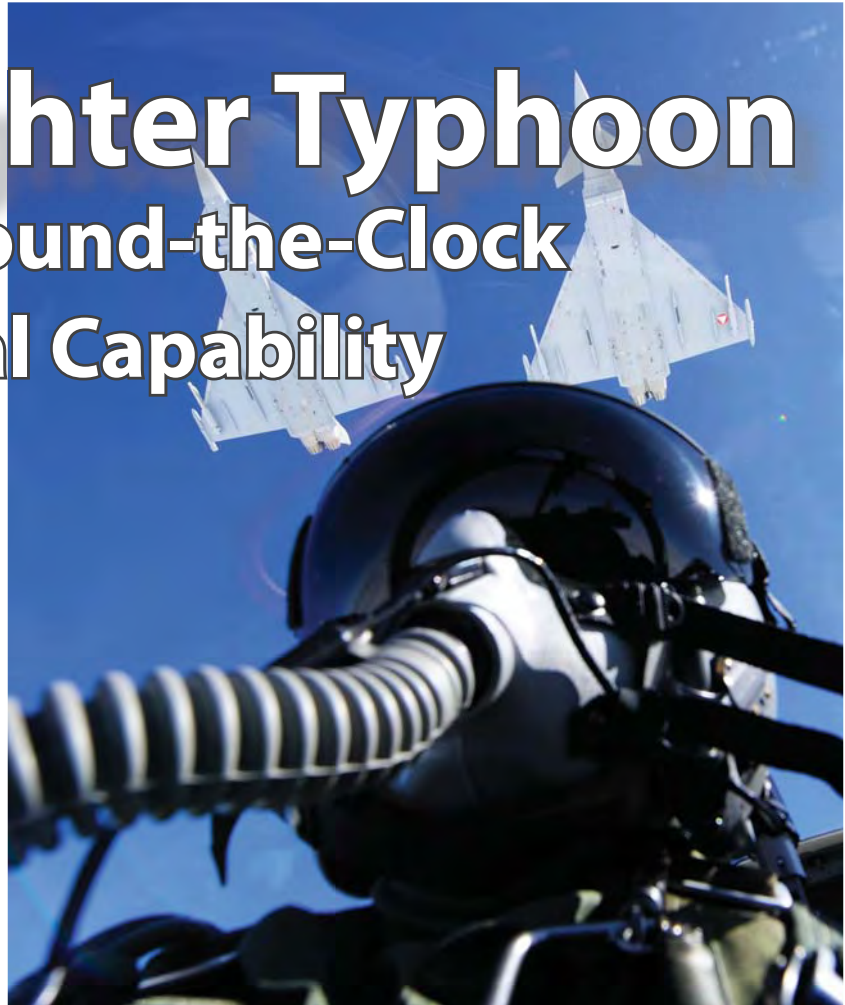
Eurofighter Typhoon Excels in Round-the-Clock Operational Capability

Eurofighter Typhoon has provided a sneak preview of the ground-breaking advancements displayed by their new aircraft model.

Selected media were briefed at the Dubai Airshow on the new e-scan radar and various capability enhancements, such as P3E. Present at the Dubai event were the Royal Air Force, alongside Air Vice-Marshal Gerry Mayhew of the Air Officer Commanding No. 1 Group and Raffael Klaschka, Typhoon Pilot and Head of Marketing of Eurofighter Jagdflugzeug GmbH.

The Eurofighter Typhoon has clocked up more swing-role combat hours than any other new generation fighter in service today. Throughout 2017, the Eurofighter Typhoon has been on round-the-clock operational demand. The new fighter has now logged more than 10,000 swing-role combat flying hours and has been carrying out 24/7 NATO air policing duties and QRA activities for Eurofighter national air forces.

The aircraft is now the most advanced swing-role fighter available on the world market. It has flown more than 900 combat missions alone for the Royal Air Force over Syria and Iraq. Moreover, as part of NATO Air Policing duties, Eurofighter Typhoon has also been deployed from the Baltics to the Black Sea. Other recent Royal Air Force, Luftwaffe and Italian Air Force deployments have included operations in Romania, Estonia and Bulgaria



respectively.

Raffael Klaschka, Head of Marketing for Eurofighter Jagdflugzeug GmbH, is confident that:

Whether it is providing Close Air Support or Air Superiority missions, Eurofighter Typhoon is a trusted and effective asset against any hostile — on the ground or in the air.

In addition, a series of live firings of the Brimstone precision strike missile from a Eurofighter Typhoon have recently been completed with much success, so adding enhanced capability to the Typhoon. The trials, conducted from BAE Systems' Military Air & Information at Warton, Lancashire, UK, form part of a programme of new enhancements that will be rolled out across the Royal Air Force (RAF). All these tests ensure

that Typhoon remains at the cutting edge of combat capability.

Fully operational roll-out after Brimstone trials

Brimstone will provide Typhoon with a low collateral, pin-point accurate air-to-surface weapon, further enhancing the aircraft's already combat-proven swing-role performance. Planning for the next stages of Brimstone development - including evaluation by the RAF in mid-2018 - is now underway in advance of its entry into service.

Brimstone is part of the Phase 3 Enhancement (P3E) package, which also includes mission system and sensor upgrades. P3E is the final part of Project Centurion as the programme built to ensure the smooth transition of Tornado GR4 capabilities to a fully opera-



Eurofighter Typhoon is currently the largest and most successful military procurement programme in Europe with 599 aircraft having already been ordered

tional Typhoon for the UK's Royal Air Force.

A total of nine firings and nine jettison trials began in July and have now been completed. They enjoyed the support of the UK Ministry of Defence, MBDA, QinetiQ, Eurofighter GmbH and Eurofighter partner companies Airbus and Leonardo.

The aim of the trials was to provide weapons integration clearance for operational use. They have covered a range of specific release scenarios, involving testing at various heights, speeds and levels of G-force and in various positions on the aircraft wing and in the launcher.

The nine firings have also been used to perform data analysis and model weapon performance. Further flight trials will take place in early 2018, followed by operational evaluation by the RAF.

Operational evaluation of the Phase 2 Enhancement (P2E) package is continuing with the RAF's 41(R) Squadron – the Test and Evaluation Squadron – at RAF Coningsby, Lincolnshire, UK. These tests will include live firings

ahead of roll-out to the UK fleet. The P2E package includes MBDA's Meteor Beyond Visual Range air-to-air missile and the Storm Shadow deep strike stand-off air-to-surface missile.

Successful Meteor Programme Testing

A Eurofighter Typhoon recently completed a simultaneous firing of two MBDA Meteor Beyond Visual Range air-to-air missiles as part of a major programme to integrate the weapon. The test was conducted using Airbus Defence & Space Instrumented Production Aircraft (IPA 4) with the support of BAE Systems, Eurofighter GmbH, MBDA and the UK's Ministry of Defence.

The trial was used to test successful engagement of targets and simultaneous two-way data link between the Typhoon and two missiles. The data follows a series of six successful Meteor firings conducted from Eurofighter Typhoon in 2016. After loading activity at BAE Systems' Military Air & Information site in Warton, UK, the trials took place over the UK's Hebrides Range.

The Warton and Hebrides tests were but the latest successful flight trials conducted by the Eurofighter Partner Companies to add additional capability to the Eurofighter Typhoon. In ensuring that the aircraft is ready to meet the threats of the future, Andy Flynn, Eurofighter Delivery Director for BAE Systems UK, emphasizes that:

This is another major milestone on the Meteor programme and the first successful test of a dual firing. Meteor brings to Eurofighter Typhoon an unparalleled air-to-air engagement capability and this successful trial – following on from a series of firings last year – is further evidence of how the Eurofighter Partner Companies are working together to deliver major enhancements to Typhoon's multi-role capabilities.

Customer Operational Evaluation and Training with Meteor is due to take place with the UK Royal Air Force later this year, while eight customers have already ordered the Eurofighter Typhoon (Germany, the United Kingdom, Italy, Spain, Austria, Saudi Arabia, Oman and Kuwait).

Ka-52: The Pride of Russia's Military

According to military officials, Russian Armed Forces are ready for the delivery of a new generation of modern aircraft, including combat helicopters. In an open meeting of the Ministry of Defense's (MoD) Board taking place on November 7th, the Chief of the General Staff of Russia's Armed Forces, General of the Army Valery Gerasimov said: Since 2013, aviation formations and units have been receiving over 200 modern aerial platforms on a yearly basis, including the Su-30SM, Su-34, Su-35S and MiG-31BM frontline aircraft and the Ka-52 and Mi-28N helicopters. This has resulted in the rearmament of twelve aviation regiments, three brigades and six army aviation regiments with new hardware. The Ka-52 is among the most modern pieces of aircraft equipment being de-

livered to Russia's military. The Ka-52 'Alligator' combat reconnaissance-attack helicopter is designed to engage both enemy tanks and armored or soft-skin vehicles. It provides round-the-clock manpower on the frontline and in tactical depth in all weather conditions. The rotary-wing 'Alligator' can conduct fire support, patrol and escort missions, while also reconnoitering targets and sending target data to interacting helicopters and ground command posts.

With the Ka-52 model, the helicopter's signature has now been reduced. It is fitted with electronic protection systems and countermeasure assets in a design that meets Russian and international requirements to combat rotary-wing aircraft and their technical operation. The Ka-52 features a twin-

seat cockpit, while the rotorcraft can be controlled by each pilot. High flight performance, in no small measure provided by the coaxial rotor scheme, provides high maneuverability in confined spaces to bring the aircraft to a position of advantage.

The Ka-52 is powered by two VK-2500-family (VK-2500 or VK-2500P) gas-turbine engines with a power output of 2,400 hp each, providing a flight altitude of more than 5,000 m. The static ceiling of the 'Alligator' reaches 4,000 m to ensure take-offs and landings in hot climate and mountainous terrains. Moreover, the helicopter can be used in cold weather and icing conditions.

The new model has received an up-to-date avionics and effective attack armament suite that can be reconfigured



to accomplish various missions. The 'Alligator' features high crew protection and modern automated systems to assist piloting, supplemented by easy-handling ground maintenance. According to Russian Helicopters Holding, a subsidiary of the Rostec state corporation, the Ka-52 reconnaissance-attack helicopter has a practical ceiling of up to 4,000 m, with a hovering ceiling of up to 4,000 m without ground effect. The rotary-wing aircraft features a maximum climb rate of 16 m/s and a vertical climb rate of 12 m/s (both at the sea level). The helicopter's cruise and maximum speeds reach 260 km/h and 300 km/h, respectively. The Ka-52 has a practical flight range of 460 km, being fueled by internal fuel tanks and a ferry range of 1,110 km.

Armament Suite and Design

The helicopter's armament suite is comprised of a 2A42-1 30 mm automatic cannon, guided missile launchers (including the Ataka) and S-8 unguided rockets, with an optional Strelets missile system. Its ammunition load is composed of up to 12 guided missiles, up to four Igla-S air-to-air guided missiles, a maximum of 80 S-8 rockets and 460 30 mm rounds. The Ka-52 is also equipped with a K-37-800M ejection seat system.

Moreover, the design of the rotary-wing platform has significant potential for modernization. The further development of the Ka-52 program envisages an increase to the helicopter's firepower. An updated version of the 'Alligator' is believed to be in receipt of a new onboard suite intended to provide a drastic reinforcement to the protection of the aircraft against surface-to-air and air-to-air missiles.

Its auxiliary power unit (APU) will be fitted with an additional generator to increase its reliability. The main rotor

will receive folding blades that will allow the helicopters to be stored in hangars. The payload weight of the updated Ka-52 will be increased to develop its tactical capabilities.

According to military officials, Russia's rotary-wing platforms, including the Ka-52, have proven their combat effectiveness during counter-terrorism operations in Syria. At the Army-2017 international military-technical forum held in Moscow in August, the Chairman of the Russian Armed Forces' Military-Scientific Committee and Deputy Chief of the General Staff Lieutenant General Igor Makushev confirmed that:

The Ka-52 and the Mi-28N modern combat helicopters are widely used during the special operation to engage enemy's tanks, armored vehicles and manpower, to conduct aerial reconnaissance and to ensure security of the take-offs and landings of the fixed-wing aircraft at the Humaymim airbase.

According to Makushev, the helicopters have been used in pairs by day and by night in visual and harsh meteorological conditions utilizing night vision goggles: "The effective combat

usage of the Ataka-1 and the Vikhr-1 anti-tank guided missiles and the Igla guided missiles was provided."

Makushev also pointed out that the helicopter's onboard systems use digital maps and provide the automated input of mission tasks:

The signal suite supports secure communication, including during the interaction with a forward air controller. The onboard protection system integrated into the Ka-52 and the Mi-28N ensures radar- and laser-homing warning and effective countermeasures against man-portable air defense systems fitted with infrared seekers.

Russia's military is now receiving the 'Alligators' at an accelerated pace. According to deputy defense minister Yuri Borisov, the Russian MoD will be in receipt of 14 Ka-52 helicopters this year, while 50 rotary-wing aircraft of this type will have been delivered by 2020. The Ka-52 is also highly sought across the global market.

Ka-52K

To meet international demand, the holding is developing a marinized modification of the rotary-wing aircraft designated the Ka-52K, where K stands for Shipborne, Korebelny. The



Ka-52 is also highly sought across the global market



Ka-52K is a ship-based version of the Ka-52 Alligator reconnaissance and combat helicopter, which is under production and destined for Russia's armed forces. Designed for overseas operations, the French-built Mistral-class amphibious assault ships and helicopter are also being manufactured by JSC Russian Helicopters.

The helicopter can be deployed in combat, target acquisition and designation, maritime patrol and convoy escort missions. The first Ka-52K prototype made its maiden flight in March 2015 and was displayed at International Maritime Defence Show (IMDS-2015) in July that same year. Russia has now signed an agreement with Egypt for the delivery of 46 Ka-52K ship-based attack helicopters.

The Ka-52K is designed to accomplish a wide range of round-the-clock naval missions both day and night, including patrolling, fire support of troops during landing and counter-sabotage

operations both on the frontline and in tactical depth. Compared with the basic Ka-52, the Ka-52K features a number of differences. For instance, the marinized helicopter has received shortened folding stub-wings that are reinforced to carry heavy armaments. The ability to be stored in confined spaces is critical for a naval rotary-wing platform. The main rotor of the Ka-52K is therefore fitted with folding blades, allowing the helicopter to be stored under the deck of ships as well as in hangars. The dimensions of the Ka-52K have also been made more compact. The anti-corrosive coating protects the helicopter against the harsh climatic conditions of the sea. The Ka-52K has received a centralized fueling system, an upgraded air cooling unit and a radio-technical system of short-range navigation. According to the Director General of the Russian Helicopters, Andrei Boginsky: This rotary-wing aircraft is being developed in accordance with

the requirements of Russia's MoD. The usage of the helicopter not only by the 'Admiral Kuznetsov' heavy aircraft-carrying cruiser, but also by other ships modified for single and group basing of helicopters is being considered. Moreover, the military has made a decision to base the Ka-52K on the indigenous advanced landing helicopter docks.

The serial production of the Ka-52K is anticipated for 2020, with four prototypes of the helicopter currently being tested. The helicopter is believed to be in receipt of new weapons; for instance, the Kh-38MEh guided missiles and the Kh-35UEh extended range anti-ship missiles (both developed by the Tactical Missiles Corporation, KTRV). In summary, Russian Helicopters Holding is set to continue the development of the Ka-52 program, integrating the latest developments in the areas of weapons and electronics into the 'Alligator'.

BARIJ Dynamics بـالـج داينامكس

Emirates Defense Industries Company (EDIC) recently announced at the Dubai Airshow that it has renamed its joint venture company Tawazun Dynamics to Barij Dynamics as part of the continuous process of transforming the defence industry landscape in the UAE into an integrated group of companies to better serve customers.

Barij Dynamics, previously known as Tawazun Dynamics was established in 2012 between Tawazun Holding and the Dynamics division of Denel, owned by the Government of South Africa and South Africa's largest defense manufacturer as a joint venture to build the Middle East region's first facility for the development, manufacture, assembly and integration of precision-guided systems for conventional air munitions.

Barij Dynamics is the Middle East's first facility for the development, manufacture, assembly and integration of precision-guided systems for conventional air munitions.

The company manufactures the Al-Tariq range, a family of strap-on bomb kit systems, used on MK81, and MK82 bombs. Al-Tariq provides the user with all-weather, day or night operational capabilities, utilising GPS/INS guidance. The system allows for increased targeting accuracy by using an Imaging Infrared (IIR) with complete Automatic Target Recognition (ATR) capability, or a semi-active laser seeker.

At the airshow, Barij Dynamics also

EDIC makes key announcements at Dubai Airshow



(R-L) Ammar Al Ozaibi, GAL's Chief Executive Officer with Rahul Shah, Senior Vice President- Strategic Growth and Business Development, AAR

showcased its latest product, the P3 precision guided munition. The P3 is a low cost, precision guided kit designed to improve the range and accuracy of the standard Mk-81 and Mk-82 aerial bombs. The kit consists of either an INS/GNSS guidance option or an INS/GNSS SAL seeker version. It has been integrated on a number of platforms and serial production has already commenced in the company's facility in Abu Dhabi.

GAL and AAR Corp

Furthermore, EDIC's subsidiary Global Aerospace Logistics, LLC (GAL) and AAR Corp (AAR), an international aviation aftermarket service provider, have signed a MoU to develop enhanced support services for the UAE. Under this agreement, AAR will provide working knowledge of PBL programmes to reduce overall risk and to greatly enhance the ability to increase operations tempo with fully mission capable aircraft at an overall cost savings, enhancing both companies' ability to

support the UAE Armed Forces.

"GAL is extremely pleased to work with AAR as a flexible partner with a history of success," said Ammar Al Ozaibi, GAL's Chief Executive Officer. "GAL believes very strongly in leveraging the experience of global leaders, such as AAR, to build capabilities in the distribution, repairs, and support of military operators. AAR brings a level of sophistication and experience to GAL that reduces both risks and costs for the end user. Working together will allow GAL to use AAR's extensive experience and as a result, this will shorten GAL's initial start-up time, which will undoubtedly prove invaluable to GAL, EDIC and the Joint Aviation Command."

Al Ozaibi added that the extended relationship ensures GAL and AAR will meet and exceed operational needs of the UAE Joint Aviation Command, ensuring efficient and effective fleet maintenance of the entire fleet of helicopters and fixed wing aircraft operated in the UAE.



Multirole Mastery with the Aermacchi M-346FA

The FA (Fighter Attack) is an enhanced version of the advanced Aermacchi M-346 twin-engine trainer, designed and manufactured by Leonardo's Aircraft Division. It is an evolution of the dual role FT (Fighter Trainer), tailored to meeting Air Forces' growing and diversified operational requirements. The FA is an extremely effective and low-cost tactical solution for the modern battlefield. It offers air forces the greatest level of performance and efficiency with all the existing M-346's AJT (Advanced Jet Trainer) features. As we

will now see, it includes the advanced and pre-operational training capabilities of the basic version alongside several innovative features.

Realizing operational requirements

In today's operational scenarios, particularly those with a low-medium threat level, modern and expensive 20 or 30 ton class fighter aircraft are often used for missions with high operating costs. Generally, these are Close Air Support (CAS) missions that should be carried out in urban areas and for battlefield air interdiction, homeland security and

air policing, tactical reconnaissance and support for personnel recovery operations in combat areas. Here, the use of low-cost aircraft would be sufficient so long as they are equipped with radar, a state-of-the-art designator pod, modern and technologically advanced self-protection systems, a state-of-the-art data link and a critical air-to-air refuelling capability.

Low-cost tactical solution

The M-346FA was developed as a low-cost multirole master taking its lead from the M-346's AJT advanced train-



M-346's intrinsic peculiarities make it suitable to be an excellent low-cost multirole aircraft

ing version already in service with the Italian, Israeli, Polish and Singapore air forces. In comparison with the previous model, the FA version has several unique features including upgraded avionics and two additional wing tip hardpoints (making seven in total) to arm two air-to-air missiles.

The M-346FA continues to maintain the full dual role capability and entire extremely advanced Integrated Training System. It will be equipped with a DASS (Defensive Aid Sub System) self-defence system, which includes a Radar Warning Receiver and a Chaff and Flare dispenser, as well as a Missile Approach Warning System with six sensors offering comprehensive 360° protection against any missile threat. The aircraft will be able to exchange all tactical data safely in real time, thanks

to a dedicated Tactical Data Link according to the NATO Link 16 or other standards.

Another key onboard attribute will be the pulse-doppler multimode radar GRIFO-346, produced by Leonardo's Airborne & Space Systems Division. This radar is specifically optimised for the M-346FA and originates from the Grifo family. Thus, with over 450 units sold worldwide, the GRIFO-346, represents a significant commercial success. The M-346FA's cost per flying hour is now 80% lower than the heavier and more expensive fighter used for close air support missions.

Leonardo Aircraft Specifications

In order to better understand the M-346's intrinsic peculiarities that make it suitable to be an excellent low-cost multirole aircraft, Nation Shield

spoke to Giacomo Iannelli, Project Test Pilot Trainer of Leonardo's Aircraft Division: "First of all, the low altitude speed is very high even with external loads, while other supersonic aircraft have a better performance in a clean configuration, but get considerably worse when loads are added.

The manoeuvrability is excellent thanks also to the 4-channel digital fly-by-wire flight control system and this allows fast manoeuvring during close air combat. The remarkable specific excess power allows the return to base even with full payload, with one engine inoperative (OEI), at an adequate altitude to keep out of the more common range missile threat, guaranteeing a notable survivability capability. The so-called Carefree Handling makes sure that the pilots can

focus on the mission, without having to worry about risking to exit the expected flight envelope.

The twin-engine configuration assures a high battlefield survivability and, at the same time, the fuel consumption is kept low thanks to the engine's efficiency, definitely providing a good range, that can be further extended by air refuelling, a capability which is already operational within Italian Air Force. The Auxiliary Power Unit (APU) assures completely autonomous flight operations.

Furthermore, the visibility is excellent as the M-346 was born as a trainer, it is a two-seater aircraft and this is very important during low altitude flight. The back-seater pilot can also be act as a Weapons System Operator or a more specialised FAC-A (Forward Air Controller – Airborne) role”.

Here it is important to mention the state of the art Human-Machine Interface which includes advanced systems to provide data to the pilots, including Multi-Function Display (MFD), Head Up Display (HUD), Helmet Mounted Display (HMD) and HOTAS (Hands-on Throttle and Stick) type commands. This capability means that pilots can control all the aircraft's systems without having to take their hands off the thrust lever or the control bar.

Giacomo Iannelli concluded that “The M-346FA keeps all the advanced

trainer's features, such as the on-board Embedded Tactical Training System (ETTS) that simulates in a Live Virtual Constructive (LVC) environment all the systems and stores it will have to operate. This is a significant advantage for the pilots who are able to pass seamlessly from training to real missions without having to change the aircraft.” The FA's new operational capabilities thus supplement those that the M-346 is already able to offer. An “Aggressor” and “Companion Trainer” is now available for Combat Ready pilot training, as the Israeli and Italian air forces have been able to demonstrate successfully.

Multi-mission functionality

We can thus list the benefits of multiple mission types, bearing mind that the M-346's transportable external stores amounts to over 2 tons in addition to the 138 gallons in each auxiliary fuel tank.

Strike missions

For strike missions, a series of both guided and unguided 500 lb class munitions can be integrated, including the latest generation of precision munitions capable of keeping the collateral damage to a minimum and increasing the number of targets hit simultaneously. The most modern state-of-the-art laser designator pods are now available for target designation.

Homeland security missions

While flying at low altitude in Slow

Movers Intercept Utilization for homeland security and air policing mission, the M-346FA has the benefit of identifying potential threats of even a terrorist nature. As with small aircraft or ultralight helicopters, the M-346FA can be equipped with short range infrared guided air-to-air missiles and a centreline pod that houses a cannon or, upon customer request, an ECM electronic warfare jamming pod.

Search-and-Rescue Support

Suitably configured with a mix of air-to-surface and air-to-air stores, the M-346FA can carry out support missions for complex Personnel Recovery/Combat Search and Rescue operations. These include problem-free recovery of personnel, even on hostile ground, along with search-and-rescue for flight crews shot down in enemy territory.

Reconnaissance missions

Finally, in the case of reconnaissance missions, the M-346FA has been equipped with a dedicated pod already used effectively by various air forces (including Italy's AF) for tactical reconnaissance missions within complex operational theatres in Afghanistan and Iraq. It has also provided prompt and effective support of civil protection in the event of natural disasters, such as the earthquake that hit the centre of Italy in August 2016.

The back-seater pilot can also act as a Weapons System Operator or a more specialised FAC-A





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V-22 Osprey One Aircraft, Multiple Missions

Recently, Boeing and Bell Helicopter Textron Inc. company announced that the Bell Boeing V-22 fleet of tiltrotor aircraft, including both CV-22 and MV-22 variants, has surpassed the 400,000 flight hour milestone.

The V-22 Osprey has been continuously deployed since entering service in 2007 with the United States Marine Corps (USMC) and the Air Force Special Operations Command (AFSOC) in 2009. The aircraft has seen extensive action in Afghanistan as part of Operation Enduring Freedom, in Iraq as part of Operation Iraqi Freedom, and as part of a U.S. Central Command (USCENTCOM) Special Purpose Marine Air Ground Task Force (SPMAGTF) supporting a long-range rapid reaction/crisis response force.

"As the number of flight hours indicate, the V-22 Osprey is a mature platform that projects a versatile mission capability for military operations as well as

humanitarian relief efforts," said U.S. Marine Corps Col. Matthew Kelly, V-22 Joint Program manager.

MV-22B Osprey are operating around the globe today, transforming the way the USMC conducts assault support, humanitarian relief operations and the broad spectrum of SPMAGTF missions. The Bell Boeing V-22 is continuing to achieve outstanding mission success, performing missions only capable with tiltrotor technology. Since entering service, the V-22 has been deployed in numerous missions around the world, including casualty evacuation, tactical recovery of aircraft and personnel, humanitarian assistance/disaster relief, resupply, VIP transport, and theater security cooperation.

The Bell Boeing V-22 Osprey is a joint-service, multirole combat aircraft that uses tiltrotor technology to combine the vertical performance of a helicopter with the speed and range of a fixed-

wing aircraft. With its nacelles and rotors in vertical position, it can take off, land and hover like a helicopter. Once airborne, its nacelles can be rotated to transition the aircraft to a turboprop airplane capable of high-speed, high-altitude flight.

Next generation lift capability

The Bell Boeing V-22 Osprey is a joint-service, multirole combat aircraft using tiltrotor technology to combine the vertical performance of a helicopter with the speed and range of a fixed-wing aircraft. With its nacelles and rotors in vertical position, it can take off, land and hover like a helicopter. However, once airborne, its nacelles can be rotated to transition the aircraft to a turboprop airplane capable of high-speed, high-altitude flight.

It combines the vertical lift capability of a helicopter with the speed, range, endurance and manoeuvrability of an airplane. It gives warfighters unmatched

flexibility and operational reach, while enabling greater mission effectiveness and the execution of missions previously thought impossible.

The V-22 has been battle-tested in both combat and contingency operations throughout the world. Commanders now demand the V-22 when they need to carry out the toughest missions in the most challenging operating environments. The V-22's multi-mission capabilities have therefore reshaped what is possible, both on and off the battlefield.

Here we can profile the Osprey's key features:

Demonstrated Carrier and Carrier Airwing Compatibility

V-22 provides fixed-wing performance and expanded flight deck delivery options. It also features a generous wind envelope and catapult/arresting gear independence. What's more, a modern design and on-board monitoring systems permit a 30-40 percent reduction on deployed maintainer-to-aircraft compared to the legacy COD.

V-22 Asymmetric Advantage

The use of a V-22 and rotary-wing asset combination gives logistics planners an expanded CONOP resupply. This advantage guarantees a fully integrated medium-to-heavy lift delivery capability, which is readily adapted to the commander's daily logistics priorities. In short, V-22 revolutionizes at-sea resupply by uniting fixed-wing range and speed with helicopter-like direct delivery to the point of need.

Upgraded and upgradable features

The V-22's future capabilities include a plug-and-play Aerial Refueling kit to support carrier launch and recovery. It also features an innovative, internal strike-fighter engine carry solution to meet long-range Carrier Air Wing logistical needs.

Superior logistic networks

The V-22 uses commercially available logistics optimization software for its logistics networks. Compared to an optimized legacy COD network, this software can demonstrate increased delivery volume and velocity to elimi-

nate the logistics "bottleneck" at the carrier. The V-22 also enjoys 100 percent same-day delivery and more efficient asset utilization. It therefore promises to deliver more to the carrier strike group, with mission cost savings of up to 50 percent and up to 44 percent improved cubic foot throughput.

The VIP V-22 Osprey

The world's first production tiltrotor has the revolutionary capabilities to change the way in which battles are fought and aid is rendered. Now, the Bell Boeing V-22's speed, range and endurance are available for VIP transport missions.

The V-22 VIP concept is a must for heads of state who need to reach their destinations quickly while placing great emphasis on safety, responsiveness, security and luxury. The Osprey can be integrated within a fleet of aircraft and can also transport cargo, staff and an aerial refueling kit, through which the range and possibilities are almost limitless.



The versatile V-22 Osprey is in demand and indispensable among commanders worldwide



Rafale, Falcon, nEURON: The Future of Military Aviation

Military aviation is undoubtedly the most strategic weapon today, both in terms of combat effectiveness and of critical technologies implemented. In modern warfare, air dominance from day one is a must, so that air-to-ground and air-to-sea operations can be conducted safely and efficiently.

The French defence major, Dassault Group offers options in military aviation including Rafale, Mirage, Falcon and nEURON.

Rafale

Rafale, with its "Omnirole" capabilities, is the right answer to the capability ap-

proach selected by an increasing number of governments. It fully complies with the requirement to carry out the widest range of roles with the smallest number of aircraft.

The latest to join the exclusive client list of Dassault Aviation was India which had signed a deal to buy Rafale. India ordered 36 Rafales in 2016, a contract that led to the creation of a joint venture with Reliance Group to manage the offsets provided for by the country's "Make in India" initiative. This company will be a major asset, given the emerging needs of the Indian

armed forces.

New Delhi's decision to acquire the Rafale shows both the loyalty and demanding requirements of Dassault Aviation's military customers, and spotlights the qualities of this aircraft, designed to handle all missions previously assigned to seven different types of aircraft. The Rafale's versatility will be further bolstered by the continued development of the standard F3-R, slated for qualification in mid-2018 and service entry in early 2019. The modernization of the Rafale F1 carrier-borne versions reflects this same ap-



Falcon 900 MPA in flight @ Dassault Aviation

proach.

As of December 31, 2016, 148 Rafales had been delivered in France. They have logged over 200,000 flight-hours to date, including 30,000 in combat: in Afghanistan from 2007 to 2013, in Libya in 2011, Mali since 2013, Iraq since 2014 and Syria since 2015.

Also in September 2017, Dassault Aviation announced that the company and its partners are participating in the comprehensive partnership offer made by the French Authorities to the Belgian Government, by presenting the Rafale for the replacement of the F-16s of the Air Component of the Belgian Defense.

Rafale will enable Belgium to continue to fully play its role as a reliable member of the Atlantic Alliance, while contributing to the security of the European Union.

The Rafale has clearly demonstrated its total NATO interoperability in combat operations. Its procurement and

operational costs are well known and without risks; its design guarantees that Belgium will remain at the cutting edge of technology for the next 40/50 years.

"Already strongly established in Belgium since the end of the 1960s, Dassault Aviation and its partners offer to the economic partners in the three Belgian regions, a medium-and-long-term cooperation strategy that will truly structure the future of the Belgian industry and that will enhance the European defense", said Eric Trapier. Chairman and CEO of Dassault Aviation.

Falcon – Guarding the oceans

The Falcon 2000 maritime reconnaissance aircraft carries out a wide range of missions, including the fight against piracy, trafficking and pollution, monitoring fisheries, search&rescue, intelligence, etc. It offers the best combination of size, payload capacity, speed, endurance and total cost of owner-

ship, and features an active electronically scanned array (AESA) radar.

The Japanese coast guard acquired a third aircraft of this type in 2016.

The French navy has taken delivery of the last of four newly retrofitted Falcon 50 maritime surveillance aircraft. Converted at the Dassault Aviation facility in Bordeaux-Mérignac, these aircraft are now fitted with a radar, an optronic system, a new cockpit and viewing ports.

nEUROn –Tomorrow's air combat management

The success of the European combat drone nEUROn confirms Dassault's ability to manage a joint program, while keeping costs under control and staying on schedule. The French defense procurement agency DGA (Direction générale de l'armement) requested two new series of demonstrations last year: low-altitude test flights near the Charles-de-Gaulle aircraft carrier, and an analysis of how aging

affects stealth characteristics.

Towards 2030, the FCAS (Future Combat Air System), manned or unmanned, will be operating alongside other military aircraft.

Mirage at Dubai Airshow

At the Dubai Airshow in November, 2017, the UAE Armed Forces announced their intention to sign a contract with Dassault Aviation for the upgrade of their Mirage 2000-9 fleet.

A company statement said that Dassault Aviation welcomes this decision and is grateful to the UAE authorities for their trust. For more than 40 years, starting with the Mirage 5, Dassault Aviation has been honoured to support the UAE Air Force & Air Defence (UAE AF & AD) in all their missions to ensure the UAE's sovereignty.

This historical partnership has led to the acquisition of the Mirage 2000 and the commendable Mirage 2000-9 programme.

"Dassault Aviation, which has been a

reliable partner of the UAE for over 40 years, is fully committed to meet the operational requirements and to support the strategic challenges of the UAE AF & AD for the coming decades," said Trappier. At the show, Major General Ishaq Al Baloushi said the government intends to sign a deal with French firms Dassault Aviation and Thales to modernise the fleet.

Holding sway from the skies

The Mirage 2000 evolved into a multirole aircraft with several variants developed. It was later developed into the Mirage 2000N and 2000D strike variants, the improved Mirage 2000-5 and several export variants.

Mirage 2000-5 is available as a single-seater or two-seater multirole fighter. The aircraft has hands-on throttle and stick (HOTAS) control. Mirage 2000-5 incorporates the Thales VEH 3020 head-up display and five cathode ray tube multifunction advanced pilot systems interface (APSI) displays.

Mirage 2000 has nine hardpoints for carrying weapon system payloads. Air-to-air weapons include the MICA multi-target air-to-air intercept and combat missiles, and the Magic 2 combat missiles. Mirage 2000 is also equipped to carry a range of air-to-surface missiles and weapons including laser-guided bombs.

MBDA was awarded a contract in October 2003 to integrate the ASMPA medium-range air-to-ground missile on the French Air Force's new Mirage 2000NK3 aircraft. ASMPA has a tactical nuclear warhead and replaces the ASMP missile, which has been in service on the Mirage 2000N since 1988.

The aircraft is equipped with a self-protection suite installed internally. Mirage 2000-5 carries the ICMS MK2 automated integrated countermeasures system from Thales. F-16s and Dassault Mirages form the backbone of the UAE Air Force fighter capabilities.



nEUROn and Rafale M in flight over the aircraft carrier@Dassault Aviation-Anthony Pecchi

Strategic Perspectives



By: Dr. John R. Ballard
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Implementing strategies for international solutions is invariably complex – sometimes it even seems impossible. Even when all national goals are clear, the ability to coordinate multinational efforts to gain success at the strategic level remains a challenging task for leaders. The actions taken in response to recent North Korean missile developments can provide useful lessons for strategists, even when facing seemingly intractable problems.

Over the past year North Korea has conducted tests demonstrating its capability to launch ballistic missiles. These actions demonstrated that North Korea's systems were developing faster than had been assessed. Such actions, coupled with regular U.S.–South Korea military exercises, threats by the new American President, and the volatile personality of North Korean leader Kim Jong-Un, all raised tensions in the region to unsustainable levels.

“Implementing Strategy: The Seemingly Intractable North Korean Challenge”

On July 4, North Korea conducted a missile test into the nearby Sea of Japan. On August 29, it launched another missile over Japan into the Pacific Ocean. On September 3, the U.S. reported an earthquake near North Korea's nuclear test site, which North Korea later claimed was a hydrogen bomb capable of being mounted on a missile. Then, on September 15, another missile was fired over Japan, traveling the furthest to date. In response, on September 18, President Trump and Chinese President Xi committed to “maximizing pressure on North Korea through vigorous enforcement” of UN Security Council resolutions; North Korea said those sanctions would only accelerate its nuclear program.

A Korean War armistice has existed since 1953; the North Korean regime controls all domestic information; Seoul's 9.9 million inhabitants are extremely close to the potential conflict zone; and, neither UN sanctions nor Chinese leverage have contained North Korea's weapons development to date. The United States has deployed THAAD in South Korea and has 30,000 troops and three aircraft carriers in the area. Economic power has had little effect on the regime and has hurt the North Korean people, and military power only seems to escalate the crisis. Informational influence and financial constraints on North Korea have also had minimal effect. Diplo-

macy seems the best answer, but has only worked in North Korea's favor in the past.

Everyone wants peace. South Korea is a friend and any crisis in that region will affect the UAE economy and pose risks elsewhere. Any conflict would be disastrous, and could bring about a global recession, so other viable options are required. North Korean regime change is impractical without a better successor, so new ideas are needed. Creative UN-led dissuasion must occur; the UAE, India, the EU and/or other concerned states could cooperate to bring more positive UN action in Korea, avoiding war. Charismatic international leadership could be influential through mediation, where both sides should retain pride and benefit from stability. Managing international crises can be challenging but can also increase the influence of the UAE when our nation does act in its national interests. Determining what is worthwhile in such crises remains an important skill for all strategic leaders, but persistence is also required.



GRIFFON ©Nexter-Renault Trucks Defense-Thales



NERVA ©Nexter Robotics

Nexter makes a strong presence

Nexter, part of the KNDS Group and the only French land defence system manufacturer and integrator displayed a range of its latest products and services at the 20th government internal security exhibition and also at the highly regarded Milipol exhibition. Nexter uses its know-how and its capacity to innovate to propose solutions that meet the specific requirements of both French and international security forces.

TITUS®

The TITUS®, a multi-purpose 6x6 vehicle, the spearhead of its range in which all of the Nexter Group's expertise in the security domain is concentrated, was displayed in its Internal Security version. Capable of carrying up to 13 equipped personnel, the TITUS® can fulfil a broad spectrum of missions; from counter-terrorism to counter-insurgency, including peace-keeping and frontier surveillance thanks, in particular, to its ballistic and NRBC protection as well as protection against improvised explosive devices (EEL).

Nexter works in close collaboration with the RAID in order to adapt the TITUS® to this elite force's requirements,

both for use as an intervention vehicle and as a command post vehicle. Currently undergoing evaluation by the RAID, the TITUS® has already been deployed during major events, such as the securing of the COP 21 conference, and is regularly used in anti-terrorist operations and against organized crime.

FINDMP®

Nexter also presented the FINDMP® mission preparation tool, coupled with an Immersive Building Reconstruction Tool (ORBI). Its aim is to assist Intervention Forces in placing under siege a building reconstructed in 3D based on 2D photos or intelligence. Thanks to the immersive visualization software designed by Nexter Training, Intervention Forces can study how to get through doors, where to position friendly snipers and how to prepare their mission to maximum effect.

Nexter Robotics

Nexter Robotics exhibited Nerva® robot range, NBC-Sys highlighted know-how in terms of handling major NRBC risks; Nexter Electronics presented future energy solutions via TEYA and Optsys demonstrated the effectiveness of its

protected vision systems via the Viper Security System. Nexter is a long-standing investor in the Middle East.

Decade after decade, Nexter has proven its dedication to providing the best of its technology, products and services to armed forces in the Middle East. Since the Leclerc MBT contract was signed in 1993, Nexter has opened 3 offices in the region, and has established a relationship of trust with its customers on the ground. With its strong presence at the 2017 IDEX trade event and also Milipol 2017, Nexter is reasserting its position as one of the leading suppliers of defence systems in the Middle East.

Nexter also provides systems and protection solutions in the field of homeland security.

Nexter Mission

Nexter mission is to meet the needs of armies all around the world, through the design, development and production of high-end defence systems, artillery and armored vehicles to land forces. Its expertise also covers the supply of systems and ammunition to air forces and navies.

Nexter's revenue in 2016 was 771€



Nexter develops and produces a large range of ammunition from 20mm to 155mm



TITUS®, is a multi-purpose 6x6 vehicle

at homeland security expos

billion, of which 19 percent was reinvested in Research & Development. The Group has 3,320 employees on 10 sites in France, two sites in Italy (Simel Difesa) and one site in Belgium (Mecar).

Projects and Services

The Group continues to pursue its policy of international expansion, with 60 percent of orders coming from export markets in 2016. In France, Nexter is fully engaged in meeting the aims of the SCORPION Program, through the renovation of the LECLERC tank and the development, as part of a consortium with Renault Trucks Defense and Thales, of the future GRIFFON and JAGUAR vehicles.

A land defence systems integrator, Nexter is the manufacturer of a long line of vehicles including the Leclerc battle tank, the VBCI armored infantry fighting vehicle, the multi-use TITUS® 6x6 vehicle and the CAESAR® self-propelled howitzer. Nexter covers the entire life-cycle of its products and offers a wide range of support services to its customers, from design, through maintenance in operational condition, to decommissioning. Nexter's service

offering also covers training, with a catalogue of multi-modal options developed by the Nexter Training subsidiary.

In addition, Nexter offers expertise in a full range of key equipment and solutions, from land defence systems (T40 and ARX® land turret families), naval (NARWHAL®) and aviation (THL30/20) applications through to vetronics and C2 systems (FINDERS).

Ammunition Business Unit, incorporating Nexter Munitions, Mecar and Simel Difesa, is the 3rd largest European group in its sector. It develops and produces a large range of ammunition from 20mm to 155mm, dedicated to land (artillery, infantry, armored vehicles and tanks) naval and air-land defence systems.

Lastly, Nexter draws on a number of equipment manufacturing subsidiaries such as Nexter Robotics, Nexter Mechanics, Nexter Electronics, Optsys, NBC-Sys and Euro-Shelter. Their engineering expertise allows them to supply combat-proven sub-systems and technologies to other parts of the Nexter group and to external clients in areas such as robotics, electronics,

optics, mechanics, shelters and NRBC protection.

Nexter has also invested in building partnerships, most notably as part of CTA International, a joint venture with BAE Systems, which sells the 40 CTAS cannon.

Nexter offers expertise in a full range of key equipment and solutions, from land defence systems, naval and aviation applications, vetronics and C2 systems



Providing Strong Partnership to Public and Private Security

On November 21-24, Rheinmetall presented a selection of its extensive array of law enforcement and security products at the MILIPOL international security show in Paris.

Rheinmetall AG is a publicly traded, globally operating high-tech enterprise with headquarters in Düsseldorf and two operational components:

Rheinmetall Defence and Rheinmetall Automotive specializing in the Public Security domain.

Survivor-R special-ops vehicle

There is no better example of Rheinmetall's commitment to the twin imperatives of security and mobility, innovation and cost efficiency than its new special operations Survivor R armoured vehicle.

Developed in cooperation with special vehicle maker Achleitner, the Survivor R combines tried-and-tested automotive technology from major production runs with the latest force protection concepts from Rheinmetall. The Survivor R is fitted with a steel armour cab based on a high-performance 4 x 4



Survivor R Armoured Vehicle

add-on protection elements which can be modified individually and discreetly to meet evolving threat scenarios. As standard equipment, the Survivor also features a ventilation system for filtering out nuclear, biological and chemical agents.

Although the Survivor R is extremely well protected, the external appearance of its law enforcement version is specifically designed to provide a de-escalating, non-military impression. Well-lit and ergonomically designed, the interior is spacious enough to seat up to eleven personnel with personal equipment, as well as extensive C4I and communications equipment.

Versatile weaponry maintenance

For the first time ever, Rheinmetall has showcased the Survivor R with an integrated Qimek weapon station. Its appearance at MILIPOL 2017 demonstrated how this versatile vehicle can

now be equipped with remotely operated weapon stations.

The Survivor R is also a cost-effective, easy-to-maintain vehicle platform with low lifecycle costs and high-level operational readiness. Rheinmetall MAN's global service network for maintenance and repairs ensures that systematic use of off-the-shelf civilian parts and serially produced military components makes the vehicle a reliable, affordable option.

Special effects technology

Rheinmetall offers a comprehensive array of pyrotechnic products suitable for SWAT team-type operations. Extremely safe to handle, highly precise and very reliable, the Group's portfolio of multi-bang grenades and improved-performance flash-bang grenades with bottom-top venting (BTV) technology offers the perfect solution. Rheinmetall has developed a wide as-

MAN truck chassis capable of reaching speeds of over 100 km/h.

In Germany, the state-level police forces of Berlin and Saxony recognize that the Survivor is exceptionally well-suited to police special operations and have already opted to equip their SWAT teams with the vehicle.

The armoured monocoque cab has



LowProfile laser module provides the user with tactical flexibility

sortment of flares both for signalling and illuminating the area of operations at night. The handheld Mithras has ranges of 300, 600 and 1,000 metres, with versions available for the visible and infrared sector.

40mm munitions family

Rheinmetall's extensive portfolio of 40mm x 46 products covers multiple operational scenarios, ranging from distraction rounds and marking charges to non-lethal impulse ammunition.

The 40 mm munitions family provides a highly effective special solutions for methods of entry, or MOE. Moreover, as a top maker of military systems and equipment, Rheinmetall offers a wide variety of relevant weapon concepts, including the RS40 grenade launcher, operating as a build-on or standalone system.

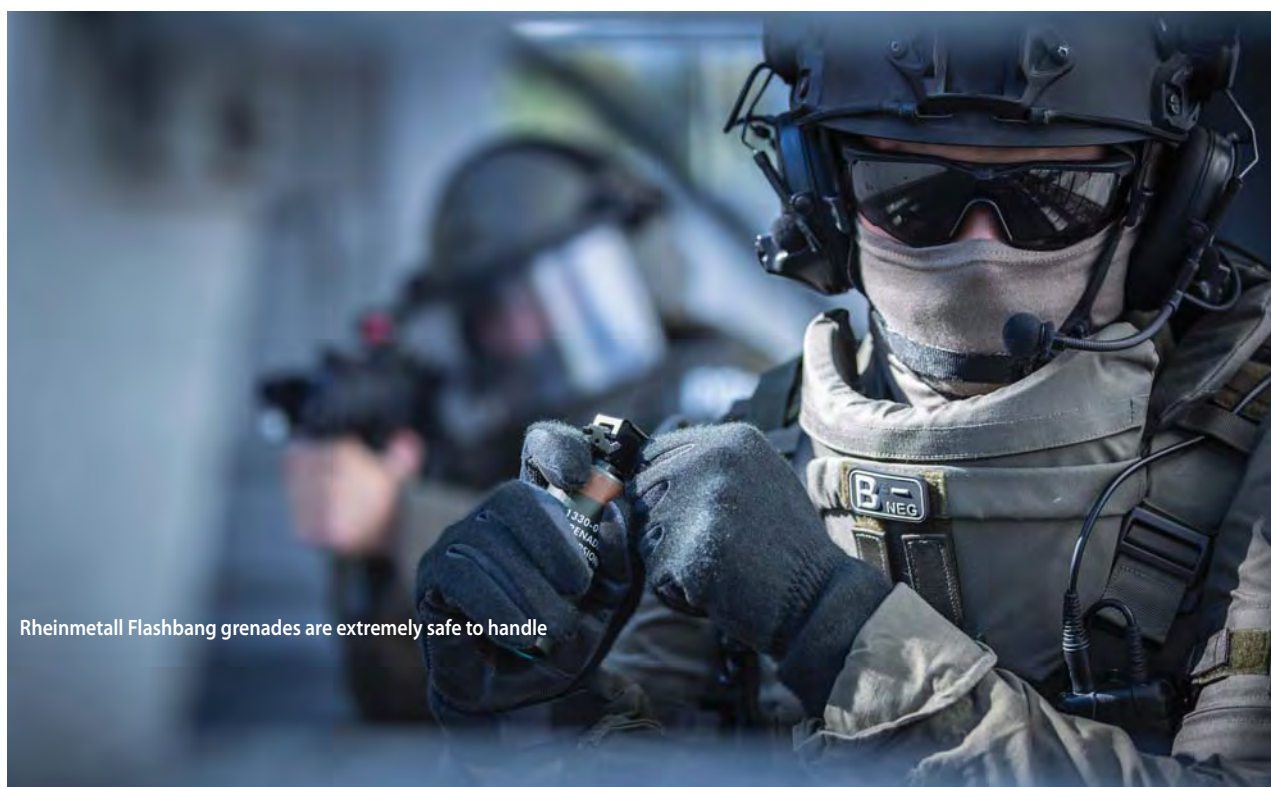
The Survivor R also offers a Magazine-Fed Grenade Launcher, or MFGL, which features integrated hydraulic

shock absorption. Overall, the Group's fire control and aiming devices make Rheinmetall a one-stop shop for 40 mm system technology.

Laser light modules

Rheinmetall has recently added two more modular components to its "VarioRay" family of laser light modules. Despite their extremely small dimensions, the VarioRay LowProfile laser module provides the user with even greater tactical flexibility, alongside the separate "Lumenator" weapon lamp with 500-lumen illumination power.

These new products are key components to amplify the operational effectiveness of modern small arms. Visitors to the Rheinmetall stand at MILIPOL 2017 also learnt about other members of the VarioRay family, such as the Group's MultiRay MR 500 and MR 800 fire control aiming devices. The TAC-Ray 1500 sniper was also on display, notable for its build-on module with integrated ballistic computer.



Rheinmetall Flashbang grenades are extremely safe to handle

JIM Compact infrared binoculars continue to attract interest

Features

- Eye safe laser rangefinder: > 12 km
- DMC, inclinometers & embedded GPS
- Laser Pointer
- Image stabilization
- Continuous eZoom x1-x4
- Multi Mode Image Fusion



The JIM Compact multifunction infrared binoculars made by Safran Electronics & Defense were unveiled at the Eurosatory 2016, and have now been chosen by seven NATO countries. It has become the binocular of choice thanks to its lightweight, multifunctional, long-range system that provides operators with top-end situational awareness and advanced connectivity in the battlefield.

These latest-generation binoculars are recognised as one of the best solutions for special forces, since they meet the full range of ISTAR missions: Intelligence, Surveillance, Target Acquisition & Reconnaissance.

JIM Compact features very light weight (less than two kilos, including the battery), long range and advanced battlefield connectivity, to meet users' most demanding requirements, especially size, weight and power (SWaP), as well as runtime. Because of its intuitive ergonomic design, low-light sensor, cooled infrared and daytime sensors already used on the original JIM LR long-range binoculars, and pointer and laser designator displays (See-Spot), JIM Compact delivers one of the best performance/weight ratio on the market.

The binoculars capitalise on the successful JIM family of multifunction infrared binoculars, nearly 10,000 of which are already in service or on order in almost 40 countries.

Safran has integrated new functionalities such as See-Spot capability, positive identification in Low Light, photo and video streaming and recording.

For these reasons, JIM Compact offers the best performance-to-weight ratio of any device in its class - considerably increasing combat effectiveness in all environments.

The portable optonics systems developed by Safran and its Swiss subsidiary, Vectronix AG, are designed for combat missions for armed forces, in particular for the infantry and special forces. They allow both overt and infrared surveillance, search, aim, identification, and target designation. Modular and interoperable, the binoculars with multiple functions (JIM, MOSKITO, etc.), such as weapon sights (SWORD, NITESPOT, etc.) have built-in high-tech devices (sensors, GPS, etc.). Designed to be interconnected with telecommunications networks, this equipment gives the user the full benefit of an easy to use man-machine interface, perfectly adapted for use on all field operations.

Safran Electronics & Defense is one of the world's leaders in optonics, avionics, electronics and critical software for both civil and defense applications. The company's products are deployed worldwide on more than 500 ships, 7,000 armoured vehicles and 10,000 aircraft.



Intersec Celebrates 20 Years of Ongoing Success

Dubai is preparing for the world's largest security, safety and fire protection trade fair to celebrate two decades of remarkable success in January 2018.

Intersec's 20th anniversary edition will feature more than 1,300 exhibitors from 58 countries, with over 31,000 visitors from 128 countries seeking the latest solutions across seven show sections: Commercial Security, Fire & Rescue, Safety & Health, Homeland Security & Policing, Perimeter & Physical Security, Cyber Security and Smart Home & Building Automation. Intersec 2018 is being held under the patronage of His Highness Sheikh Mansoor bin Mohammed bin Rashid Al Maktoum and supported by the Dubai Police and Dubai Civil Defence, the Dubai Police Academy and the Dubai Municipality. Occupying 60,000 sqm across 13 halls of the Dubai International Convention and Exhibition Centre with 10 percent extra space, Intersec 2018 has added a new Drones Pavilion and indoor Drone Zone. Meanwhile, a Wearable

Security Pavilion will put the spotlight on advanced textiles, including head-up displays, body cameras, embedded sensors and exo-skeleton communications.

The world's largest security providers

The three-day event, which takes place from 21-23 January 2018, features 19 of the world's top 20 security solutions providers. NAFFCO is one of 12 original exhibitors from the inaugural Intersec 1999, with the UAE-based company now established as one of the world's leading suppliers of life and fire safety solutions in a global network spanning over 100 countries. Ahmed Pauwels, CEO of Messe Frankfurt Middle East, said, "Societies, governments and corporates are increasingly pulling out the stops to combat various threats and ensure the security of people, infrastructure, property and information which has led to a

resultant surge in demand for the latest safety and security products and solutions.

By continuing to prioritise the showcasing of cutting edge new developments and the latest technologies, Intersec hopes to continue to play a constructive role in making the region a safer and more secure place."

Growth throughout the Middle East

Intersec's impressive global presence coincides with the Middle East's own rapid rise as a significant growth market for homeland and commercial security and fire protection.

According to Frost & Sullivan (F&S), the Middle East homeland security market is estimated to reach US\$ 17.05 billion by 2021, growing at a compound annual growth rate (CAGR) of 15.6 percent from 2015-2021.

The Middle East's commercial security market has also witnessed an upswing,

creating opportunities for suppliers of video surveillance, access control and intrusion detection. Valued at US \$1.93 billion in 2015, the market is expected to grow at a CAGR (2016-2021) of 17 per cent, reaching US \$4.82 billion by 2021. The Middle East fire safety market is expected to be worth US \$4.4 billion by 2021, growing at a CAGR of 12.4 percent from 2016-2021.

Commercial Security

With more than 580 exhibitors, Commercial Security will be the largest exhibition section at Intersec 2018. More than two-thirds of the world's top 50 security solutions players are on board, including Hikvision, Bosch, Dahua, Assa Abloy, Tyco, FLIR, Hanwha Techwin, Axis Communications, Avigilon, Panasonic, Infinova, IDIS and Milestone Systems.

According to Philippe Kubbinga, Regional Director for the Middle East and Africa at Axis Communications:

"Intersec is a very important event for us to showcase the latest advancements across products and solutions, demonstrating our strengths across key verticals and networking with industry professionals."

CP PLUS is a global leader in advanced security and surveillance solutions with big plans for Intersec's 20th anniversary edition. As company director Gaurav Khemka confirms:

"Our association with Intersec has been quite a long one, and it goes without saying that it is one of the best platforms to showcase our technologies and solutions. This time around we'll have quite a few new launches to showcase such as Analog HD solutions in 4MP and 5MP; Indigo and Red IP Solutions powered by Insta Stream, Time & Attendance solutions equipped with Facial Recognition, Wi-Fi, 3G and battery support, PoE Switches and much more."



Intersec 2018 Highlights

- 1,300+ Exhibitors
- 31,000 visitors from 128 Countries expected
- 7 Product Groups
- Specialised Pavilions: Safety Design in Buildings, Smart Home Pavilion, Drone Pavilion, Wearable Security Pavilion and Job & Career Pavilion
- 15 Country Pavilions: Canada, China, Czech Republic, France, Germany, Hong Kong, India, Italy, Korea, Pakistan, Russia, Singapore, Taiwan, UK, USA
- Drone Zone & Live Demonstrations

A comprehensive conference program

Fire & Rescue is the next largest section with 400 exhibitors, including NAFFCO, Fike, Honeywell, Hochiki, Oshkosh and Siemens. Safety & Health and Homeland Security & Policing (both with 100 exhibitors), along with Perimeter & Physical Security, Cyber Security, Smart Home & Building Automation (50 exhibitors each), wrap up the dedicated show sections.

Returning features include the Safety Design in Buildings Pavilion in the Fire & Rescue section and an Outdoor Demonstration Zone of the latest fire rescue applications in action. A comprehensive three-day conference programme will also cover new developments, innovations, legislation and changing paradigms within the Middle East safety and security industry.



C-130J

Super Hercules

Continues to Reach New Heights

First flights, additional variants, new operators and expanded sustainment options are just some of the most recent milestones for Lockheed Martin's C-130J Super Hercules airlifter.

"We're at a fantastic point and place with the C-130J. The Super Herc is a fully established program and we know exactly how it will perform in terms of operability, versatility and maintainability," said Tony Frese, vice president of Business Development for Air Mobility & Maritime Missions at Lockheed Martin.

The first LM-100J – the Super Herc's commercial freighter variant – made its maiden flight in May 2017. Two weeks later, that same LM-100J made

its global debut at the Paris Air Show.

"LM-100J is very well suited for firefighting at night due to the night vision capability," Frese said. "Firefighting is indeed an area it is suited for. Obviously the typical missions you see there are medical, oil spill, search and rescue. In addition, we have several customers in oil and gas, and mining, so it is truly a multi-mission aircraft.

"Earlier certain platforms were modified to be used for firefighting but now particularly in forest services there are safety concerns when platforms are changed. This aircraft is a great fire fighter. But it is not limited to firefighting because the firefighting equipment that we install can be removed

offering flexibility to be used for anything else you may want."

FAA testing has commenced and two LM-100Js are now supporting that effort. Additionally, with FAA concurrence, the first LM-100J was deployed to Puerto Rico in October in support of Hurricane relief efforts.

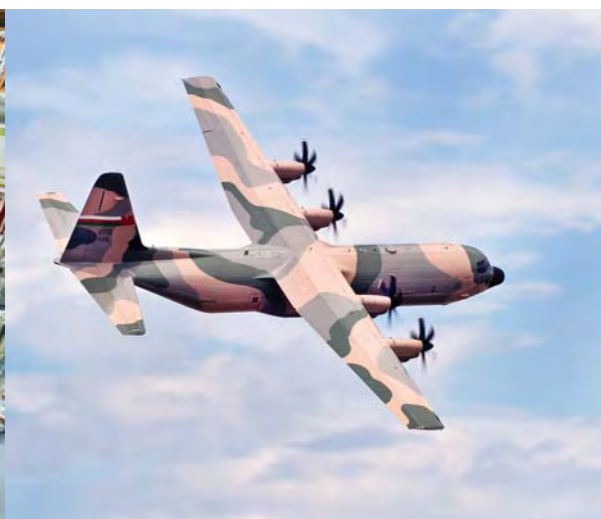
The LM-100J is an updated version of the legacy L-100 Hercules freighter, which is part of many fleets in the Middle East and North Africa (MENA) region, including UAE, Kuwait and the Kingdom of Saudi Arabia.

Also at the Paris Air Show, Lockheed Martin introduced the C-130J-SOF production variant. This configuration is designed for international operators supporting Special Operations Missions, with the capability to be configurable to each operators' requirements.

"The C-130J's design is proven to be exceptional for the tactical mission, but it's also proven to be exceptional in terms of versatility," Frese said. "The Super Herc's airframe is exceedingly adaptable. This adaptability allows us to seamlessly expand the C-130J's capabilities to meet the many requirements facing our military and commercial operators."



Multiple Super Hercs have been delivered to the U.S. Air Force, Marine Corps and Coast Guard through the Multiyear II contract



Lockheed Martin has delivered more than 2,500 C-130s to date

Lockheed Martin continues to deliver C-130Js to customers as well. The Indian Air Force recently received an additional six C-130Js. Multiple Super Hercs have been delivered to the U.S. Air Force, Marine Corps and Coast Guard through the Multiyear II contract with the U.S. Government. A total of 85 aircraft have been ordered through the Multiyear II contract, which include C130J combat delivery aircraft, KC-130J tankers, MC-130J and HC-130J Special Operations and combat rescue tankers.

The Super Hercules team is in the final stages of production on the first C-130J for France's Armée de l'Air. France will receive two C-130Js and two KC-130Js to augment its existing C-130H fleet.

To date, the C-130J is the airlifter of choice for 17 nations, which includes a strong presence in the MENA region. The Kingdom of Saudi Arabia, Oman, Kuwait, Iraq, Qatar and Tunisia are all Super Hercules operators. The aircraft is certified to support 17 different mission requirements and the global fleet has soared passed 1.6 million flight hours.

"There are many benefits to having

a truly global fleet, one of the most notable being interoperability with allies around the world," Frese said. "Interoperability offers expanded training opportunities, fosters maintenance and operational commonalities, and transforms national C-130J fleets into global assets."

As the C-130J is the current production variant of the iconic C-130 Hercules, it is part of wide-reaching global fleet. Lockheed Martin has delivered more than 2,500 C-130s to date, with 68 countries currently operating C-130s. Given its global presence and ongoing use, sustainment is a very important component of the worldwide C-130 fleet.

"As the Original Equipment Manufacturer (OEM), we're driven to provide the best and most comprehensive sustainment option for our operators," Frese said. "One of the major reasons why C-130s are important assets is because of its reliability, which is tied directly to maintenance and sustainment operations."

Lockheed Martin offers an integrated portfolio of sustainment options, to include its most recent offering: Aeronautics Capabilities Solutions™.

Aeronautics Capabilities Solutions™ are post-production enhancements designed to improve the C-130's existing operational capabilities, reduce operating costs and improve availability.

It's certainly been a busy and dynamic year for the C-130J Super Hercules program. But, the Lockheed Martin team isn't resting on the C-130J's current success. Frese said he expects to see continued growth for the Super Hercules portfolio.

"Our customers not only tell us how they need the C-130J to perform for current missions, but what they need it to do for future requirements," Frese said. "We expect that the C-130J will continue to meet and exceed these requirements — and it will do so for many more decades to come."

Patria offers high-tech expertise and competitive solutions

Patria is an international defence, security, and aviation group providing customers with competitive solutions based on strong expertise and collaboration with trusted partners. The company's strength is based on its excellent products complying with NATO standards.

Patria's most significant export products include the armoured modular vehicle, Patria AMV and Patria Nemo mortar system, which have both been selected by international customers, including the UAE Armed Forces.

Insight into Patria AMV and Patria Nemo

Patria AMV, the market leader among 8x8 armoured wheeled vehicles, is its key export product. Seven customer countries, including the Finnish, Polish, and Swedish Defence Forces, have currently contracted the vehicle and it has been fielded in ISAF operations since 2007. AMV products are under continuous development and are fitted with the latest technology. Patria AMV's structural solutions enable high payload capacity, high level of protection and integration of heavy weapon systems.

Patria also produces advanced mortar systems. The core product is Patria Nemo, a 120 mm remote controlled mortar turret, providing indirect and direct fire as well as MRSI (Multiple Rounds Simultaneous Impact) and direct lay capabilities. As a modern and



Patria AMV's structural solutions enable high payload capacity, high level of protection and integration of heavy weapon systems

compact system, Patria Nemo can easily be mounted onto various armoured vehicles, both wheeled (6x6, 8x8) as well as tracked ones. Due to its low weight, Patria Nemo is also adaptable to lightweight, high-speed vessels and can be effectively used for harbour patrolling and protection, coastal guarding and infantry landing operations. Patria Nemo can also be equipped with the Fire Control System – Command Post (FCS-CP) solution, which is designed to support and coordinate indirect fire for one or several Patria Nemo Mortar Units enabling the units to be operated as a group. Patria Nemo gunner-commander training simulator provides a realistic, virtual training environment for all kinds of fire missions that can be performed with Patria Nemo mortar system.

Patria Nemo Container: Introduced to the public for the first time in February 2017, the Nemo Container was the first container solution to mount a large-calibre weapon. While smaller-calibre, container-mounted weapons have been available, no Nemo-like mortar system, capable of both direct and indirect fire, has been on the market until now.

The development of a new type of weapon system was possible thanks to the knowledge and long-term experience of mortar systems at Patria. This container-mounted 120mm Nemo mortar system is also an example of how Patria's product development meets customer needs. During the development process Patria's experts were in touch with the UAE to ensure that the finished product took maxi-

mum account of customer needs.

The key benefit of the Patria Nemo Container is its easy mobility, which is unique to mortar systems of this calibre. It is capable of flexible transfer from one location to another using suitable equipment. It is delivered with everything that a mortar unit needs: protection for the crew, the weapon and space for ammunition.

System integration know-how

Today's defence systems are large entities that are comprised of several subsystems. Patria's solid system integration know-how ensures that the entire system functions faultlessly. Areas of special expertise are intelligence, surveillance and command and control systems, as well as their integration, software and life cycle support. Patria's system integration know-how has been developed for decades to meet the needs of the increasingly complex systems used by customers. Data transfer and its reliability form an important part of defence systems. The company has solid expertise in secure wireless data transfer solutions. The operating environment of modern defence systems is no longer limited to land, sea and air – cyber threats must also be taken into account. This



Patria Nemo Training Simulator

Nemo gunner-commander training simulator provides a realistic, virtual training environment for all kinds of fire missions

serves to enhance the importance of information system and network protection. Patria has actively strengthened its expertise and service and product range in these areas.

Leading provider of aviation support services

With a firm footing in aviation, Patria is one of the leading European providers of aviation life-cycle support services. Current operations focus on the life-cycle support of F-18 Hornet jet fighters, Hawk training jets, and NH90 transport helicopters.

In military pilot training, Patria has achieved excellent results in the elementary pilot training under contract for the Finnish Air Force (phase I – II training for conscripts, cadets and flight instructors).

Patria also operates in the civilian sector specialising in professional pilot training. Patria Pilot Training offers airlines a competence based MPL (Multi-crew Pilot Licence) training programme teaching pilots comprehensive skills to operate Airbus fleet even under the most demanding weather conditions, safely and with the best efficiency. Patria Pilot Training is a leading Flight Training Organisation (FTO) in northern Europe.



Patria Nemo Container



Proxy Wars:

The threat of sectarian militias and their role in Iran's expansionist strategy

The phenomenon of Iran-supported armed sectarian militias has risen to the forefront of recent events. They have proved to be one of the most dangerous military tools employed by Tehran to achieve its objectives in the region, both in terms of expansion, and posing a threat to the security and stability of the countries of the region. In this issue, the Nation Shield sheds light on the sectarian and doctrinal arms of Iran that are launching proxy wars to achieve Iran's expansionist goals and spread chaos and unrest throughout the Arab region.

Sectarian militias and Iran's expansionist strategy

Since the Khomeini revolution of 1979, Iran has invested a great deal of its financial resources in planting loyal

military militias and ideological arms, to use them as key instruments of Iranian military, strategic and doctrinal policy in the region. This interest began with the formation of the Iranian

Revolutionary Guards (IRGC) from the Basij fighters, who participated in the Iraq-Iran war and acquired combat experience. The Iranian Revolutionary Guards later became the largest and

most powerful Iranian militia that is parallel to the Iranian army and intelligence and police forces; they are even better armed than all of them. They control the security, and even economic decision in Iran. Of the IRGC units, the Qods Force, led by Major General Qassem Soleimani, stands out as the most important Iranian arm operating outside the borders. It is responsible for the formation, training and direction of various militias linked to Iran, particularly in Lebanon (Hezbollah), Iraq (Popular Mobilization Militia), Syria (Shiite factions) and Yemen (Houthi group). It is also responsible for the planning of guerrilla warfare and unconventional military movements, including the use of cultural, economic and civilian front organisations to cover its foreign activities.

Iran's success in establishing the Lebanese Hezbollah in the 1980s and employing it politically and militarily made it focused on establishing similar military militias in many countries of the region to use them as tools to carry out its objectives and plans abroad. Iran has exerted efforts to re-produce the experience of Hezbollah in the Arab countries, establish military militias in the neighbouring Islamic countries (Pakistan-Afghanistan), create the so-called 'multi-national militia phenomenon', and form the military militias belonging to it after the example of the Iranian Revolutionary Guard. This has been revealed by the commander of the Revolutionary Guards, Muhammad Ali Jafari, during his meeting with the Chief of Staff of the Pakistani Army, Javid Bajwa, in October 2017, when he recommended the transfer of the experience of the Iranian Basij militia to Pakistan via the 'Zainabion' brigade fighting in Syria. He declared that his forces are ready to cooperate with the Pakistani



Army to clone the experience. The fact is that Iran has been seeking for years to integrate the Shiite militias in their countries of origin to form the nucleus of the Revolutionary Guards in those countries and to establish them as a military arm of Iran in the region.

Motives of the Iranian interest in the formation of sectarian militias

Iran's interest in the formation of military sectarian militias and arms in many countries of the region emanates primarily from several sectarian, political and military considerations:

1 - Political recruitment of these militias: To practice pressure on the governments of the countries in which they exist, as in the case of the Lebanese Hezbollah, or to frustrate any political movements that do not fit in with their interests. Iran instructed the Houthis to thwart the Gulf initiative to find a political solution in Yemen. It provided them with military support until they occupied the capital Sana'a in September 2014. It has recently even incited them to thwart the initiatives led by the UN envoy to Yemen, Ismail Ould Sheikh Ahmed, to find a political solution to the Yemeni crisis.

2 - Military recruitment of these mi-

litias to fight proxy wars: Iran recognises that its entry into direct military confrontation with the countries of the region may cost a lot, so it began in recent years to rely on military militias and local arms in the countries of the region to achieve its military objectives. Through Hezbollah, it is involved in the Syrian conflict and providing support for the regime of Bashar al-Asad. In Yemen, it continues its support to the Houthis financially and militarily, and seeks to convert them to a similar version of Hezbollah on the Saudi border.

3 - Regional expansion in the region:

Iran's awareness of its strength made it think of strategic intervention and expansion in neighbouring countries, emphasising that it can be replicated in other countries, as it considers itself the largest state in the Gulf region. Iranian intentions to intervene and expand in the Arab world manifests itself in the Iranian regime's document known as the 20th Iranian Strategy (2005-2025), or the Twentieth Iranian Plan (Iran: 2025), which is considered the most important national document that formulates the future visions of the Iranian role over twenty



years. It aims to transform Iran into a central nucleus of an internal pluralistic dominance in Southwest Asia.

4. The imposition of Iranian tutelage on the countries of the region:

As confirmed by the Iranian President, Hassan Rouhani, in October 2017, when he said in a televised speech that "in Iraq, Syria, Lebanon, North Africa and the Gulf, no crucial step can be taken without Iran." That was days after the U.S. President Donald Trump, had announced his strategy for Iran.

Iran's attempt to impose guardianship on the countries of the region, especially Lebanon, explains the political crisis triggered by the resignation of Prime Minister Saad Hariri in November 2017. This resignation came in protest against Tehran's continued attempts to control the Lebanese political decision. This was highlighted by Hariri in his statement of the reasons for the resignation: "Wherever Iran settles, it sows sedition, devastation and destruction, as proven by its interferences in the internal affairs of the Arab countries, in Lebanon, Syria, Iraq, Bahrain and Yemen, driven by a deep hatred of the Arab nation and an overwhelming desire to destroy and control it," considering that "it planted discord among the people of one country, encroached on

the authority of the state and established a state within the state."

5 - Confirmation of hegemony and influence:

Iran is present provocatively in various crises and issues of the region, starting from Iraq, through Syria and Lebanon and Yemen, and ending in Qatar. It continues its territorial expansion, moving towards Bab al-Mandab, being present militarily in Eritrea, and maintaining its relations with many African countries. Therefore, it acts in the logic of a Great Power (the Empire), confirming that its security extends to the Red Sea and the Mediterranean and that it controls four Arab capitals (Damascus, Beirut, Sana'a, and Baghdad). This stresses the fact that it has not forgotten that its ancient empire collapsed at the hands of the Arabs 1,400 years ago.

Hezbollah and the Houthis: Iran's most dangerous doctrinal arms

Military militias are increasingly important in Iran's strategy towards the region, where Tehran uses its political influence in its regional neighbourhood. The first model of this strategy was the establishment of Hezbollah in Lebanon. Iran tried to convert the Houthi movement into a Hezbollah version, and put pressure on the Gulf countries, especially Saudi Arabia.

1 - Lebanese Hezbollah: Iran played a key role in establishing the Lebanese Hezbollah and helped the party emerge as a Shiite representative in Lebanon. It provided it with financial and military support to form a Shiite force in the region, according to the view of the Arab region on Iran. As a result, the party owes its full ideological and political allegiance to Iran; it has formed a successful model that tempted Iran to try to replicate it in other Arab countries. Iran has defended the party for years by supporting it with arms and money and training its military forces. For years, Iran has been supporting the party as part of its strategy to intervene in the affairs of Arab states. Iran has therefore strongly criticised the decision of the Arab League, the GCC and the Organisation for Islamic Cooperation in 2016 considering the party a terrorist organisation.

A report by the British-based Global Risk Insights Institute (GRI), issued in November 2017, highlighted the growing influence of the Lebanese Hezbollah and Iran's attempts to replicate it in the Middle East, especially in Yemen, Iraq and Syria. According to the report, Iraq, Syria and Lebanon have become the front line in this increasing tide of Iranian military and economic power. The report notes that Iran has expanded by cloning the Hezbollah militia model within the countries of the region under the pretext of "defending its national security and securing its external borders. The road from Tehran to Beirut is not only open for the transfer of arms and supplies, but also for the transfer of Iranian ideology and influence into the depths of the Arab territories as well."

2 - Houthi Militia: Iran's support for the terrorist Houthi militia comes from a purely profiteering, political and strategic logic. It is true that the Houthis

profess the Shiite doctrine and have historical ties to the Shiite authority in Qom, but Iran sought to employ them in the political struggle in Yemen. The main aim of Iranian intervention in the conflict in Yemen and support for the Houthis is to replicate another model of the Lebanese Hezbollah on the southern borders of Saudi Arabia.

Since Operation Al-Hazem storm, and then Operation Restoring Hope, in Yemen, Iran has been supporting the Houthi terrorist militias, with the aim of prolonging the conflict on the one hand, and thwarting the political solution initiatives on the other. The Iranian intervention in the Yemeni conflict and supporting the Houthi terrorist organisation is the main reason for the failure of the efforts to find a political solution to the Yemeni crisis. Therefore, the Yemeni government renewed in October 2017 its accusation against Iran of using the Houthis to destabilise the region, and complained about the Iranian interventions in its country.

The role of the Houthi terrorist militia in implementing Iran's expansionist strategy

The statements made by several Iranian officials over the past two years reveal that the Houthi terrorist militia is one of the wings used by Iran to strengthen its influence not only in Yemen but also in the region in general, given Yemen's critical geographical location, which guarantees Tehran many advantages. The Iranian presence in Yemen allows it to easily extend its influence to other Arab countries, such as Somalia, Djibouti and Sudan. This has been confirmed clearly since the launch of the operations of Al-Hazm Storm and Restoring Hope in Yemen in 2015, where the Houthis fired several missiles at Saudi territory, the most recent being the ballistic missile that fell Near Riyadh in November 2017. Presi-



dent Donald Trump blamed the Iranian regime for the launch of the missile. The U.S. officials described the repeated missile firing by the Houthis, Hezbollah and Iran Revolutionary Guards as a demonstration of Iran's missile arsenal. This means that the terrorist Houthi militia is a tool of Iran to implement its strategy of interventionism and aggression aimed at destabilising security and stability in the region.

The threat to regional and international security and stability

Sectarian militias associated with Iran, especially the Lebanese Hezbollah and the Houthis in Yemen, constitute the main threat to the security and stabil-

ity of the countries of the region and the world at large. They do not only commit crimes against the defenseless civilians, but also destroy the unity and sovereignty of the countries in which they exist, as they owe full loyalty to Iran, which employs them to implement its strategy in the region.

Conclusion

Iran's threat of expansion is indisputable. The international silence about Iran's practices entices its regime to expand and gain time to carry out its plots and clone North Korea's experience of possessing a missile arsenal that threatens regional and international security.

Counter IEDs: New Technological Approaches to Asymmetrical Warfare



An improvised explosive device (IED) is an unconventional explosive weapon that can take any form and be activated in a variety of ways. IEDs target soldiers and civilians alike, continuing to be the weapon of choice for adversary networks. This phenomenon is likely to continue for decades, either with the IED as the only threat or combined with others within a hybrid complex scenario.

An IED can be hidden anywhere: in animals, planted in roads or strapped

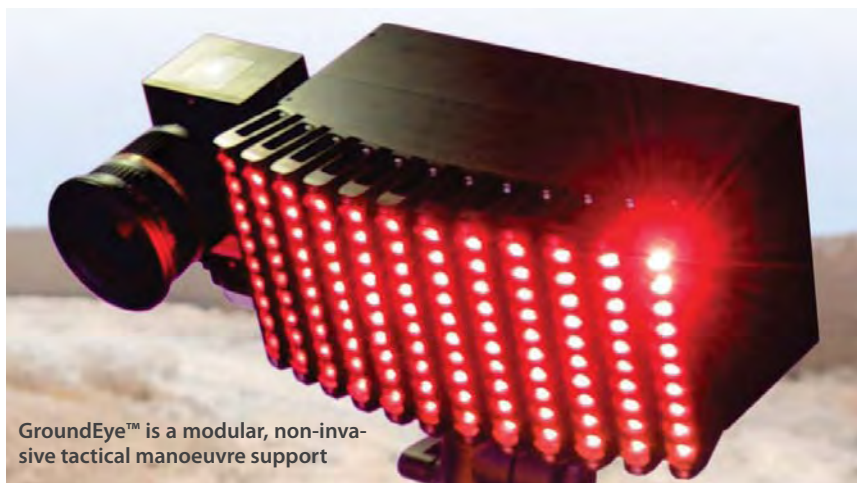
to a person. They can be detonated via cell phones or trip wires, amongst other methods, and can be deployed anywhere, whether in a combat environment or in the middle of a busy city. The design of IEDs and their trigger systems range from the simple to the technologically developed. In general, production costs are low using components such as military ammunition (mines or artillery shells) as well as freely available chemical components that can be combined to make explo-

sives.

Use of IEDs

IEDs have already been used for many decades in civil wars and conflicts worldwide. Nonetheless, the casualties caused by IEDs have a cumulative effect when deployed in a military campaign. Thus, their use is key for modern terrorist and insurrectionary movements in their fight against technologically-superior conventional forces.

The adaptability of IEDs to almost any situation makes them difficult to de-



GroundEye™ is a modular, non-invasive tactical manoeuvre support

detect and stop. Consequently, NATO members and partners have employed several methods to augment their counter-IED capabilities. For example, the Emerging Security Challenges (ESC) Division has put in place several scientific initiatives that focus on developing sensors to detect explosives before they can claim lives.

Counter-IED initiatives thus bring together research, testing and training conducted at the NATO Headquarters in Brussels, the Supreme Allied Command Transformation (SACT) in the U.S. as well as various Centres of Excellence (CoEs) and NATO agencies. These different commands, agencies and divisions have focused on training and developing the technology designed to defeat IEDs. They also share information and bring together non-NATO actors to disrupt the paramilitary networks in question before IEDs kill or injure troops and civilians.

The following presentation covers some of the latest technology used in countering IEDs:

GroundEye IED Detection

Raytheon's GroundEye is a modular, non-invasive tactical manoeuvre support capability. It enable real-time detection, confirmation and diagnosis of Explosive Ordnance (EO) hazards, IEDs,

mines and other buried/concealed threats.

The GroundEye system enables EO specialist high-threat search and disposal operators to view the exact position, orientation, size and shape of all individual components of an emplaced or suspected EO hazard in real-time – this can include an IED or other buried threat.

Designed for day/night operation, GroundEye delivers extremely high-definition, easy-to-interpret imagery. Moreover, it can be operated entirely from a rugged tactical computer, by automatically placing geo-tags on all EO hazard/IED imagery for easy After-Action Review and intelligence collection.

The system can be deployed in three ways:

- * As a portable tripod-mounted capability for a dismounted EO search-and-disposal operator
- * With remote stand-off Confirmation and Diagnosing capability installed upon any small/medium-sized Remote-Controlled Vehicle Unmanned Ground Vehicle
- * In an array-mounted configuration with any type of GPR-array antenna to enable the host system to access enhanced IED detection via full confirma-

tion and diagnosing capability

GroundEye is modular, which means that its fully-open architecture allows for wider usage when coupled with different primary sensors. These sensors include Ground Penetrating Radar (GPR), Non-Linear Junction Detectors (NLJD) or Command Wire (CW) detection systems.

The system's detection capability incorporates all the existing improvised pressure plates (high, medium, low and zero metal content), as well as battery packs and main charges. Therefore, in offering the highest probability of detection with extremely low false alarm rates, the baseline system comprises of:

- * A GroundEye sensor for imaging the target
- * A light source capability which utilizes laser imaging technology to illuminate the area of interest
- * A compact Tactical Acoustic Source
- * A compact tactical display/processor with intuitive tactical user interface
- * A power system appropriate to the user's requirement

Northrop Grumman JCREW Systems

The U.S. Navy has awarded Northrop Grumman Corporation a \$57.7 million contract for full-rate production of the Joint Counter Radio-Controlled Improvised Explosive Device (RCIED) Electronic Warfare (JCREW) Increment One Build One Systems. The contract, awarded by the U.S. Naval Sea Systems Command (NAVSEA), includes options bringing the total value to \$505 million.

On September 28 2017, Northrop Grumman received an additional \$267.6 million for full-rate production in support of the Navy's Expeditionary Warfare Program Office. Northrop Grumman will produce the systems in San Diego and complete the work by August 2022.



Symphony Block 40 is an open architecture design that incorporates cutting edge technology to address new and emerging threats.

JCREW systems are software-programmable jammers providing protection from device-triggered improvised explosive devices (IEDs). Northrop Grumman has developed dismounted, mounted and fixed-site variants to protect war-fighters on foot, vehicles and permanent structures. For instance, the Increment One Build One system uses an open architecture-integrated

design to maximize commonality across the variants, reducing life-cycle costs and providing increased protection against worldwide threats. JCREW systems are fully in use today, providing protection from unmanned airborne systems (UAS) in support of the growing counter-UAS mission. Their demonstrated multi-mission capability thus highlights the programmability and versatility of these advanced electronic warfare systems.

SMART Vehicle Protection

Hensoldt's SMART Jamming Technology monitors communication signals to prevent triggering RCIEDs in its frequency range. The monitors of Hensoldt's VPJ family emit jamming signals to suppress any RCIEDs that might be triggered, so preventing a possible assassination attempt.

The VPJ-R provides a unique combination of conventional (active) and responsive (reactive) jamming. Indiscriminate conventional barrage jamming is performed is most suitable against known and very dense threat bands.

Nonetheless, in utilizing this combina-

tion, SMART jammer systems enlarge the protection bubble significantly in comparison to traditional barrage jammers. Moreover, they avoid all the risks of purely responsive jammers, entailing that SMART jammers not only have the capability to protect the vehicle or person carrying the jammer but can also protect vehicles and persons in front of and behind the jammer system.

The system stays protected by the VPJ while it records the complete observed spectrum in parallel for later analysis and RCIED jamming effectiveness improvement. In addition, time and location information from an internal GPS receiver is recorded, providing the customer with track-based information about emitter power and critical hotspots.

Symphony Block 40

Symphony Block 40 is a technologically-advanced, open-architecture system developed by Lockheed Martin to address new and emerging threats. This system jams select or multiple electronic signals simultaneously to prevent radio-controlled (RC) IEDs from being triggered.

The jammer is a small, vehicle-mounted system with an open architecture design that provides continuous coverage across the entire threat spectrum. It has also updated its capabilities for maximum effectiveness, security and response.

In an unpredictable future, the United States and its allies rely on Symphony to protect war-fighters. Indeed, the Symphony product line is the only counter-IED systems of its kind approved by the U.S. government for foreign military sale to allied, coalition and partner nations with more than 4,500 Block 10/20 variant systems currently supporting U.S. and coalition forces in Iraq, Afghanistan and other



Hensoldt's VPJ family

areas of conflict.

Lockheed Martin provides global electronic warfare solutions through a unique open architecture product platform and open business model. On land, in the air and at sea, Lockheed Martin pioneers advanced technologies to control the electromagnetic spectrum and develop disruptive technologies to outpace adversary threats.

SRC's CREW System

The AN/VLQ-12 Counter Remote-Controlled Improvised Explosive Device (RCIED) Electronic Warfare (CREW) Duke system is a vehicle-mounted, lightweight system. SRC's system neutralises RCIED threats to give U.S. troops a tactical advantage across the full spectrum of operations.

The CREW system uses an advanced software-defined architecture that supports rapid reconfiguration so adapting to a constantly evolving threat environment. SRC engineers have continued to enhance the Duke system with programming upgrades to provide lifesaving protection against the full range of remote-controlled improvised explosive device threats.

This vehicle-mounted, lightweight system thus utilizes state-of-the-art jamming technology to neutralize RCIED threats. Moreover, the Duke system was selected as one of the U.S. Army's Top 10 Greatest Inventions in both 2005 and 2009, while CREW engineers continue to enhance this mission critical system.



Harris EGON Active Reactive counter-IED



CREW Duke system

The CREW Duke was originally designed to minimize size, weight and power while optimizing performance. Moreover, the system is simple to operate and mount into a wide variety of military vehicles. The most widely fielded and reliable system today has thus played a critical role in reducing the number of RCIEDs detonated.

Harris EGON Active Reactive counter-IED

The Harris EGON is a counter-improvised explosive device (IED) system addressing all the current and emerging radio-controlled IED threats. It is about half the size and weight of prior systems, consuming half their power. Moreover, EGON has been operationally deployed since mid-2010 and can be tailored to meet individual mission requirements in less than 15 minutes. The EGON counter-IED system offers proven operational capability. The EGON's small size, weight and module separation enable various installation configurations, while the modular concept is suitable for real-time mission tailoring.

Although the EGON operates in silent mode, it also offers a Remote Visual Alert (RVA) for high noise environments. Moreover, Harris' system can be repaired to board level in the field.

REDWING Force Protection

Under Australia's Department of Defense REDWING programme, Microe and Defence Science and Technology have developed low-cost, robust and lightweight force protection systems for use in austere operating environments. Military and police units can opt for the lightweight, handheld GREENGUM to equip dismounted forces, while the more powerful GREYGUM device is to be fitted to light vehicles. As part of L3's Sensor Systems business segment, Microe is a world leader in high-quality RF design and produc-



Eclipse Counter IED system

tion. It has also developed photonic products for radar and electronic warfare systems where, from its plant in Brisbane, Micreo works with customers to design leading-edge product for extreme environments.

Micreo has installed its products in several front-line military aircraft. Their systems function with minimal operator training and limited logistical support. Thus, a significant quantity of these counter-improvised explosive devices has already been deployed extensively by the Afghanistan National Defence and Security Forces (ANDSF).

Saab's MCMV 80

Today, a wide variety of mine types are deployed in waters all around the world, many highly advanced. There is hence growing demand for enhanced Mine Countermeasures (MCM) Systems of the sort designed by Saab, a long-time supplier to the Royal Swedish Navy.

With decades of experience in designing and building world-class Mine Countermeasure Vessels (MCMVs), Saab supplies the toolbox needed to clear waters and ensure mission success. The Swedish company has proven expertise in the design and production of full composite ships with low,

shockproof signatures, such as the MCMV 47 of the Swedish Landsort and Koster class, as well as the Singaporean Bedok class.

A good track record of a well-integrated toolbox in unmanned vehicles indicates that Saab's MCMV80 can be tailored to a wide range of different missions. Containerized mission modules enable operations to be conducted both in the minefield and outside, adding logistic and reconnaissance operation capabilities to a helicopter flight deck or a UAV hangar.

Two stern ramps and a launching crane enable the launch of ASUV, ASV, ROV and Rib's or interceptors. This flexibility makes the MCMV 80 the perfect platform for a wide range of manned and unmanned operations, with a focus on supporting lean operations. In naval operations, the operator room and the bridge are integrated in one 'superbridge' to facilitate communication, enhancing situational awareness and navigation, as well as optional flotilla command.

The MCMV80 follows Saab's evolutionary design approach, introducing innovative ideas step by step alongside proven designs. This approach enables Saab to provide next generation solu-

tions with low technical risk and without having to recycle obsolete technology or ideas.

Moreover, the MCMV80 can be delivered with various levels of signature management, from lower MCM signatures and less stringent requirements up to the highest shockproof requirements and stealth capabilities. Thus, the increased use of unmanned vehicles, the rise of anti-submarine warfare and more rigorous mission requirements have led to increased demand for the addition of sub-systems to MCMVs.

Remotely Operated Vehicles (ROV) are now being used as a tethered Propelled Variable Depth Sonar (PVDS) to run ahead of the MCMV, complementing the hull-mounted sonar on board. The MCMV will soon be compatible with autonomous, non-tethered vehicles, such as SAROV, while both the MCMV 47 Koster class and MCMV 52 enhanced Koster class can be used in conjunction with ROV systems to help prepare naval crews for any situation.

ECLIPSE's next-gen Jammer

The ECLIPSE counter-IED system developed by Thales is built around a new-generation jammer preventing improvised explosive devices from being detonated by remote control. The moment an IED is detected, ECLIPSE jams radio signals across a wide range of frequencies without interfering with the radio communication systems used by friendly forces. The ECLIPSE system recently reached a key milestone in the BARAGE programme, led by the French Defense Procurement and Technology Agency (DGA), with the successful completion of qualification testing. BARAGE will provide additional protection from radio-controlled IEDs, one of the major threats faced by forces deployed in conflict zones today.

The TRC 6274HJ hybrid active/reactive inhibition system has been commercially designated as Eclipse to provide full band coverage between 20-250 MHz with options up to 6000 MHz and accepting an input voltage range of 18-36V. It offers scalable and modular open architecture enabling the expansion of defensive capabilities by adding new functions to the system as threats evolve. These functions include four independent transmitters, embedded capability with combat net radio system, easy vehicle installation and spectrum sensing capacity.

The BARAGE electronic protection is intended to equip vehicles procured by the DGA as part of the SCORPION program. In addition, BARRAGE is expected provide protection to VBMR Léger 4x4 (Véhicule Blindé Multi-Rôle) multirole light tactical vehicles and VBAE (Véhicule Blindé d'Aide à l'Engagement) fire support vehicles to be purchased by the DGA.

The system will fit the Griffon and

Jaguar 6x6 armoured vehicles being developed by a consortium formed by Nexter Systems, Renault Trucks Defense and Thales. It has formed part of the contract awarded by the DGA in December 2014, alongside the Leclerc main battle tanks modernized by Nexter Systems to the Leclerc Rénové (XLR) standard. Moreover, it may be retained for the planned modernization of Nexter Systems VBCI (Véhicule Blindé de Combat d'Infanterie) 8x8 infantry fighting vehicles.

Now fully qualified for use in hostile environments, ECLIPSE is a compact device ideally suited for integration on board any type of light or armoured vehicle. ECLIPSE jammers are already in operation within the armed forces of several other countries and will equip a number of French Army vehicle types, including the future Griffon and Jaguar vehicles under development for the SCORPION programme.

The Counter-IED Market

According to industry think-tanks, the

counter-IED market is projected to grow from USD 1.78 billion in 2017 to USD 2.03 billion by 2022. The growth of asymmetric warfare and the increasing incidence of terror attacks across the globe are the factors expected to drive the growth of the counter-IED market. Yet countering IED is not just about stopping or neutralising it once in place, it also about identifying and disrupting the networks that create and initiate IEDs.

Understanding the various threat networks on a tactical or strategic level is vital to success in current and future operations where battle lines are no longer linear. Thus, organisations working to counter IED use not only focus on reducing the frequency and severity of IED attacks, but also target the networks that facilitate them.

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Latest Counter IED System



The KC-130J Harvest Hawk: A Big Stick Weapons Kit

Harvest Hawk has become a real partner to the Marine air and ground forces. The aircraft is the latest in a series of military aircraft modification efforts developed under the broad name "Harvest." In fact, HAWK is an acronym that stands for Hercules Airborne Weapons Kit, but Harvest Hawk has become its more popular generic name. Since its combat debut in Afghanistan in 2010, marine crews have been very busy flying this specially configured

armed intelligence, surveillance and reconnaissance (ISR) variant of the KC-130J Super Hercules tanker. Harvest Hawk has quickly become a big stick, thanks to its long loiter time, multiple radios and sensor to find and track insurgents or vehicles. More importantly for the Marines on the ground, it has an ability to launch a laser-guided Hellfire or Griffin missile and have those weapons hit exactly where and when needed.

In serving as an accelerated Marine Corps program to meet urgent Marine ground combat needs, Harvest Hawk is MIR-tied (Multi-Sensor Imagery Reconnaissance) to close air support (CAS). Its permissive air environment is more persistent than any other platform, enabling a KC-130J fighter pilot up for ten or more hours on station before having to refuel.

In addition, the Super Hercules, or 'Battlehawk' to the Marines, has sufficient



electrical power and room for the Harvest Hawk equipment, enabling innovations like video uplink and Blue Force Tracker. Thus, using only existing components, the Harvest Hawk kit was developed in eighteen months by a joint Marine Corps, Lockheed Martin and Naval Air Systems Command team.

Profiling the Harvest Hawk's capabilities

What sets Harvest Hawk apart from



In Harvest Hawk, two additional display monitors are permanently installed on the flight deck primarily to allow the pilot to see the sensor images



HarvestHawk has the ability to launch laser-guided Hellfire or Griffin missiles

other KC-130Js is to be found underneath on the left wing of the outboard station. Instead of a KC-130J hose refueling pod, it has an M299 quad-mount Hellfire missile launcher taken from an AH-1 Cobra attack helicopter. The AGM-114P Hellfire II and its twenty-pound high-explosive antitank warhead is the primary weapon. VMGR-352 and VMGR-252 crews having already launched more than 100 Hellfires, nearly all recording direct hits. Meanwhile, the Hawk's electro-optical, infrared and laser Target Sight Sensor (TSS) also comes from an AH-1Z Super Cobra and is mounted in an empty external fuel tank on the left inboard station. The sensor can see individual targets clearly from more than ten

miles away.

Internally, both the fire control console (FCC) and the mission computer from the Navy's SH-60 Seahawk multipurpose helicopter are mounted on to a reinforced 463L cargo system pallet installed in the KC-130J's cargo compartment. Two additional display monitors are permanently installed on the flight deck allowing the pilot to see the FCO sensor images and look at the FalconView aeronautical charts, satellite images and elevation maps, while offering a consent-to-lase and fire button located near the throttles.

The Hawk's AGM-176 Griffin missiles have a smaller warhead but less powerful rocket motor than Hellfire and were originally housed in a

cargo ramp-mounted box launcher. To fire this missile, crews would therefore have to go on oxygen and depressurize the aircraft prior to lowering the ramp for launch meaning that Griffins were launched against targets only about ten percent of the time.

Harvest Hawk aircraft now have a dual missile launcher for Griffin located in the left paratroop door along a 'wine rack' that holds ten missile launch tubes. This Derringer Door launcher allows the crew to keep the aircraft pressurized during launch. A third type of weapon, the GBU-44 Viper Strike glide bomb, is now being tested on Harvest Hawk.

Thus, with four Hellfire and ten Griffin, the Harvest Hawk can carry more precision guided munitions than any other aircraft in the Marine Corps. Moreover, other aircraft can still be refueled if necessary from the aircraft's right hose to help fighters during poor weather.

Superlative sandbox maneuvers

The VMGR-252 Harvest Hawk is a roll-on/roll-off kit, enabling crews to average approximately 110 flight hours per month, well above the overall in-theater norm. In exercises during poor weather, Harvest Hawk was sometimes the only aircraft airborne in the tasking able to transit to the area needed, receiving a 'nine-line' location while still

twenty-five miles out. It could then correlate the sensors, confirm the attack plan and clear the airspace to take out the target within nine minutes, before returning to tracking its original target after about fifteen minutes elapsed time.

Harvest Hawk crews generally fly at medium altitudes to maximize time on station. So far, squadron crews have launched approximately sixty Hellfires during their deployment with a near 100 percent success rate without a single civilian casualty.

On one mission, the crew observed a group of insurgents engaging a marine ground unit where the insurgents had a central gathering point and were using children as a buffer and forcing them to resupply the snipers with ammunition. Here, the crew watched the battle play out for a few hours before coming up with a plan.

They received clearance to make a high-speed pass - slightly below minimums - and popped self-defense flares normally used to defeat heat-seeking missiles. The startled insurgents then dispersed enabling the marine ground unit to accomplish its mission.

Sophisticated crew coordination

By necessity, the seven-member Harvest Hawk crews have now become an integrated team. The aircraft commander serves as the airborne supervisor, deconflicting the airspace and clearing out friendlies prior to a missile launch. He also helps develop the target attack plan with the FCO and gives consent once the aircraft is in position to fire the targeting laser and then launch the missile.

The copilot manages the basics: navigating and flying the aircraft, using the aircraft's seven radios to communicate with the air assets, ground commanders and, as necessary, higher command headquarters. The crewmaster



The AGM-114P Hellfire II, with a twenty-pound high-explosive antitank warhead



Instead of a KC-130J hose refueling pod on the outboard wing station, Harvest Hawk has an M299 quad-mount Hellfire missile launcher

acts as a flying crew chief, changing the radio frequencies and looking out the window as another set of eyes.

The primary FCO of the aircraft's cargo compartment locates, tracks and designates the targets, coordinating surveillance and talking directly with ground troops. The second FCO is the backup, sitting next to the primary FCO at the FCC. In addition to their usual job, the two loadmasters act as scanners or as different sets of eyes to help the FCOs scan the sensor picture. They also load the Griffin launch tubes into the Derringer Door.

During an attack, the combined job of the flight deck crew and the FCOs is to position the aircraft in the optimal position to shoot. The aircrew adjusts each attack depending on the target. Once the target is designated and locked, the aircraft in position and the pilot with consent to fire, the FCO lifts the cover on the Hellfire launch button and pushes it. Coming off the launch rail, Hellfire missiles quickly reach supersonic speeds in a very short flight time entailing that the FCO has to take

account of the Hellfire's sonic boom.

Teaching battlefield innovation Heavy tasking in combat theaters entails that as many as 140 flight hours per month (the maximum allowed) are required of Harvest Hawk crews on future deployments. A formal training program has therefore been established in the form of a Harvest Hawk ground school, consisting of 23 classes on close air support and multi-image reconnaissance, the FCC and TSS, ground force maneuverers, radio procedures and aircraft basics, such as where the crash axe is located.

Moreover, a recently installed desktop FCC simulator has prepared the crew members for the five qualification flights. The simulator schooling covers the same profiles as the actual training flights: day weapons employment, integrating with ground forces on CAS and MIR missions, and urban CAS where shot geometry and zero civilian casualties are important considerations. It also integrates a live fire mission in which each FCO launches a Hellfire and a Griffin.

Technical Specifications

Maximum Takeoff Weight:

164,000 lbs.

Maximum Fuel:

61,364 lbs. (with external tanks)

Max Payload:

47,903 lbs. (at Maximum Wing Relieving Fuel)

Cargo Volume:

4,551 cu ft.

Crew For Refueling Options:

Two Pilots, One Advanced Crew Stations (ACS) Operator, Two Loadmasters

Max Range:

4,275 n.mi (with external tanks)

Armament :

AGM-114P Hellfire II air-to-ground missiles, Raytheon AGM-175 Griffin short-range air-to-surface missiles, MBDA GBU-44/B Viper Strike gliding munitions, and a side-mounted Orbital ATK Mk 44 Bushmaster 30mm cannon

The instructors sit on the flight deck or behind the student FCOs to simulate communications from the ground forces. In addition, there are growing numbers of training flights with the actual ground forces with whom the Harvest Hawk crew will be working in theater.

Students are debriefed in detail after a flight, reviewing their attack profiles with the instructors and assessing how each mission element could have been better performed. The urgency of the Harvest Hawk mission is emphasized during training, as the consequences are dramatic of a missile being on target thirty seconds rather than three minutes late because the aircraft had to go around to avoid a marine on the ground.

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