



vehicle commanding aerodynamic control surfaces and manages on-board equipment with a triple redundant Flight Control Computer (FCC) system and multiple remote multi-lane Servo Interface Units (SIU), developed to achieve the required level of safety and mission reliability.

Position, attitude and air data are guaranteed by triple redundant Inertial Sensors (INS) and Air Data Probes (ADS), mounted in the VCMS. P.IHH HammerHead VCMS features an Automatic Take-Off and Landing (ATOL) system served with dual redundant external sensors for required reliability and safety.

All VCMS LRU's are installed inside the large volume fuselage, in a very protected optimized operative environment, in a specific lay-out that provides zonal separation and temperature analysis to achieve a state of the art operative temperature range, highest VCMS reliability and finally, P.IHH HammerHead safety.

Autonomous shelter

Very easy access is provided through the

large entry door and a multitude of access doors for the best maintainability within the segment.

An advanced Ground Control Station (GCS) is the P.IHH HammerHead UAS's command and control center. The GCS is located in an autonomous shelter that hosts crew, equipment and consoles necessary to manage three UAVs (two operational, one in transfer mode) and their related Payloads.

The crew processes functions necessary to execute tactical unmanned missions and stand-off surveillance unmanned missions, remotely commanding and controlling through VCMS and MMS the on-board surveillance system with an advanced human/machine interface integrating display and control system.

The GCS is provided with multiple Ground Data Terminals (GDT) that when coupled with the associated Air Data Terminals (ADT) on the vehicles provide Line Of Sight (LOS) and Beyond Line Of Sight (BLOS) link for vehicle and payload control.

The Links System allows LOS & BLOS

air vehicle command & control and payload digital encrypted data transmission via redundant, multi-frequency, high bandwidth RF links and via Ku/Ka Band SATCOM.

The P.IHH HammerHead UAS Mission Management System is based on Selex ES skySTAR innovative technology, which redefines the concept of patrolling and ISR missions, to encompass threats that range from terrorist attacks to illegal immigration, as well as protection of Exclusive Economic Zones (EEZ), infrastructures and critical sites.

The on board airborne Mission Management System (MMS) manages sensors, video and data, communications, and ISR functions and it is capable of recording video and mission data.

The MMS is modular and reconfigurable with effective and fully integrated open system architecture possessing significant growth capability.

Reference: Picture / text
www.piaggioaerospace.it



Payload could be more than 500 kg, but Piaggio plans to keep it within that limit

Technical specification

Dimensions

Span 15.600 m [51.18 ft]
 Length 14.408 m [47.27 ft]
 Height 3.980 m [13.05 ft]

Weights

Max TakeOff Weight MTOW 6,146
 Kg [13,550 lbs.]

Powerplant

2 x Pratt & Whitney Canada PT6A-
 66B 850 SHP (ISA, sea level)

Hartzell five blade low noise propellers
 counter rotating

Mission system

Selex ES SkyiSTAR® with
 FLIR EO/IR StarSafire 380HD
 Seaspray 7300 E Radar

governors while managing engine and propeller data. A large upper fuselage tank, supported by a robust yet efficient carry through beam, is integrated to provide the required fuel quantity for long range and endurance.

A smart fuel system is designed to



P.180 HammerHead power plant has low noise five blade scimitar propellers

control and minimize the movement of the aircraft center of gravity for maximum operational flexibility in a wide range of mission payloads. The triple redundant 28VDC electrical generation and distribution system supplies energy for all aircraft functions with adequate operational reserve through the envelope, and fully satisfies large power demands from a variety of power consuming payloads.

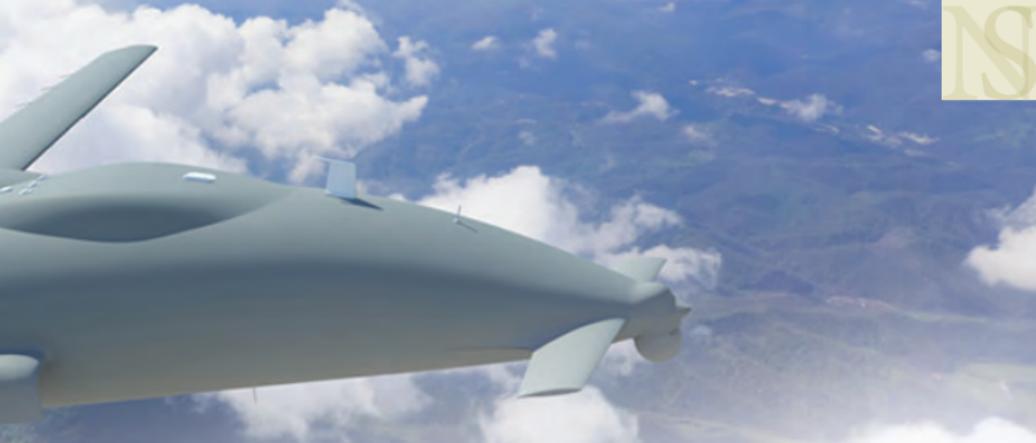
Payload

The large but, low drag P.180 aircraft fuselage provides capability for aero-

dynamically effective payload arrangements, with plenty of available volume from the variety of LRU's equipment, sensors and communication equipment comfortably located inside the fuselage.

P.180 HammerHead features a technologically advanced Vehicle Control & Management System (VCMS) that when combined with the advanced Mission Management System (MMS) manages the UAV and its mission specific equipment.

The VCMS, commanded from the Ground Control Station (GCS) via an airborne datalink system, conducts the



Avanti II business aviation aircraft, the fastest twin turboprop aircraft in the world with a proven, uneventful, service record of more than 20 years and 800,000 flight hours.

The design of the P.1HH HammerHead aims at being a unique ISR platform, able to climb up to 45,000 feet, loitering quietly at low speed (135 KTAS) for an endurance of up to 16 flight hours and dashing at very high speed (up to 395 KTAS) to target. Its capabilities include being able to host several payload combinations and to perform multiple missions: aerial, land, coastal, maritime and offshore security, COMINT/ELINT, electronic warfare as well as other roles.

Maximum safety

Based on the P.180 Avanti II proven architecture and technologies (tested and certified for passenger transportation) and, on the outstanding experience and capability of Selex ES in the mission management systems for manned/unmanned ISR, P.1HH HammerHead is designed to be an all-weather aircraft with twin turboprop propulsion providing maximum safety, operational reliability and the lowest incident rate in its category.

The core of the UAV is the Selex ES SkySTAR Mission Management System (MMS), coupled with the firm's Vehicle

Control Management System (VCMS) that commands the aerodynamic control surfaces and manages the on-board equipment. VCMS LRUs are installed inside the large volume fuselage, spaced for temperature control as well as survivability. Selex ES also supplies remote-piloting Ground Control Station (GCS), and UAS datalink and communications systems that can work beyond line of sight.

The MMS handles the overall mission, runs the sensors, and processes the data. During flight operations, the on-board VCMS is commanded from the off-board GCS via the airborne datalink system, and relies on a triple redundancy Flight Control Computer system and multiple remote multi-lane Servo Interface Units to handle the aircraft. The ATOL takes over for take-offs and landing, which should contribute to fewer losses.

Payload could be more than 500 kg, but Piaggio plans to keep it within that limit, in order to avoid export issues with the Missile Technology Control Regime (MCTR) that Italy has signed. Finmeccanica's Selex ES will supply an electro-optical day/night turret, along with its e-scan Seaspray 7300 radar for land and maritime surveillance.

Initial plans involve a surveillance-only UAV, but there is more than sufficient

space for weapons in a weapons bay, if customers like Italy decide they want that. The key limitation is the MCTR treaty's 500 kg payload maximum, not the aircraft's capabilities.

The P.1HH HammerHead design is fully compliant with STANAG USAR 4671 standards to fly in both restricted and unrestricted flight areas, according to the relevant authorities permission.

Versatile

The P.1HH HammerHead UAV platform has an aerodynamic configuration largely similar to P.180 Avanti II. This is very versatile thanks to its unique patented three lifting surfaces configuration (3 LSC) and high aspect ratio laminar wings, adapted for the P.1HH design by moderately increasing the wing span to sustain larger vehicle masses and allocating a quick detachable joint to the outer wings for rapid aerial deployment of the UAS in remote areas. Being based on a certified Mach 0.70 aircraft, P.1HH HammerHead is the fastest MALE.

The P.1HH HammerHead power plant has two, highly reliable Pratt & Whitney Canada PT6A-66B turbine engines integrated with low noise five blade scimitar propellers. The power plant is controlled by two engine interface units that receive commands from the FCC to drive the turbine and the propeller



P.1HH HAMMERHEAD UAS SETS NEW FRONTIER

UAE to be first export customer

The Piaggio Aerospace P.1HH HammerHead is a new, state-of-the-art Unmanned Aerial System (UAS) designed for intelligence, surveillance and reconnaissance (ISR) missions whose combination of performance and operational characteristics is at the very top end of the UAS MALE category.

It boasts an unmatched combination of range, wide operative speeds, fast climb gradient, high operative ceiling and variety of payloads, provides end-users with a powerful yet flexible defense system that outperforms other MALE Systems, identifying the P.1HH HammerHead as a Super MALE UAS.

P.1HH HammerHead, is suited for a wide range of ISR, defense and security missions, and defines an unsurpassed mission role flexibility and sets a new frontier of CONcept of OPERations (CONOPS) for defense.

The first export customer of Piaggio Aero's P.1HH Hammerhead UAV will be

the UAE. Contracts signed on March 8 with Abu Dhabi Autonomous Systems Investments Company (ADASI) will see eight of the UAVs produced and delivered at a cost of AED 1,327 million (€316 million), and includes the provision of EO/IR (Electro-Optical Infra-Red) cameras, radar, and communications systems. Part of the contract is also the integrated logistic support, including training.

Speaking at the Unmanned Systems Exhibition and Conference in Abu Dhabi, Mr Carlo Logli, CEO of Piaggio Aerospace, said:

"This important contract recognizes

Piaggio Aerospace's efforts in establishing a world-class military program and state-of-the-art manufacturing facilities that position the business for long-term sustainable success."

Development of the Hammerhead has been conducted in conjunction with fellow Italian firm Finmeccanica which has provided the mission control system, sensors, data link, and ground control station.

Unique platform

The P.1HH HammerHead Unmanned Aerial Vehicle (UAV) is derived from the successful Piaggio Aerospace P.180



Swordfish MPA on Q400 turboprop aircraft

ad Saab products help in safeguarding people and society by achieving Maritime Domain Awareness. The Swordfish MPA offers strategic ISR capabilities over both sea and land. The system is capable of achieving superior Maritime Domain Awareness through use of its advanced mission system and tightly integrated sensor suite, with finding modern submarines as its specialty.

Protection from the air

When the sea is the threat, protection comes from the air. As seaborne trade and human activities in the coastal zone increase, so do the threats. Piracy, smuggling, illegal fishing, oil pollution, illegal underwater activities and other criminal operations violating the borders are all pressing threats that necessitate the need for superior maritime awareness to increase safety for people. The threats are complex, constantly changing, and vary from place to place. New threats put new demands on maritime security and

The Swordfish MPA offers strategic ISR capabilities over both sea and land

protection resources, and force technology, manning and tactics to keep adapting.

“We have put all variables into the equation and with the Swordfish MPA. We offer a sophisticated yet cost-efficient solution, which uses the world’s latest, operational proven sensors wrapped in Saab’s very successful C4I mission management system. This is made possible by our vast experience and knowledge in product design and system integration, which reaches across all domains,” says Joakim Mevius, Head of Business Unit Airborne ISR, Saab.

Platform

The Swordfish offers the latest in sensor technology for multiple domain awareness, with finding submarines the cornerstone of its operation. Saab allows customers to choose the platform that best fits their needs and the Swordfish is available on the Bombardier Global 6000 jet aircraft or Q400 turboprop aircraft, a potent combination of world-leading aircraft.

Saab’s Swordfish mission system combines proven, operational COTS sensors from several suppliers, with the company’s own specialist electronic warfare and C4I mission management systems. The advanced and tightly integrated sensor package is displayed on interchangeable workstations with an intelligent degree of automation and system support, meaning more can be achieved with fewer operators.

Reference Text / Photos:
www.saabgroup.com



A key element of the Saab's GlobalEye system is the Global 6000 ultra-long-range jet aircraft from Bombardier

many decades of experience in delivering large-scale, strategic airborne surveillance and C4I systems to customers around the world. They also have a track record in developing technology transfer opportunities for customers of all kinds.

Equipped with one of the market's most capable and operationally proven sensor suite, the Swordfish MPA system gives any nation the tools to protect their territorial waters, coast lines and exclusive economic zones; as well as the ability to perform search and rescue operations including on-scene command and control. Carefully installed and integrated on an appropriate aircraft platform, this multi-role system will effectively detect, track and identify modern submarines and other naval vessels.

Maritime ISR

The Swordfish MPA can arrive on task and quickly raise a local maritime picture by using its 360-degree AESA radar, supported by other sensors such

as AIS. Soon after, its next generation command and control system, will support the operators by giving an intelligent level of automation and support, meaning that the decision making process is more efficient and the target of interest can be located more easily. The comprehensive communications suite means that mission critical information can be sent back to the Air Operations Centre real-time, ensuring that an accurate and up-to-date sea picture is readily achieved and distributed.

Search and Rescue

These operations can be both life threatening and time critical. Sometimes occurring many miles from land, the ability to reach an area quickly combined with the carriage of specialist stores can be the difference between life and death. This is when the Swordfish MPA is deployed. Once the target has been located using radar, electro-optics or even visually by an operator using the large observer windows, the

aircraft will position to drop life-saving equipment if required. Equipped with an array of communications, the system can take airborne command and control of large-scale incidents, coordinating on-scene rescue assets whilst interfacing with shore-based agencies.

Anti-Submarine Warfare

Modern day, super-quiet submarines make the job of searching, locating and tracking more difficult. Armed with the latest in acoustics technology, together with a significant sonobuoy and torpedo payload, Swordfish MPA is ready to resolve the situation. Either by reporting, intervening or like in any other scenario, take full on-scene command and act as communication central whilst still tracking the target. Being a company that builds the next generation AIP (Air Independent Propulsion) submarine, Saab successfully meets the demands of modern day Anti-Submarine Warfare.

Maritime Patrol takes place in a complex and dynamic environment



Swordfish is available on the Bombardier Global 6000 jet aircraft

to communicate between all involved stakeholders.

It is a fact that today's defence budgets are more and more limited. For many countries this puts new requirements into play when considering new products and systems.

The threats and challenges are evolving and ever changing, and all with their own unique set of circumstances. Quieter submarines, opportunist piracy and border violations must be effectively combated to ensure the safety of people and society, and it's not an easy task to choose the best tool for the mission as each scenario is different with its own set of requirements.

This situation is typical for Saab's

problem solving approach to keep people and the society safe. As a world-class platform and systems integrator, with a proven track record in delivering complex airborne surveillance solutions, Saab is now offering a cutting-edge multi-role Maritime Patrol Aircraft platform, called Swordfish MPA (maritime patrol aircraft) that best fits the end-users' operational needs.

The Swedish defence philosophy has always been about sustainable, cost-efficient, but high technology, solutions; Sweden has always had small budgets and high requirements. Over the last eight decades, Saab has developed many products that have contributed to a safer and more secure society within the air, land and sea domains. Commercial and fighter aircraft, torpedoes, radar and sensor systems, submarines and naval surface vessels are all in the Saab portfolio.

The projection of substantial submarine activity in South East Asia Pacific is a game-changer, and raises

questions about how to defend the invisible threat. Any nation wanting to protect their borders from intruders and unwanted activities must be able to react quickly, with the ability to detect, track and identify unfriendly submarines.

Nature plays it part too as the Asia Pacific region is home to a demanding operating environment with variable depths, high salinity and unpredictable tides and currents. Factor in the high levels of ambient noise polluting the ocean from the surface traffic and you have some of the most difficult conditions in which to find a submarine. A combination of the right technology, such as Saab's Swordfish MPA, and operational crews who are highly trained to face such conditions, go hand in hand in making the classic game of cat and mouse easier.

Saab has nearly 80 years of aircraft manufacturing and systems integration at its core, as demonstrated by the success of Gripen fighter and Erieye AEW&C. The company also has

Saab Swordfish MPA: Offering Cutting-Edge Performance

The system helps in effectively combating invisible threats facing Asia Pacific

The Asia Pacific region is synonymous with busy sea-lanes, which facilitate the high density of commercial flows to and from many of the world's busiest ports. The scale and volume of goods and energy transportations are gigantic; the consequences if these flows are disrupted are monumental, effectively incapacitating countries ability to function. The geography of the area, with narrow straits causing bottlenecks and long areas of coastlines, further complicates the challenges and threats faced. Piracy, people and narcotics smuggling, advanced super-quiet submarines, border violations and various terror organisations makes it more important than ever to take all the necessary measures possible in order to mitigate such risks.

Recently, it has been estimated that the number of operational submarines in the Asia Pacific region will be around 130 vessels by 2020. Piracy attacks continue to increase with 68 per cent of the 134 piracy incidents reported worldwide in the first six months of 2015 occurring in South-East Asia. "The protection of national interests and the ability to contain threats in lit-

toral waters and surrounding seas has never been more prevalent," says Richard Hjelmberg, Head of Marketing and Sales, Saab Airborne Surveillance Systems for the Asia Pacific region.

Increasing Number of Submarines

Surveillance operations in the maritime domain are often complicated

and demanding. Sometimes the threat is invisible and the environment more than dynamic. It is a difficult arena and, without the right tools, the detection of unwanted visitors is complicated. There is a need for the ability to carry out systematic maritime ISR (intelligence, surveillance, reconnaissance) over large areas and distances, with an effective platform that is able

and applied modern technology and materials to create new capabilities and efficiencies.

At 302ft (92 metres), the Airlander 10 is the world's longest aircraft. The part plane and part airship was first designed in 2010, but a series of budget cuts left it sitting in hanger in Bedfordshire. The £3.4 million (US\$5.25 million) grant from the UK government is set to get the giant aircraft off ground.

While the US Army originally designed the aircraft for surveillance and reconnaissance, the UK government is hoping to use it to transport cargo cheaply, according to reports. The ship, previously named HAV304, is capable of carrying around 20,000 pounds (nine tonnes) of cargo for up to five days at a time without landing. It is also 10 to 20 per cent cheaper than a helicopter to operate. The giant aircraft is currently being held at Cardington, UK, which has the only hangar big enough to accommodate the 113ft (34m) wide and 85ft (26m) high aircraft.

The UK government's innovation agency has also enabled Hybrid Air Vehicles to start a full engine test programme, enabling it to double its staff in 2014.

While it looks like giant airship, it has a unique aerodynamic shape that means it can also create lift just like an aeroplane wing. The cambered shape provides up to 40 per cent of the vehicle's lift. This allowed engineers to make the machine heavier than air, removing the need for crew to hang onto ropes to hold it down. A number of ballonets fore and aft in each of the hulls provide pressure control. The aircraft is powered by four 350 hp, four litre V8 direct injection, turbocharged diesel engines. Two engines mounted forward on the hull and two on the stern of the hull for cruise operation.

Airlander 10 will eventually lead to the development of the Airlander 50, which would be able to transport 50 tonnes of

Hybrid Airships enable affordable and safe delivery of heavy cargo and personnel to virtually anywhere, water or land, in normal flying weather conditions



freight. The huge aircraft combines the best of aeroplane, airship and helicopter design. Hybrid Air Vehicles believes there could be a world market for between 600 and 1,000 of these aircraft. For the time being, the company plans to produce around 10 a year for the next four or five years. This is expected to lead to the creation of 1,800 jobs in the Bedfordshire area.

This year will be a momentous one for the future of aviation with the Airlander 10 taking to the British skies for the first time; Hybrid Air Vehicles's pioneering team of experts continues to make ground-breaking progress on a daily basis – most recently attaching the Mission Module to the iconic hull.

Unlike traditional airships, the Airlander has no internal structure but it becomes rigid through being filled with helium, at just above atmospheric pressure. The super-strong hull material has been designed by Warwick Mills and assembled by ILC Dover, the company who make NASA spacesuits. Its innovative composition includes a woven fabric for strength on the inside, and a Tedlar layer for protection on the outside, sandwiching a mylar film to retain the helium.

An Airlander produces 60 per cent of its lift aerostatically (by being lighter-than-air) and 40 per cent aerodynamically (by being wing-shaped) as well as having the ability to rotate its engines to produce an additional 25 per cent of

thrust up or down; this means the Airlander can hover as well as land on almost any surface, including ice, desert and even water. It produces less noise, less pollution, has a lower carbon footprint than conventional aircraft, and has longer endurance and better cargo-carrying capacity than any other flying vehicle.

Why Hybrid Airships?

More than two-thirds of the world's land area and more than half the world's population have no direct access to paved roads. As you move farther away from infrastructure, cost, time and the safety of transport becomes more of a challenge. Hybrid Airships will enable affordable and safe delivery of heavy cargo and personnel to virtually anywhere – water or land, in normal flying weather conditions – with little to no infrastructure. Hybrid Airships also burn much less fuel than conventional aircraft. For many projects, the combination of these capabilities makes Hybrid Airships the best economic choice and an environmentally friendly alternative to traditional modes of transportation.

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Airlander-10 can stay airborne for up to five days at a time if manned, and for over two weeks unmanned

cargo loads and personnel in and out of remote areas daily, not just certain seasons or only after major road, rail or airport infrastructure is developed.

On-going Development

Lockheed Martin were the first organisation to fly a manned proof of concept vehicle with their P791, which first flew in January 2006. Although video of the first flight shows, what appears to be, alarming instability, Lockheed Martin stated in late 2011 that they have resolved any stability issues using avionics software.

Hybrid Air Vehicles were sub-contracted by Northrop Grumman to build a vehicle for the US Army under very tight time constraints. The Long Endurance Multi-intelligence Vehicle made its maiden flight on 7 August 2012. Plans to develop a heavy lift transport variant, now rebranded the Airlander, are ongoing.

The Boeing Skyhook project apparently progressed to design freeze, but there were insufficient backers to take the project to the prototype stage, and it was subsequently shelved.

In addition to aerodynamic lift, there

is also the potential, initially proposed by Jean-Francois de Roziere, of heating the lifting gas to increase available lift. The principle has been used in the Ballooning world for several world records, but has not yet been successfully applied to a Helium airship. There is currently a renewed interest in the Hybrid concept, both for heavy lift and for surveillance purposes from the US Military.

Lockheed Martin Hybrid Airships

Lockheed Martin is using Hybrid Enterprises as its exclusive, authorised, worldwide reseller of Hybrid Airships and related aftermarket value-added services. The company has invested more than 20 years to develop the Hybrid Airship's technology, prove its performance and ensure there are compelling economics for various markets that would benefit from using this platform. Almost eight years ago, the team built and flew the technology demonstrator known as the P-791, which successfully demonstrated all the technologies needed to make this real. Since then, the team has completed all required FAA certification planning steps for a new class of aircraft and they

are ready to begin construction of the first commercial model and the completion of the FAA Type certification process.

In 2015 June, Hybrid Enterprises LLC, acting on behalf of Lockheed Martin, announced that they will be taking orders for Hybrid Airships with deliveries planned as early as 2018.

"Lockheed Martin's Hybrid Airships will significantly reduce the cost and environmental impact of remote operations, making it possible to reach locations previously thought inaccessible," said Rob Binns, Chief Executive Officer of Hybrid Enterprises. "Customers will feel confident that with more than a century of proven experience, Lockheed Martin has repeatedly solved seemingly impossible challenges through its products and technologies."

The technologies required for Hybrid Airships are already mature and have been demonstrated in-flight by Lockheed Martin's P-791. Work is currently underway on the 20 tonne variant at the Lockheed Martin Aeronautics facility in Palmdale, California.

Airlander 10

Currently working on developing the Airlander 10, Hybrid Air Vehicles uses innovative technology to combine the best characteristics of fixed wing aircraft and helicopters with lighter-than-air technology to create a new breed of hyper-efficient aircraft. It can stay airborne for up to five days at a time if manned, and for over two weeks unmanned. It will fulfil a wide range of communication, cargo carrying and survey roles in both the military and commercial sectors all with a significantly lower carbon footprint than other forms of air transport.

More recently, the team at Hybrid Air Vehicles has re-examined the basic principles behind lighter-than-air science



In 2006, the half scale prototype vehicle, P-791, flew in Palmdale, California and successfully completed all flight test objectives

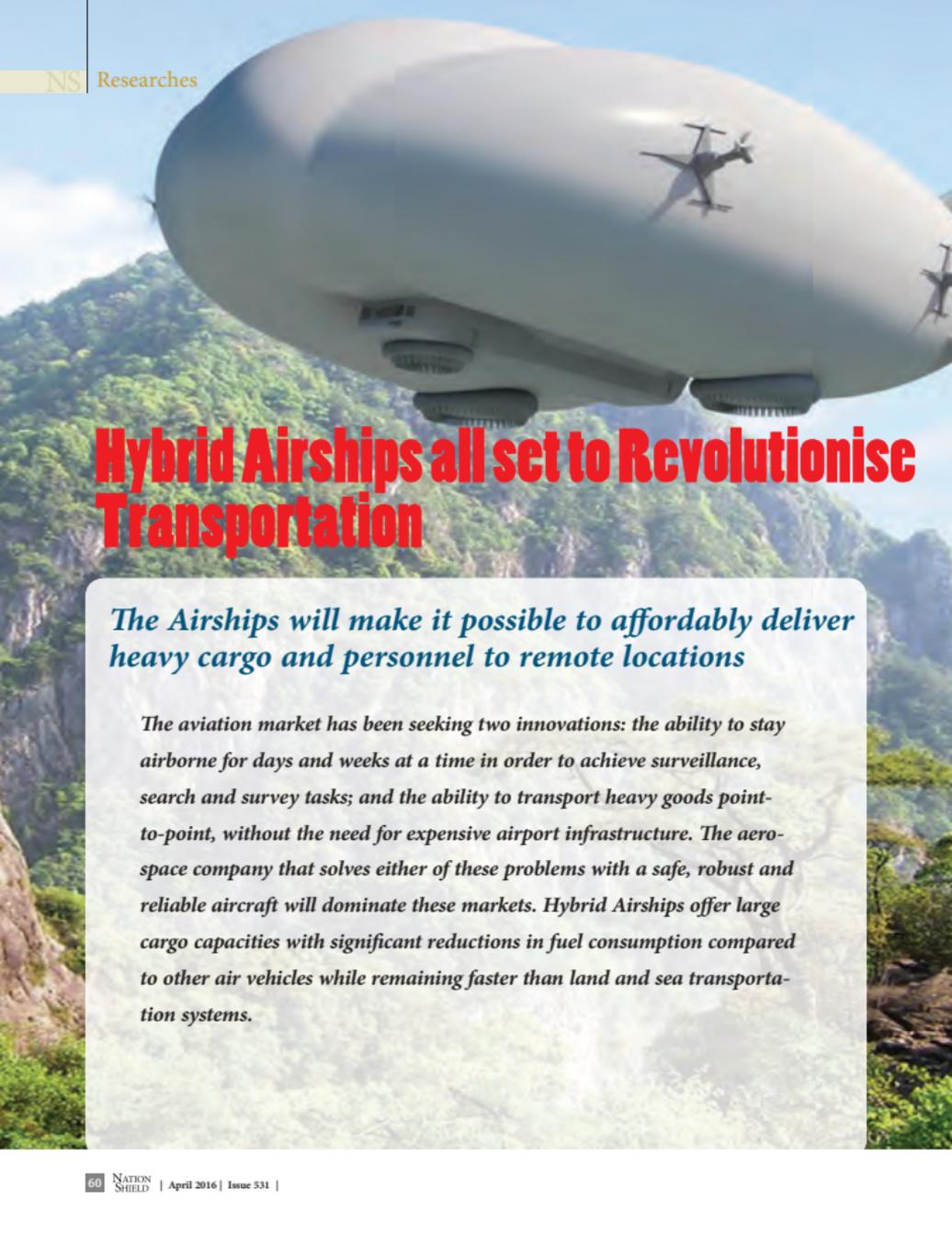
Airships are aerospace vehicles that get most of their lifting capability from 'static' lift using gases which are lighter than air (LTA), unlike aircraft that fly using the principles of dynamic lift i.e. wings (fixed or rotary). In essence, much of the energy expended by a conventional aircraft is used to keep it in the air, while most of the energy used by an airship is to propel it forward. Airships were widely used in the first half of the 20th century, for a variety of purposes, but the speed, power and glamour of conventional aircraft eclipsed the benefits of LTA vehicles for many years. However, widespread concerns about climate change, the effects of economic and political turmoil on the price of petroleum and the need for security organisations to maintain persistent surveillance in a cost-effective manner, are causing a fundamental reassessment of the utility of Airships.

A number of organisations are beginning to explore the use of LTA vehicles for different roles in today's society. As well as traditional airship types, the last few years have seen some interest in exploring new concepts which combine static lift with an increased use of dynamic lift, using either airfoil or ro-

torcraft technology to increase their lifting capabilities. These hybrid systems are generating much interest in the civil and military arena. More than two-thirds of the world's land area and more than half the world's population have no direct access to paved roads. As you move farther away from infrastructure, cost, time and the safety of transport becomes more of a challenge.

Hybrid Airships enable affordable and safe delivery of heavy cargo and personnel to virtually anywhere, water or land, in normal flying weather conditions, with little to no infrastructure. The technologies required for Hybrid Airships are mature and have been demonstrated in-flight. In 2006, the half scale prototype vehicle, P-791, flew in Palmdale, California and successfully completed all flight test objectives. The two-man proof-of-concept featured fully functional digital flight controls and an air cushion landing system (ACLS).

With unlimited access to isolated locations around the globe, Hybrid Airships safely and sustainably support a wide range of activities in areas with little to no infrastructure. The airship offers the simplicity of a pickup truck by carrying



Hybrid Airships all set to Revolutionise Transportation

The Airships will make it possible to affordably deliver heavy cargo and personnel to remote locations

The aviation market has been seeking two innovations: the ability to stay airborne for days and weeks at a time in order to achieve surveillance, search and survey tasks; and the ability to transport heavy goods point-to-point, without the need for expensive airport infrastructure. The aerospace company that solves either of these problems with a safe, robust and reliable aircraft will dominate these markets. Hybrid Airships offer large cargo capacities with significant reductions in fuel consumption compared to other air vehicles while remaining faster than land and sea transportation systems.



a complaint to the United Nations against Iran, in which he described Iran's blatant and continuing unacceptable interference in the internal affairs of the kingdom.

6. Attempts at pitting Shiites in the GCC countries

Since the outbreak of the Iranian revolution in the late 1970's, Tehran has been seeking to penetrate the Gulf societies by pitting Shiites there against the GCC countries. Iran tried to communicate with the Saudi Shiites. Iran even intervened directly in the provisions of the Saudi judiciary by protesting against the execution of Shiite cleric Nimr Baqir Al-Nimr.

Iran tried to communicate with the Shiites in Kuwait over the past years. Iran's attempts were not limited only to the pitting the Gulf Shiites, but it also sought to reproduce the Hezbollah experience in the Gulf States in order to destabilise internal security and stability in these countries. An example is the Bahraini Hezbollah, which is an extension of the Islamic Front for the Liberation of Bahrain, based in Tehran. In the mid-1980's, specifically in 1987, the military wing of the Organization of the Islamic Revolution in the Arabian Peninsula, which was called



Hezbollah of Hijaz, was established. It carried out terrorist attacks in Saudi Arabia, in coordination with the Iranian Revolutionary Guard.

Conclusion

All of the above demonstrates Iran's keenness on sectarianism in its foreign policy toward the neighbouring Arab states. It considers sectarianism a vital pillar, which allows it to put pressure on the Gulf Arab states. If we add to this expansionist project of ideological character, the behaviour of Iran and its insistence on adhering to out-dated policies, such as its occupation of the

UAE islands (Greater Tunb, Lesser Tunb and Abu Musa) and its refusal to settle this issue through direct serious dialogue with the UAE or to accept international arbitration, we would realise that Iran is seeking regional hegemony and that it does not have the will of peaceful coexistence in this heartland of the world.



Since the Iranian revolution, Tehran began seeking to export its revolution to the neighbouring Bahrain. It supported the formation of the Islamic Front for the Liberation of Bahrain, which issued a statement at its inception stating its goals as the “Liberation of Bahrain,” and the establishment of a pro-Khomeini revolutionary regime in Bahrain. The Front made a coup attempt in December 1981, which failed miserably, and in the mid-eighties the Front leaders held a meeting with officials from the Iranian intelligence to agree on the establishment of the Front’s military wing. Iran also provides support for many political movements in Bahrain, including Al Wefaq Society, whose loyalty is for the Iranian Wally Faqih, and the February 14 Youth Coalition, the Shiite political movement.

with the Arab states, especially Saudi Arabia, because this intervention was associated with providing support for Shiite against the sunnah.

Iran is providing substantial support to Hashd Sha’bi (Popular Mobilization) militias, which were formed last year, in 2015, within the framework of the war against Daesh. The Iranian support for groups and Shiite militias, aimed primarily at achieving political and strategic interests for Iran.

4. Houthis in Yemen

Iran’s support for Houthis has been

for mere political and strategic purposes. It is true that the Houthis belong to the Shia doctrine, and have historical ties with the Shiite authority in Qom, but Iran has sought to hire them in the political conflict in Yemen. Iran was seeking to clone a new Hezbollah model in Yemen through the Houthis, but the Operation Al-Hazem Storm, which was launched by the Arab Coalition forces led by Saudi Arabia against the rebels in March 2015 operation, frustrated the Iranian schemes.

5. The Shiite Associations in Bahrain

The Kingdom of Bahrain has repeatedly accused Iran, in recent years, of being behind the repeated attacks against the police. The Bahraini authorities announced, on 4 November 2015, the arrest of a terrorist network consisting of 47 elements, who had links with Iran. On 3 October 2015, the Bahraini Foreign Minister, Sheikh Khalid bin Ahmed Al Khalifa, filed



Official statistics indicate that about 3,000 Iranian pilgrims enter Iraq every day, and some of them settle illegally

graphic changes inside Syria on a sectarian basis. It suggested the transfer of the Shiite population of the villages of Kefraya and Foha in Idlib province to the border town of Zabadani, and the transfer of the population of Zabadani Sunna population to the Sunni-dominated areas, such as Hama. This would help the Iranian regime to consolidate its control over what it considered the strongholds of the Syrian regime. Under the pretext of defending the Shiite

shrines in various areas of Syria, Hezbollah was called to fight inside Syria after Syrian President Bashar al-Assad's forces failed to crush the Syrian Revolution, in an attempt by Tehran to form a Syrian model of Hezbollah.

3. Strengthening Shiite parties and militias in Iraq

Iran relies on the sectarian and religious factor in strengthening its influence in Iraq, where it provides Shiite parties with tremendous political,

financial and logistical support in order to dominate the decision of these movements. Iran has also exploited religious tourism to tamper with the demographic and national composition. Official statistics indicate that about 3,000 Iranian pilgrims enter Iraq every day, and some of them settle illegally. The Iranian interference in Iraq, especially after the overthrow of Saddam Hussein's regime in 2003, was one of the reasons for Iran's differences



Since the fall of the Shah, Tehran has adopted an expansionist strategy through the dissemination of the seeds of its political, sectarian revolution

1970's and the fall of the Shah, Tehran has adopted an expansionist strategy through the dissemination of the seeds of its political, sectarian revolution. This can be illustrated as follows:

1-Lebanese Hezbollah

Iran had a key role in the foundation of Hezbollah (The Party of God). It



helped the party to emerge as a representative of the Shiites in Lebanon, and provided it with financial and military support.

Although Hezbollah cost Iran a lot of effort and money, Iran has benefited a lot from it, both in terms of its regional Shiite project and its regional hegemony. Hezbollah also is a trump card, which Iran can use whenever it wants to put pressure on Israel and the United States.

2. The attempt to reproduce the experience of Hezbollah in Syria

Since the outbreak of the Syrian unrest in 2011, Iran has been standing with all its power behind the regime of Bashar Assad, and has deliberately given the war an ideological character, especially through the inclusion of Hezbollah.

This employment of the sectarian factor did not stop at this level, but Iran has sought to bring about demo-

of regional influence



precise diagnosis of the crisis, which led to strained relations between Iran on the one hand, and the Gulf and Arab states in general on the other.

In fact, the Iranian Constitution perpetuates this sectarian vision. It contains many articles that confirm this. Article 12 of the Iranian Constitution, for example, states, “the Twelver Jaafari doctrine shall remain forever the official doctrine of Iran and it is not subject to change.” Article 13 of the Iranian Constitution states that the Iranian Magians, Jews and Christians are the

only recognised religious minorities and they are free to perform their rituals. It is clear here that the Iranian constitution, while acknowledging the rights of the followers of these religions only, which must be recognised from a humanitarian and national viewpoint, did not recognise the rights of the Mandaean (Sabeian) community which is a religion mentioned in the Quran and one of the monotheistic religions whose followers in the Ahwaz area are a hundred thousand, and they all speak Arabic. Article 115

of the Constitution requires that the President of the Republic should be a Shiite Jaafari. The Iranian constitution confirms explicitly the legality of interference in the internal affairs of other countries. It also adopts the ‘Welayat Al-Faqih’ theory.

The Sectarian Dimension in Iran Foreign Policy

The sectarian aspect is one of the tools of soft power in Iran foreign policy. Even the leader of the Iranian revolution, Ayatollah Ruhollah Khomeini, called explicitly to export the Iranian revolution outside Iran. Iran is trying to use sectarianism and religion as a tool to achieve its interests in the region. The sectarian dimension in Iran foreign policy is based on two important sources, namely: the vision of Khomeini regarding the image of the government, and the theory of the “Mother of Villages”, developed by Iran’s foreign policy architect Dr. Jawad Ali Larjani. Since the revolution in the late 1970’s until now, Iran has employed sectarianism for purely political purposes, far from its claims that it is the voice of the oppressed.

Iran’s foreign policy also employs ‘religious dissimulation’ in an opportunistic and utilitarian way. Political dissimulation is also reflected in Iran’s attitude toward the regional unrest known in the media as the Arab Spring. The Iranian contradictory attitude toward these events revealed Iran’s opportunism. While it supported the overthrow of the regimes in Tunisia, Egypt and Libya, it adopted a different vision in Syria, and continued to support the regime of Bashar al-Assad.

Sectarian Arms are Iran’s Tools for Regional Expansionism

Since the Iranian revolution in the late

The Sectarian Dimension of Iranian Politics

A look at Iran's sectarian expansion and perpetuation

All evidence confirms that Iran has an expansionist regional project of sectarian nature. Religious sectarianism is one of the tools of dissemination of the Iranian influence in many countries of the region. Iran has planned for this since the Khomeini revolution in 1979. It invested a lot of its resources and the funds of the Iranian people in planting ideological cells that obey the orders of Iran's Revolutionary Guard commanders. This in essence is a source of concern and unrest in the region.



In this issue, Nation Shield magazine highlights the manifestations of the deep-rooted sectarian dimension in Iranian politics, internally and externally.

The Sectarian religious aspect is one of the tools of Iranian foreign policy. Iran is using this tool to expand its influence in the region through the promotion of loose slogans, such as defending the oppressed in the region and the entire world. Perhaps Iran's exaggerated attitude towards the execution of the Shi'ite cleric Nimr Baqir

AL-Nimr by the Saudi authorities on 2 January 2016, and the accompanying hostile comments by Iranian officials against Saudi Arabia, reveals the sectarian dimension in Tehran's policies.

The sectarian-religious aspect of Iran's foreign policy is not limited to slogans, but it has manifestations on the ground. Iran is supporting the Shiite minorities in the Arab and Gulf countries politically and culturally. It is trying to create political parties or military militias that strive to achieve its interests in these countries, like the

Lebanese Hezbollah and the Houthis in Yemen.

Iranian Constitution, Perpetuating Sectarianism

During a press conference in Abu Dhabi with his German counterpart Frank-Walter Steinmeier, in March 2016, His Highness Sheikh Abdullah Bin Zayed Al Nahyan, Minister of Foreign Affairs and International Cooperation, said, "Iran is the only country in the world, whose constitution provides for the export of the revolution by exporting sectarianism." He provided a



and helps the oppressed. The blood of our righteous martyrs, which was poured on the land of Yemen and mixed with the blood of their Arab brothers, has been a firm proof that Emiratis have sacrificed their souls to protect the national security of their country and to defend the constitutional legitimacy in a dear Arab country.

One year after Al-Hazm Storm Operation, we feel proud of the combat, operational and planning capacity of our valiant Armed Forces. The unique capabilities and outstanding performance of our Armed

Forces were not limited to military action, but included humanitarian and relief roles. Thus our Armed Forces helped to alleviate the suffering of the people of Yemen throughout the past months. The performance of the UAE Armed Forces in the fields of humanitarian and relief missions is based on broad experience that has been accumulated from humanitarian tasks in various regions of the world over the last two decades.

Based on the above, our prudent leadership believes that the role of our valiant

Armed Forces in assuring the security and stability of Aden and other Yemenite cities, and providing help for the Yemenite Government to control liberated areas, is an essential and strategic mission so that the government may be able to take up its role and provide the necessities for the people of Yemen. This was in implementation of the promise of His Highness Sheikh Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the Armed Forces, when he said in April last year, "Moving to rescue Yemen is not limited to the military or security aspect; rather, it extends to other development, economic, humanitarian and social aspects. These aspects are important for the people of Yemen so that they can overcome all challenges."

Since our combat doctrine is inseparable from our political doctrine and humanitarian principles, our prudent Leadership has taken upon itself not to leave the people of Yemen alone in the face of brutal Houthi aggression. Therefore, the UAE will continue to support our Yemenite brothers, help effectively with the reconstruction of Aden and the liberated areas, assist the people of Yemen to build their state and institutions, and contribute to the training and preparation of the Yemen National Army to protect its land and nation.

The UAE's historic role in the help relief of brothers in Yemen, and the blood of our valiant martyrs on the Yemenite land, will remain a strong testimony of the resilient relations between the UAE and the sisterly Yemen and its people.





Analysing the Strengths of Al-Hazm Storm Operation in Yemen

By: Staff Lieutenant-Colonel Yusuf Jumaa Al-Haddad, Editor-in-Chief

The Arab Coalition launched operation Al-Hazm Storm, on 26 March 2015, to restore constitutional legitimacy in Yemen. It was led by the Kingdom of Saudi Arabia, on demand from the Government of Yemen, with strong international support. Now that a year has elapsed after the launch of this operation and its complementation with Operation Restoring Hope on 21 April 2015, it is viable from a strategic perspective to review its lessons and effects in all respects.

Operation Al-Hazm Storm was only a response to the attacks of the Houthi militias and the forces loyal to former President Ali Abdullah Saleh, against the people of Yemen, and their attempt to seize power by force in this sisterly country. Having been defeated in consecutive battles, the Houthi and Saleh were forced to look for political settlements. They had no choice after a series of military defeats but to give in after the government took control of about 90 per cent of the Yemen territories. The Houthis, Saleh's militias and their regional supporters did not seek negotiations from the beginning, but the balance of power imposed a new equation. Without Al-Hazm Storm Operation, the Houthi and their allies would not have decided to sit at

the negotiation table with the rest of the parties.

From time immemorial, philosophers and politicians defined wars as continuation of politics in a different way. Despite the argument that war is but a reflection of the failure of politics, wars in essence cannot be separated from political action; they are a political decision in the first instance, particularly in light of the complications of the global and regional status quo. We have to recognise that without AL-Hazm Storm Operation, the Houthis would not have been a part of the negotiations.

The Arab Alliance countries, led by KSA, support any political solution or settlement based on the Gulf initiative, the output of national dialogue, and the UN Security Council Resolution No. 2216. These countries understand that Al-Hazm Storm and Restoring Hope operations have achieved many strategic goals, mainly undermining the expansionist sectarian scheme, which sought to control Yemen, sur-

round the GCC countries strategically and undermine the regional security and stability. Thus the decisive military intervention by the Arab alliance succeeded in disrupting this sectarian plan completely.

Al-Hazm Storm Operation supported by the people of Yemen restored the country to its natural strategic Arab milieu. History will record that our wise leadership, led by His Highness Sheikh Khalifa bin Zayed Al Nahyan, UAE President, Supreme Commander of the Armed Forces and Ruler of Abu Dhabi, and our Armed Forces, have participated efficiently and effectively since the very early hours of Al-Hazm Storm Operation and had an effective operational role in liberating Yemen cities. Our Armed Forces heroes have manifested their combat capabilities and efficiency. The participation of our Armed Forces in Al-Hazm Storm Operation was an explicit expression of a combat doctrine, which believes in truth and justice





**FREMM
Languedoc is
the fifth unit
to be built by
DCNS and the
third intended
for the French
Navy**

the Royal Moroccan Navy in 2014 and the Egyptian Navy in 2015.

The operational deployments and international successes of this latest-generation frigate demonstrate the capacity of DCNS to design, build and maintain competitive, high-tech vessels, which are perfectly suited to the needs of its clients. The FREMMs are

the first vessels in Europe to deploy the naval cruise missile (MdCN) for which the first firing took place on 19 May 2015 from the FREMM Aquitaine.

“The delivery of the FREMM Languedoc represents an opportunity to highlight the serial effects of a programme that DCNS clients can take advantage of”, said Anne Bianchi, Di-

rector of the FREMM programme at DCNS. “With this fifth unit, DCNS has again improved its industrial and economic performance. It was possible to reduce the duration of the sea acceptance trials for the Languedoc frigate to five weeks, thanks to the experience acquired for the FREMMs already delivered.”

The FREMM programme currently represents the construction of 10 vessels, of which eight are for the French Navy. Six FREMMs will have been delivered to the French Navy before mid-2019, in accordance with the 2015-2019 military programming law. DCNS is currently completing the FREMM Auvergne, which was floated on 2 September 2015, and is pursuing the assembly of the FREMM Bretagne. Work has started on the eighth FREMM in the series, the Normandie. DCNS is also finalising the design of two FREMMs with strengthened anti-aircraft capacities, the delivery of which is slated for 2022.

DCNS Delivers Fifth FREMM Frigate

Languedoc is one of the highest-performance combat vessels

DCNS recently delivered the FREMM frigate *Languedoc* intended for the French Navy, on the occasion of the acceptance ceremony by OCCAR (Organisation for Joint Armament Cooperation) on behalf of the French DGA (Direction Générale de l'Armement). The event demonstrated the industrial success of the largest European naval defence programme. The FREMM frigates are among some of the highest-performance latest-generation combat vessels in the market and have already won over three client Navies.

FREMM *Languedoc* is the fifth unit to be built by DCNS and the third intended for the French Navy. The frigate was officially accepted by OCCAR (Organisation for Joint Armament Cooperation), an international organisation for the through-life management of cooperative defence equipment programmes, which has the role of contracting authority for FREMMs intended for France and Italy. The ceremony was presided over by the Director of OCCAR, Timothy Rowntree, and the Armaments Engineer-General, Laurent Sellier, Director of the DGA's "Armaments Naval Operations" management unit, and in the presence of Pierre Legros, Director of Programmes at DCNS.

The official acceptance of the FREMM *Languedoc* is a demonstration of the satisfaction of the operational personnel that had the opportunity to test its exceptional military quali-



FREMM frigate Languedoc



FREMM frigate Languedoc acceptance ceremony Pierre Legros, Laurent Sellier, Timothy Rowntree, VA J. L. Lozier

ties in multiple operations theatres. At the start of the year, the Aquitaine and Provence FREMMs participated in the Task Force 50 actions in the Per-

sian-Arabian Gulf, at the sides of the Charles de Gaulle aircraft carrier, designed, built and maintained by DCNS. These front-line frigates also won over

Airbus Helicopters Kick-Start H145 Demo Tour in Asia

Will be making appearances in Southeast Asian countries

Airbus Helicopters' H145 is all set to showcase its performance and capabilities through a series of demo flights in Malaysia, Thailand, Indonesia and Taiwan. The first H145 demo tour was held in Southeast Asia in 2013, covering Malaysia and Thailand. Since then, there has been an increasing interest in this rotorcraft, especially in the emergency medical services (EMS) and commercial/business aviation segments.

This Asian demo tour will be divided into two legs. The first one took place from 23-30 March, where the H145 visited Malaysia and Thailand once again. The second leg will start in May, covering Indonesia, eastern Malaysia and Taiwan for the first time.

"We are very pleased to bring the H145 back to Asia for demo flights. This is an excellent opportunity for us to connect with customers who could not take part in the

previous demo tour," said Philippe Monteux, Airbus Helicopters Head of Southeast Asia & Pacific region. "By actually flying the H145, operators will be able to experience first hand the power and versatility of this light helicopter, which represents a very cost-efficient solution for all mission needs."

Current and potential customers will have an opportunity to get familiar with this best-selling light twin-engine rotorcraft, which incorporates Airbus Helicopters' trademark Fenestron and innovative Helionix avionics suite for enhanced safety, increased performance and reduced pilot workload. Equipped with a large cabin that can accommodate up to eight passengers (or 10 in special operations seating), a compact airframe and powerful engines, the H145 features sophisticated mission capabilities and flexibility, especially in high-and-hot operating conditions.

The H145 is the latest member of the 4-ton-class H145 family, which has a fleet

of 1230 in service around the world clocking over 4.4 million flight hours. Although the aircraft is very popular in the EMS and corporate transportation segments, its built-in flexibility makes it the best choice for a wide variety of missions. The newest, enhanced H145, which entered into service in mid-2014, has already seen some 54 helicopters in operation in 14 different countries, accumulating more than 15,400 flight hours with an average availability of over 90 per cent.

Compact in size, this helicopter's small footprint and large and flexible cabin make it the aircraft of choice for a variety of civil missions. This multi-purpose rotorcraft can be tailored for emergency medical services and police duties, along with aerial work, passenger transport, including business and private aviation, and airlift flight to offshore platforms. For multi-mission operators, the H145 can be reconfigured for different roles quickly and easily.



The H145 is the latest member of the 4-ton-class H145 family

Sultan Al Qiwani: Revolutionizing the folding shelter sector

By Sakha Pramod

Smart housing, an exhibitor at the recently concluded ISNR 2016, is a UAE company that is bringing a sea change to the folding shelter sector in the country and the Middle East. Whether it's a disaster relief command post, military barracks or a VIP suite for an outdoor event, Smart Housing's innovative folding technology makes erection of shelters possible in quick time, according to Smart Housing's visionary CEO Sultan Al Qiwani.

"Our portable rugged, lightweight, versatile and energy-efficient, portable buildings are easy and quick to assemble. They are available for a wide range of applications, featuring numerous configurations and amenity combination," Sultan told the Nation Shield in an exclusive interview.

"Whether it is a disaster relief command post, military barracks or a VIP suite for an outdoor event, our fold-out shelters are far and away the superior choice. Smart Housing, which is a UAE company, in collaboration with leading manufacturing in the world offers for the first time fold-out shelters that have broken new ground in the rapid deployment of portable buildings and modular command centers," he said.

"Our shelters feature innovative folding technology that compresses the shelters to one sixth of their expanded volume, enabling easy transportation and storage - for rapid deployment by land, by sea or by air," he said.

"Because they offer full plug & play capabilities with HVAC, electrical, lighting and data connections, and can be assembled in just ten minutes by a team of three,



they provide the ideal solution for your needs. Additional amenities can include kitchens, bathrooms and other custom features as required," he added. Whether it is emergency, military or hospitality requirements Smart Housing can fit in all.

"No matter what the challenge, C-SMART portable military shelters are up to the job - providing a turnkey solution that is both effective and comprehensive. In any weather conditions, in any terrain, anywhere in the world, C-SMART military shelters outperform," Sultan said. With their expandable footprint C-SMART portable buildings offer significant advantages for field command posts, tactical operations centers and troop barracks.

"Because it collapses to a fraction of its deployed volume, the C-SMART military shelter can be transported by land, by sea, and by air easily, and cost efficiently. Yet

the building can be made fully operational in just ten minutes by a team of three people. That means you can respond rapidly and forcefully wherever and whenever required," he said.

Sultan said that with a lifespan of up to 30 years, these portable military shelters provide rugged, energy-efficient performance, and feature turnkey plug & play amenities. What's more, they can be joined together to form large compounds, configured according to the demands of the challenge.

It could be an on-site medical clinic, either providing healthcare support or addressing an emergency situation or a crime scene management challenge. Whatever the circumstances, SMART Mobilizer fold-out shelters offer a rapid deployment solution. It has built-in storage for equipment and generator and SMART unit loads or unloads in less than 10 minutes. But they are also designed to connect together in a modular fashion, forming larger compounds.

Sultan said whether it's intended to be used as a portable office, a hospitality suite, VIP accommodations, a showroom or a pop-up boutique, the SMART mobile building is the perfect choice - for luxurious comfort and convenience.

C-SMART military shelter can be transported by land, by sea, and by air easily





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Common Infrared Countermeasures

feature the latest technology in a small, lightweight configuration that protects a wide variety of fixed-, rotary- and tilt-wing aircraft from today's most modern threats.

Common Infrared Countermeasures (CIRCM)

Also, the Common Infrared Countermeasures (CIRCM) was in the spotlight. It is designed specifically to protect rotary wing and medium fixed wing aircraft from infrared (IR) missiles. The system is built on open architecture to work with existing hardware, simplify upgrades and keep lifecycle costs low. CIRCM solution defends against emerging missile threats of today and tomorrow. With over a million operating hours in theatre, the dependable, adaptable system has been tested and proven in the harshest wartime conditions.

The company also focused on the Guardrail airborne signals intelligence (SIGINT) system that builds on more than 40 years of success to provide operational commanders with near real-time intelligence, precise geo-location data and persistent targeting information. Around the globe, modulated, encrypted and multiplexed signals are increasing in number, type and complexity, creating

challenges for signal surveillance and exploitation. Today's airborne payloads require advanced, open and modular architectural designs and technical implementation to meet these challenges with improved signal location and exploitation capabilities. Northrop Grumman, in partnership with the US government, develops modern, integrated airborne SIGINT payloads that are affordable, scalable and sustainable for a variety of airborne platforms.

On the other hand, the Large Aircraft Infrared Countermeasures (LAIRCM) system protects large aircraft from man-portable missiles, increases crew-warning time, decreases false alarm rates and automatically counters advanced IR missile systems by directing a high-intensity modulated laser beam into the missile seeker, with no action required by the crew. The pilot will simply be informed that a threat missile was detected and jammed. LAIRCM system is an active countermeasure that defeats the threat missile guidance system by directing a high-intensity modulated laser beam into the missile seeker.

Other highlights included the Slayer, a handheld precision targeting device providing dismounted observers the ability for target engagement with precision

indirect fire munitions. The compact, lightweight system provides precision engagement capability through a non-magnetic celestial compass and includes an internal high-definition colour day and thermal night vision sensor, an eye safe laser rangefinder, a GPS receiver and a digital magnetic compass. The Slayer system is proven to meet all US Army requirements for rapid precision target engagement.

The Lightweight Laser Designator Rangefinder 2H was also on display and is known to provide high-resolution sensors for fire-support target acquisition and reconnaissance missions. Through its unique integration of leading edge technologies, LLDR-2H provides high-resolution sensors for fire-support target acquisition and reconnaissance missions. Interconnectivity within the digitized battlefield enables the operator to use LLDR-2H to quickly acquire, locate and designate high-value targets.

Lastly, the company highlighted Venom, a remote-controlled laser designator rangefinder telescoping mast system with an automatic tracking device that enables war fighters to designate moving and stationary targets while on the move from the safety of an armoured vehicle. The vehicle-mounted targeting system uses a Lightweight Laser Designator Rangefinder (LLDR), a programme of record that will field 2,700 systems. Venom supports the LLDR on a universal, stabilized and gimballed mount that is transferable to all vehicles. The quick dismount, modular design of the Venom system allows the war fighter to easily disconnect the LLDR for man-portable operations. Venom's LLDR is battle-tested and has been used effectively in Operation Enduring Freedom and Operation Iraqi Freedom in support of the global war on terrorism.

Reference Text / Photos:
www.northropgrumman.com

financial auditability and unprecedented asset visibility. The technical innovation and schedule performance of the GCSS-Army team will result in the implementation and fielding of the largest Enterprise Resource Planning systems successfully attempted within the Department of Defense. Interfacing with other Army logistics systems provides users with continuity of operations. Its aim is to ultimately replace several aging and out-dated Army management information systems across tactical logistics environments within the Army's Active and Reserve components as well as the National Guard.

Furthermore, the event focused on a Northrop Grumman-developed aircraft-mounted airborne communications pod, Smart Node Pod, combined with a company Freedom multifunction, software-defined radio system that serves as an aerial gateway to create an advanced tactical network and to enable a more fully connected digital battlefield. Warfighters in the field perform most effectively when they have a more complete under-

standing of local and theater situations, threats and operational objectives. In the highly dynamic battlefield of today, command and control, situational awareness, and full motion video are delivered from an increasingly wide variety of sources. Smart Node Pod system provides a force multiplier by extending line-of-sight and beyond-line-of-sight, tactical data link (TDL) and IP-based communications in the Joint Aerial Layer Network (JALN).

Like the larger BACN system, the Smart Node Pod provides a communications payload that bridges data and voice communications and projects networking capabilities to the forward edge of the battlefield. It provides a communications gateway capability for manned and remotely piloted aircraft, extending needed communications capabilities to disadvantaged users at the edge of the JALN.

The Smart Node Pod provides both commanders and network planners the flexibility to extend the capabilities of traditional tactical and strategic battlefield communications. With the option

to deploy on a variety of readily available airborne platforms and a modular approach to radio and application configurations, the system enables a more fully connected digital battlefield today.

Maximising Survivability

Some of the other innovations highlighted included the AN/APR-39D(V)2, a radar warning receiver and electronic warfare management system designed to maximise survivability by improving aircrew situational awareness via interactive management of all on-board sensors and countermeasures. The electronic battlefield becomes more complex every day, dominated by an array of multispectral (RF/IR/EO) threats that jeopardize aircrew survival. To survive, aircrews must not only have sophisticated sensors and countermeasures, but a way to manage them. The APR-39D(V)2 will merge the C(V)2 baseline with the Northrop Grumman Digital Receiver product line, providing advanced RWR capability for today's and tomorrow's RF threat environment. The system will



Venom by Northrop Grumman



Guardian Anti-Missile System

NGC Showcases Defence Capabilities at AUSA

The company exhibited a number of winning capabilities



Laser Designator Rangefinder

Northrop Grumman Corporation highlighted key defence capabilities during the Association of the United States Army (AUSA) Global Force Symposium, which took place from March 15 to 17 at the Von Braun Centre.

"The AUSA Global Force Symposium offers government and industry attendees a rich opportunity to exchange ideas on ways to address the Army's war fighting challenges," said Kevin Campbell, Vice President and Huntsville Corporate Lead Executive, Northrop Grumman.

At the event, Northrop Grumman displayed their family of air and missile defence sensors and command-and-control programmes including the Air and Missile Defense Workstation (AMDWS); Counter-Rocket, Artillery and Mortar (C-RAM) system; Forward Area Air Defense Command and Control (FAAD C2) system; Integrated Air and Missile Defense Battle Command System (IBCS); and the Joint Tactical Ground Station (JTAGS). These programmes were designed and developed

to counter the set of threats against Army forces – from RAM to aircraft and helicopters to ballistic missiles.

Support System

The company shed light on the Hellhound light reconnaissance vehicle, which provides unique capabilities by combining the latest innovation from the automotive racing community with emerging weapons and electronics technologies to offer a flexible, high-performance platform for the Army's light forces. The sleek, black vehicle can hold a squad of six soldiers and their gear, export 100 kilowatts of power and travel in the back of a CH-47 Chinook cargo helicopter. It features a 30mm cannon that can fold from the roof into the vehicle, a height-reduction system and

flat-screen display. The Hellhound is a mid-sized off-road truck that can generate more electrical power for radios, sensors, defensive jammers, and other gear than much larger vehicles using older technology. In a disaster scenario, the Hellhound could power a blacked-out hospital; in a war zone, it could power a command post.

The Global Combat Support System-Army (GCSS-Army), a state-of-the-art, web-based, logistics and finance system based upon COTS software, was also at the event. Integrated with Department of Defense financial systems, GCSS-Army provides highly accurate cost management and financial visibility for tactical materiel and sustainment. When complete, GCSS-Army will have met the mission of providing a system for

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vanced signal processing and guidance control capabilities of the Advanced Medium-Range Air-to-Air Missile (AMRAAM). SM-6 provides Joint Force and Strike Force Commanders fleet air defense against fixed- and rotary-wing aircraft, unmanned aerial vehicles, land-attack anti-ship cruise missiles in flight and terminal ballistic missiles, both over sea and land.

SM-6 delivers a multi-mission, proven over-the-horizon air defense capability by leveraging the time-tested advantages of the Standard Missile's airframe and propulsion. It uses both active and semi-active guidance modes and advanced fuzing techniques.

The missile uses the airframe of the earlier SM-2ER Block IV (RIM-156A) missile, adding the active radar homing seeker from the AIM-120C AMRAAM in place of the semi-active seeker of the previous design. This improves the capability of the Standard missile against highly agile targets, and targets beyond the effective range of the launching vessels' target illumination radars. Initial operating capability was planned for 2013 and was achieved on November 27, 2013. The SM-6 is not meant to replace the SM-2 series of missiles, but will serve along side and provide extended range and increased firepower.

The SM-6 offers extended range over previous SM-2 series missiles, primarily being able to intercept very high altitude or sea-skimming anti-ship missiles, and is also capable of performing terminal phase ballistic missile defense. It can discriminate targets using its dual-mode seeker, with the semi-active seeker relying on a ship-based illuminator to highlight the target, and the active seeker having the missile itself send out an electromagnetic signal; the active seeker has the ability to detect a land-based cruise missile amid ground features, even from behind a mountain.



Launched from the USS John Paul Jones, a Standard Missile-6 demonstrated its ability to intercept ballistic missiles

Shatters engagement distance record

Recently, Raytheon's Standard Missile-6, successfully engaged five targets and shattered its previous maximum engagement range record, set in June of 2014.

This test series, supported by the Cooperative Engagement Capability, validated the tactical warfighting capability of SM-6, by demonstrating both maximum down range and a maximum cross range intercepts in over-the-horizon, engage-on-remote missions.

"These tests demonstrate the full warfighting potential of SM-6 and its proven multi-mission value," said Dr. Taylor Lawrence, Raytheon Missile Systems president. "The versatility of SM-6 makes it deployable on 60 surface combatants in the fleet, providing additional layers of capability and protection."

The USS JOHN PAUL JONES (DDG 53), configured with AEGIS Baseline 9.C1, executed the series of four missions with five SM-6 missiles for Follow-

on Operational Test and Evaluation, part of the final testing leading to a likely declaration of Full Operational Capability in 2017.

The USS GRIDLEY (DDG 101) was on station to perform as the AEGIS assist ship for the engage-on-remote missions. The tests also proved the ability of SM-6 to conduct complex, multiple target scenarios.

SM-6 is a key component of the U.S. Navy's Naval Integrated Fire Control – Counter Air mission, providing U.S. Navy sailors and their vessels extended range protection against fixed and rotary-wing aircraft, unmanned aerial vehicles, cruise and ballistic missiles. The SM-6 deployed for the first time in 2013, and Raytheon has delivered more than 250 missiles. The missile's final assembly takes place at Raytheon's state-of-the-art SM-6 and SM-3 all-up-round production facility at Redstone Arsenal in Huntsville, Ala.

Reference Text / Photos:
www.raytheon.com



cant for the versatile missile. Raytheon's SM-6 "Dual 1," part of the Missile Defense Agency's Sea-Based Terminal programme, is slated for additional testing. The programme protects against ballistic missiles in their final, or terminal, phase of flight, and it also includes anti-air warfare – combat against airborne threats such as helicopters, planes, unmanned aerial vehicles and cruise missiles.

Multi-mission Test

"SM-6 is an advanced multi-mission missile built upon decades of technological innovation and best practices," said Dr. Taylor W. Lawrence, President of Raytheon Missile Systems. "Its success showcases the value in using mature components in innovative ways."

Deployed on cruisers and destroyers, SM-6 currently provides the US Navy fleet with air defense against fixed- and

SM-6 is an advanced multi-mission missile built upon decades of technological innovation

rotary-wing aircraft, unmanned aerial vehicles, land-attack and anti-ship cruise missiles in flight, over both sea and land.

"Our objective was to demonstrate the SM-6's ability to intercept ballistic missiles in their terminal or final seconds of

flight," said Lawrence.

SM-6 is a key component in the US Navy's Naval Integrated Fire Control – Counter Air (NIFC-CA), providing the surface Navy with an increased battle space against over-the-horizon, anti-air warfare threats.

SM-6 has also been selected to fulfil the US Navy's Sea-Based Terminal (SBT) role and will provide defence against ballistic missiles in their terminal phase of flight, succeeding the SM-2 Block IV missile. The dual mission capability (long range air defense and terminal ballistic missile defense) is called SM-6 Dual 1.

The US Navy fired an SM-6 "Dual-1" in July 2015 for the first time, intercepting and destroying a short-range ballistic missile target at sea in its final seconds of flight.

SM-6 is the only missile in the world that can perform both anti-air warfare and terminal ballistic missile defense from sea. Now it is adding anti-surface warfare to its repertoire. The system's operational modes include semi-active homing and active homing to provide highly accurate target engagement.

Vertically launched from a MK 41 VLS canister, SM-6 is compatible with existing AEGIS cruisers and destroyers and future cruisers and destroyers.

The US Navy awarded Raytheon US\$270 million for SM-6 production in late February. Delivery of up to 113 missiles will begin in 2018. The award marked the fourth year of full-rate production for the multi-mission missile. SM-6 was first deployed in 2013. Raytheon has delivered more than 250 missiles to date, with many years of production on the horizon. SM-6 is currently deployable on 60 surface combatants in the fleet.

SM-6 leverages the legacy Standard Missile airframe and propulsion elements, while incorporating the ad-



An SM-6 missile launches from the deck of USS John Paul Jones during a test in June 2014

Standard Missile-6: One Missile, Many Missions

The missile has been built for anti-air warfare and can also be used against ships at sea

Raytheon's Standard Missile-6, already deployed in anti-air warfare and as an interceptor for ballistic missiles at sea, has now proven effective against targets on the ocean's surface.

In a test off the coast of Hawaii, an SM-6 missile engaged and sunk its first-ever surface target – the decommissioned guided missile frigate USS Reuben James. That test demonstrated SM-6's capability in anti-surface warfare.

The test comes as the US Navy strives for what it calls distributed lethality, or the ability to strike from any ship and from any location. That requires using ships in dispersed formations to counter threats from missiles, aircraft, submarines and surface ships.

"In order to have more power in more places, the Navy is increasing the offen-

sive might of the surface force," said Dr. Mitch Steverson, Vice President of Raytheon Air and Missile Defense.

Data gathered from the test will be assessed to examine how the missile and its supporting systems work together. Ultimately, the Navy will use the information to make recommendations for the development of future systems and standards.

"The SM-6 is a very capable missile," Steverson said. "One missile with one hardware configuration performs all three missions."

In separate tests, the missile, which is deployed on cruisers and destroyers, broke its previous distance record for engaging a target by demonstrating both maximum down-range and maximum cross-range intercepts.

"The missile was put through its paces and it exceeded all expectations during

rigorous and complex multiple target scenarios," said Mike Campisi, Raytheon Missile Systems' Senior SM-6 Program Director.

The missile destroyed five targets in "over-the-horizon, engage-on-remote" missions. Those tests, in part, confirmed SM-6's ability to engage threats beyond the sight of operators on the ship, using its own radar.

"Now, through pairing it with real-time sensors, SM-6 no longer relies on the ship to provide targeting data," Campisi said. "The missile activates its own radar to engage targets."

The USS John Paul Jones (DDG-53), configured with the advanced Aegis Baseline 9.C1, executed the distance-breaking missions as part of final testing that will likely lead to full operational capability in 2017.

This year will continue to be signifi-



at the Dubai Airshow last November.

Vital options

With tailored maintenance programmes for the unique requirements of any fleet, Beechcraft Defense Company Global Mission Support provides an array of vital options for keeping teams fully operational. From cost-per-flight hour solutions that provide all-inclusive coverage to on-site technical training and support to full turn-key fleet maintenance, the company's technicians will put an aircraft back in

AT-6 is able to provide a complete COIN Precision Attack & ISR capability

service as quickly as possible.

Global Mission Support helps ensure that the fleet will be ready to fly

at a moment's notice. With more than US\$100 million in parts inventory and access to more than a half-billion dollars in inventory worldwide via service network, the company is ready to deliver aircraft parts and support quickly. Worry-free inventory management and support equipment is what clients get when they source Global Mission Support for warehouse management needs.

Unscheduled incidents can cripple operations without ready, reliable support. When you need them most, Global Mission Support has factory-trained experts immediately deployable anywhere in the world for a mission. Its cost-per-flight hour solutions provide all-inclusive coverage from onsite technical support to full turn-key maintenance.

Support

Global Mission Support provides industry-leading training in fleet maintenance for fleets around the world. Their Train-the-Trainer concept enables military and special mission operators alike to take over their own programmes with full confidence. The training programmes can be tailored to client's exact requirements so a team is equipped to deal with any situation. Following the technical instruction phase, a comprehensive on-the-job training is provided.

Standing by to support all of a client's technical requirements, Global Mission Support's technical and field support team leverages decades of experience and technical knowledge to resolve any challenge encountered quickly and can also support clients around the world.

Reference Text / Photos:
www.beechcraft.com



AT-6 training programmes can be tailored to client's exact requirements

laser-guided rockets successfully.

Wolverine is used for undergraduate pilot training, Introduction to fighter fundamentals, joint terminal attack controller training, and collaborative training.

Unique

Disaster area imagery, reconnaissance, and search and rescue are also areas where a Wolverine can best perform. AT-6 can provide a comprehensive solution to meet Counterinsurgency (COIN) Precision Attack & ISR Aircraft mission needs. The AT-6 team leverage significant operational experience from Textron, Beechcraft, and Lockheed Martin to provide a solution specifically designed for the host country. AT-6 is able to provide a complete COIN Precision Attack & ISR capability in the shortest possible time and can be a proven, low-risk solution. The Beechcraft Team is also in a unique position to offer in-country Field Service Representatives (FSRs) to support the long-term sustenance

**Wolverine's
extensive variety
of weapons
including
general-purpose,
laser-guided
and inertial
aided munitions
boasts its
efficiency**

of an aircraft.

In September 2015, the AT-6C Wolverine light attack and reconnaissance aircraft completed its first NATO exercise. Held at Namest in the Czech Republic, Ample Strike 15 was a multinational exercise that integrated

air and land forces, and was primarily focused on training for more than 100 NATO JTACs (joint terminal air controllers). As well as the Wolverine, fixed-wing assets included Slovenian Pilatus PC-9s, a Learjet and PC-9 target facilities aircraft from Germany, a Slovak L-39, plus Gripen and L-159s from the Czech air force. US Army AH-64 Apaches and Czech Mil Mi-24/35s were also involved.

As part of the exercise the AT-6C flew seven operational missions, during which 35 successful engagements against adversary forces were undertaken. The scenarios included live firing; helicopter forward and arming refuelling points; smoke and kinetic blanks.

As well as its exercise participation, the AT-6C performed a number of customer demonstration flights while in Europe. The aircraft is a derivative of the T-6 Texan II trainer, but is fully missionized for the light attack and reconnaissance role. It was also seen

AT-6 is designed to accommodate 95 per cent of the aircrew population; the widest range in its class



AT-6 Wolverine has a higher airspeed and Mach envelope

Sparrowhawk HUD with integrated navigation and weapons delivery and F-16 Hands-On-Throttle-And-Stick (HOTAS).

Wolverine's extensive variety of weapons including general-purpose, laser-guided and inertial aided munitions boasts its efficiency. Further, AT-6 is the first fixed-wing aircraft to fire laser-guided rockets. It provides the most powerful allied-compatible ISR and targeting suite available with an L3 Wescam MX-15Di multi-sensor suite, which provides colour and IR cameras, laser designator, laser illuminator and laser rangefinder.

Higher airspeed

The AT-6 Wolverine has a higher airspeed and Mach envelope for carriage and employment of external systems than other light attack aircraft. Its seven hardpoints allow the AT-6 Wolverine more than 13 general purpose and precision munitions to meet the demanding requirements of close air support and light attack missions. The AT-6 Wolverine can accommodate more than 66 standard load configurations as well as its non-standard asym-

metric configurations, which provides the most versatile mission readiness in its class.

This mission ready aircraft leverages significant Department of Defense investment in people, platforms and programmes to meet light attack and armed reconnaissance requirements. It covers a wide-mission spectrum that includes training, manned Intelligence Surveillance and Reconnaissance (ISR), and light precision attack. Its non-traditional capabilities are ideal for internal defense and civil support missions.

The AT-6 Wolverine employs a broad range of weapons that no other light attack aircraft can match. It has demonstrated light attack capabilities and full compatibility with US and NATO Joint Terminal Attack Controller (JTAC) systems. Capable of operating with a staggering array of weapons and external fuel carriage configurations, the AT-6 Wolverine gives the warfighter what they need when they need it, including the flexibility to tailor weapons configurations. In addition, the AT-6 Wolverine is the first fixed-wing aircraft to employ 2.75"



AT-6 WOLVERINE: READY FOR ANYTHING

Purpose-built for light attack and armed reconnaissance

In a world where unpredictability is commonplace and flexibility is critical, Beechcraft delivers the AT-6 Light Attack and Armed Reconnaissance aircraft, which offers purpose-built solutions for irregular warfare and counterinsurgency. The AT-6 outperforms the competition and provides a full suite of synchronized ground-based training capabilities as well as an established global logistics infrastructure.

It is purpose-built for the light Attack and armed reconnaissance missions and leverages millions of investment dollars in the US Air Force's T-6, A-10C and MC-12 platforms. This translates into lower cost and makes the AT-6 available at a fraction of the acquisition, sustainment and training costs of more traditional combat aircraft. AT-6 is based on the proven Beechcraft USAF T-6A and USN T-6B and designed to accommodate 95 per cent of the aircrew population; the widest range in its class.

It is capable of long persistence

with two aircrew and weapons and up to 1,485 nm self-deployment range. The sensor suite is adapted from the MC-12W and world-class Lockheed Martin A-10C mission computer with CMC Esterline glass cockpit and flight management systems command the AT-6 Wolverine. The AT-6 Wolverine cockpit is built for today's warfighter and integrates a digital glass cockpit and HUD, tactical navigation, sensor display, weapons management, and weapons delivery modes. It further includes Flight Management System, and Multi-Function Displays,





forever be with Saudi Arabia, led by King Salman Bin Abdul Aziz, through consultations and coordination towards all issues of common interest. Jordan is absolutely keen on Arab security, particularly during these times dominated by chaos resulting from terrorism," he said.

Arab efforts should be conjugated to eradicate terrorism and the participation of Jordan in the military drills is in the framework of its solidarity with Saudi Arabia and the other Gulf, Arab and Muslim states, he added.

Abdul Hafedh Ebrahim, Sudan's Ambassador to Saudi Arabia, said his country fully supported Saudi Arabia. "Sudan's participation in the drills is based on the significance of joint work to ensure security and peace in the region," he said.

On the other hand, the Egyptian ambassador to Saudi Arabia, Nasser Hamdy said that his country's participation was within the strategic cooperation between the two countries.

Pakistan's JF-17 Thunder aircraft performed flight manoeuvres during a military parade at the concluding cer-

emony of exercises in Saudi Arabia. "Pakistan is the only country whose pilots and fighter aircraft took part in aerobatics at the show as PAF's display team Sherdils performed with its K-8 Karakoram aircraft," a statement said. Soldiers from Pakistan's elite commando force, the SSG, also performed free fall by jumping off military helicopters carrying flags of 21 countries, which took part in the military drills.

Making a Strong Statement

The move to host the drill came just months after Saudi Arabia formed an anti-terrorist coalition of 34 mainly Muslim nations. Saudi Arabia's Foreign minister Adel al-Jubeir said the alliance had been formed to "push back and confront the terrorists and those who promote their violent ideologies," which promises to fight any terrorist organisation. Also recently, Saudi Arabia sent an aircraft to Turkey's Incirlik air base to aid in the fight against ISIS militants in Syria.

The stage chosen for the exercise, Hafr Al-Batin in northern Saudi Arabia, adjacent to Iraq, near Iran and Syr-

ian is also a strategic move, according to reports. Hafr Al-Batin is in the Eastern Province, located 430 km north of Riyadh and 94.2 km from the Kuwaiti border. Hamdan Al-Shehri, a political analyst, said, "The manoeuvre, which is a strong message for Iran, seeks to unify the military forces of Arab and Islamic countries. It is the first real manoeuvre after the Kingdom's announcement of the formation of a 34-nation Islamic alliance against terrorism last December."

Saudi Arabia has in recent weeks resumed its part in the air strikes carried out against ISIS, which has been welcomed by the US. The country has also offered to send ground forces to fight militants. While President Obama has ruled out sending American ground troops into Syria, Turkey's Foreign Minister Mevlut Cavusoglu said his country and the Saudis would support a ground operation coalition.

According to the International Institute of Strategic Studies, Saudi Arabia has the best-equipped military of Gulf countries, with an army of 75,000 troops and 313 combat-capable aircraft.



ticipating countries.

Authorities have released few details of the extent of the exercises, but Asiri said they were aimed at preparing to tackle the region's "terrorist menace" and were not directed against Iran.

He said, "The drill served to boost fighting capabilities, exchange of information, benefit from experiences and expertise and enhanced coordination between the participating countries."

Asiri added, "When participating countries feel that there are coordinated and interdependent efforts, the results of the exercise will be positive. We have models based on real experience of being in the Arab coalition in Yemen where operations are running excellently and positively."

Asiri said that Saudi Arabia worked within military coalitions and that it was ready for a land war whenever the international coalition wants to launch ground operations. Saudi Arabia has a strong desire to defeat terror groups, he said, adding that, no country in the region was targeted by the Daesh terror group like the Saudi kingdom, where it attacked mosques, security men and



the northern border.

Further, Asiri said that the focus of the drills was guerrilla warfare, pointing out the dangers the region faces due to Iran's use of loyalist militias in what he said was Iran's attempts an interfering in the internal affairs of Arab states. He cited the Lebanese Hezbollah militia and the Yemeni Al Houthi militia as examples.

Several Arab ambassadors said that

the participation of their countries in 'Northern Thunder' will focus on the ground troops and will boost combat readiness and coordination.

"The initiative of the Custodian of the Two Holy Mosques to launch the Northern Thunder drills is one of his numerous initiatives to preserve security and stability in the region," said Jamal Al Shamayla, the Jordan ambassador to Saudi Arabia. "Jordan, led by His Majesty King Abdullah, will always and



The training focused on how to coordinate combat operations and guerrilla warfare tactics among the Muslim-majority countries that are members of a larger alliance against terrorism announced by Riyadh in December.

Taking place near Hafra Al Batin city in north eastern Saudi Arabia, the manoeuvres are the “most important and largest in the region’s history”, according to Saudi authorities.

A two-hour mock battle featuring fighter jets, attack helicopters and tanks was among the final exercises, which Saudi Arabia has described as a show of regional unity.

Riyadh has adopted a more assertive foreign policy since King Salman took the throne early last year following the death of King Abdullah. The Kingdom is leading a mainly Arab coalition fighting rebels in Yemen, is taking part in US-led air strikes against ISIS and has offered to send special forces to fight the extremist group in Syria.

‘Northern Thunder’ is also taking place after tensions escalated between



Saudi Arabia and Iran, who back opposing sides in Syria and Yemen.

Joint Cooperation

According to reports, Saudi Arabia hosted the major military drill to send a clear message that any hostile action or intention in the region will be tack-

led decisively. Brigadier Ahmed Asiri, the spokesperson for the Arab Coalition fighting to restore the rule of the internationally recognised government in Yemen, said that the aim of the exercise was to achieve the highest level of preparedness, exchange expertise and promote coordination among the par-



Northern Thunder Military Exercise: Sending a Message of Unity and Power

Nearly 350,000 ground troops from 21 nations in the Middle East, Africa and Asia, including the UAE, recently took part in the last day of the 'Northern Thunder' manoeuvres. The exercises took place in the Saudi Arabia desert near the borders of Kuwait and Iraq.

Warplanes roared overhead, tanks rumbled across the desert and smoke filled the sky recently during the final stage of what Saudi Arabia said were the biggest military exercises in the history of the region.

According to reports, around 150,000 soldiers, 2,540 warplanes, 20,000 tanks, and 460 helicopters participated in the military exercise. The participating

countries included Saudi Arabia, UAE, Bahrain, Kuwait, Qatar, Oman, Jordan, Senegal, Sudan, Maldives, Morocco, Pakistan, Chad, Tunisia, Comoro Islands, Djibouti, Malaysia, Egypt, Mauritania, and Mauritius.

His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, joined Saudi Arabia's King Salman to attend the conclusion of the manoeuvres. Senior royals from Qatar, Bahrain and Oman were also present along with other regional leaders, including Egyptian president Abdel Fattah El Sisi, Sudanese president Omar Al Bashir and Pakistani Prime Minister Nawaz Sharif.

Sheikh Mohammed praised the expertise of the UAE troops who partici-

pated in the air, land and sea exercises. He said, "This group of our armed forces enjoy the advantages of combat and military skills, and morale is very high. They are the vanguard against challenges, no matter how hard, which have increased the threat to peace and to regional and international security."

He also praised the skills of the other armies taking part, and expressed his confidence that all involved would achieve military superiority.

"One victory is not enough to defeat and root out terrorism because it would be temporary, whereas superiority lasts forever and that is what we plan to do as leaders in the UAE, to achieve superiority on many levels and in all fields of military, developmental, humanitarian, political and economic," he added.

“Implementing Strategy: Strategic Coalitions”

The need to focus effort and implement coherent strategies is just as necessary when seeking regional and international solutions to problems as it is for domestic issues, but is much more complex. Today our region faces strategic challenges in both Yemen and Syria; solutions to both will require the coordination of national and multinational capabilities. Even when the goals at the national level are clear, the ability to focus multinational efforts to ensure success at the strategic level remains a challenge in periods of turmoil. Thus, international tools for focusing effort, among them alliances and coalitions, merit greater understanding.

An alliance is a formal agreement between two or more nations, commonly related to planning, threat response, force commitments, or joint action against challenges. Alliances often involve both military and non-military agreements. Historically, alliances were designed to advance the respective national interests and provide for coordinated response if any member became threatened. The obvious motivation in states engaging in military alliances is to better protect themselves against threats from more powerful global actors. However states have also entered into alliances simply to improve ties with a particular nation or to deter conflict with a potential adversary. The value of alliances, including their formation and cohesiveness, is hotly debated; two leading books outlining that debate include Glenn H. Snyder's *Alliance Politics* and Stephen Walt's *The Origins of Alliances*.

A strategic multinational coalition is an organization made up of countries mutually committed to a given action, unified within a single command structure with specified powers, most typically designed for a multinational military or relief operation. Coalitions have weaker bonds than alliances, which typically require cooperation, whereas coalition actions are voluntary. Examples of coalitions include the one formed in 1990 for the liberation of Kuwait and the Australian-led INTERFET operation in East Timor in 1999. A more contemporary example of a coalition was that formed by NATO for the 2011 Libyan civil war against Muammar Gaddafi. Each of these coalition groupings had different bonds among the participating nations. A good recent study of coalitions is Melissa Yeager and Charles Carter, *Pacts and Alliances in History: Diplomatic Strategy and the Politics of Coalitions*.

Most recently Saudi Arabia has directed a coalition of nine Arab states in neighboring Yemen. In operations Decisive Storm and Restoring Hope in response to requests for assistance from the Yemeni government of President Hadi. Aircraft from Egypt, Morocco, Jordan, Sudan, the United Arab Emirates, Kuwait, Qatar, and Bahrain took part in these operations. Somalia made its airspace, territorial waters, and military bases available for the coalition and the United States provided intelligence, weapons and logistical support, including search-and-rescue for downed coalition pilots. Despite not becoming a member of the coalition, Pakistan agreed to provide warships to help the coalition enforce an arms embargo against the Houthis. All of these nations shared some common goals. In April officials announced the end to Decisive Storm, and the coalition shifted its focus to political processes and initial stabilization efforts, in Restoring Hope, showing that coalitions can be useful in both security and humanitarian efforts. In February 2016 Saudi Arabia also sponsored coalition exercise North Thunder, including Pakistani forces, designed to demonstrate coalition commitment against other threats.

With the crisis in Yemen still ongoing and coalition operations likely in Syria, the UAE will be faced with potentially conflicting requirements that could pull our national effort in different directions, so focusing coalition efforts while maintaining emphasis on our national objectives will require constant attention. Coalitions can help demonstrate regional norms of behavior and succeed where unilateral action often fails to have full effect; managing international coalitions can be challenging but can also greatly increase the impact of the UAE when our nation shares common interests with other countries. Managing international coalitions will remain an important skill for strategic leaders in the decades to come.

Strategic Perspectives



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Watchkeeper X Makes a Mark at UMEX

Built to the same standards as a manned aircraft

Thales's new modular Watchkeeper X system reflects a growing need for high-end military-standard Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) capability to wider markets. This modular Unmanned Aircraft System offers a range of options that can be adapted to specific operational requirements. Thales has presented Watchkeeper X Unmanned aircraft system, stratoBus and other solutions at UMEX.



Watchkeeper (credit Richard Seymour)

The versatile system is ideal for providing high-performance ISTAR over a wide range of air, land and maritime scenarios but can now also provide covert, rapid reaction to threats if required. Thales aims to deliver Watchkeeper X through collaboration with local industries and partnerships. This unique approach to unmanned aircrafts systems means that Thales can help to build a truly sovereign capability for our customers.

At the heart of Watchkeeper X, remains a fully certified, combat proven, high-performance unmanned aircraft system. Building on this solid foundation, Thales now offers a range of options in sensors, exploitation, mobility and effectors, which can be integrated, upgraded or adapted to make this a fully flexible, modular capability today and in the future.

The sensors option builds on the dual payload configuration of the aircraft to offer cameras, radar, electronic surveillance and a fully integrated simultaneous

operation. The mobility option offers a range of solutions to provide fixed infrastructure operations or full expeditionary or mobile deployments. The exploitation option pulls on our experience of data management and dissemination to give tools such as datalinks to transport information anywhere in the world, protect that information and exploit it to maximum effect. And the effectors option gives the capability to deliver effect directly or indirectly.

With its fast deployment, high endurance, flexible payloads and precision strike, Watchkeeper X will respond to the growing need for ISTAR capabilities. Built to the same standards as a manned aircraft, it is highly transportable and its modular design means it can be adapted and upgraded for specific operational requirements. Upgrades can be integrated at any time which means the system is flexible to change along with strategic priorities.

The StratoBus project may immediately call to mind Google's Project Loon.

But the advantage of StratoBus is that it offers long endurance and complete autonomy from a fixed position, while the high-altitude balloons in Loon move around the Earth and will offer only limited autonomy.

StratoBus, a surprising vehicle halfway between a drone and a satellite, will be able to carry out a wide range of missions, including observation, security, telecommunications, broadcasting and navigation and it offers a lifespan of five years.

The StratoBus project is led by Thales Alenia Space, along with partners, Zodiac Marine and CEA-Liten. It embodies a new concept for an autonomous airship, operating at an altitude of about 20 kilometers. This is in the lower reaches of the stratosphere, but well above air traffic and jet streams. StratoBus will be able to carry payloads up to 250 kg. The project is part of the creation of an airship company by the Pégase competitiveness cluster in southern France.

PC-21: Offering a Reliable Training Platform

PC-21 training courses are practically orientated

Pilatus showcased the PC-21 at the Simulation and Training Exhibition. To train the next generation of military pilots, Pilatus developed the PC-21, especially designed and built with students in mind.

With air force budgets getting tighter, the all-new PC-21 provides a low-cost but highly effective training platform for pilots destined to fly jet fighters, without actually requiring them to fly jets until much later in the program. To do this, Pilatus expanded the design and performance envelope to take this single engine turboprop into an area that was previously the domain of jet aircraft.

The PC-21 far surpasses all other turboprop trainers in terms of aerodynamic performance, cockpit equipment, flex-

ibility and ease of maintenance. The use of state-of-the-art technologies increases both the efficiency and quality of training. Training hours flown in expensive jets can now be done entirely in the PC-21, which saves a substantial amount of life-cycle cost. Other PC-21 attributes include significantly lower fuel consumption and noise emissions.

As a manufacturer with a long history in assisting air forces to train their front line pilots, Pilatus develops completely integrated training systems. The PC-21 package includes sophisticated synthetic training devices, computer based training, and classroom instruction, providing a proven turnkey solution for today's pilot training needs.

Pilatus Aircraft Ltd and its training center are located in the heart of Switzerland surrounded by the Alps and

close to Lake Lucerne.

The training centre offers various courses for maintenance personnel and flight crews for the entire Pilatus Aircraft fleet. All their training instructors are highly motivated and have many years of experience and a thorough knowledge of their fields of expertise.

All training courses are practically orientated. Whenever possible the customer's aircraft is used for hands on training or cockpit and system familiarisation. This ensures that all the equipment and systems are presented in the customer's configuration.

Training is supported by the latest Computer Based Training software (CBT), Flight Training Device (FTD) and other modern training systems.



Training hours flown in expensive jets can now be done entirely in the PC-21

Rapid Mobilization Vital for Armed Forces

HEMTT is engineered to surmount the toughest environments

Events in recent years have repeatedly demonstrated the need for national armed forces to have the capabilities to protect their borders and respond quickly to crises – the ability to go virtually anywhere, any time to bring the support needed to fulfill the mission – whether it is in disaster response or on the front lines of battle.

Addressing escalating regional threats, two Gulf nations, United Arab Emirates and Qatar, have introduced mandatory military service to increase readiness and manpower and other Gulf nations have initiated a unified military command to coordinate their land, air and sea forces' response to threats while also upgrading their special operations capabilities.

Defense analysts emphasize the need for national armed forces to step up the "precision and technological advances now being incorporated into weapons, platforms, and operating concepts [to] make it possible to do far more with fewer assets than ever before." This assessment calls for platforms, such as the Oshkosh® Heavy Expanded Mobility Tactical Truck (HEMTT), that can be adapted to perform a broad range of missions and proven dependability over many years of operation.

The 10 ton (9,070 kg) Oshkosh HEMTT has proven over the years that it delivers on tough missions. While the first HEMTTs rolled off of the production lines in 1982, the international reputation of these powerful transporters soared due to the key roles HEMTT played in the international response to Iraq's invasion of Kuwait in 1991. During this conflict, the



versatile HEMTT performed a variety of logistical and combat support missions including enabling Patriot missile batteries to move into positions—regardless of the terrain—to defend against airborne missile and attack aircraft threats to civilian and military facilities.

The HEMTT is engineered to surmount the toughest environments – on and off the battlefield. These eight-wheel giants are built with the flexibility to be configured for multiple variants from cargo, cranes and wrecker winches to Terminal High Altitude Area Defense (THAAD) guided missile batteries and gun platforms. Eight independent wheels on a platform powered by a 15.2 liter, 515-horsepower Caterpillar® C15 engine can traverse challenging off-road terrain, such as soft sand, mud and loose rocks, in all weather conditions. All HEMTT models are designed to navigate water to a depth of 48 inches (121 cm) and can climb a gradient of at least 60 percent.

HEMTTs deliver exceptional performance for the most difficult recovery missions and extreme transportability

in large cargo aircraft such as the C-17. The HEMTT has served more than 10 countries in times of crisis and disaster response and is regularly called upon in natural disasters and other crises in the U.S. mainland and around the world, including the disastrous earthquake in Haiti in 2010.

Land forces development is expected to continue its rapid growth across the Middle East, as more governments look at six- and eight-wheel-drive vehicles to cope with the terrain and because of their lower maintenance costs. With its long history of operation in the Gulf region, HEMTT is the most proven and capable of delivering mission performance and reliability in all of the many roles it has played.

Today's constantly evolving military threats demand heavy tactical vehicles that can keep pace, not only with the demands and the forces, but also with threats to the national environment. The Oshkosh HEMTT's reputation as the "ship of the desert" and its proven capabilities continue strong to this day.♦

PREDATOR XP: Well equipped to face today's ISR challenges

Excels in both military and civil missions

General Atomics Aeronautical Systems, Inc.'s (GA-ASI) Predator® XP Remotely Piloted Aircraft System (RPAS) is designed specifically to overcome the threat of global terrorism previously handled by manned Intelligence, Surveillance, and Reconnaissance (ISR) aircraft, according to Tamer Aly, Regional Director, International Strategic Development, Middle East/North Africa, GA-ASI.

"The manned ISR is a resource-intensive effort requiring multiple aircraft with heavy operating costs and vast teams of trained personnel to pilot, operate sensors, and perform maintenance. The result has been an incomplete solution coming at great expense to the countries that have made the required investment to address this critical problem," Aly told the Nation Shield magazine in an exclusive interview on the sidelines of the UMEMX.

He said that this is because the ISR mission presents two critical challenges for these nations. First, persistent surveillance over vast stretches of open terrain is required to spot the covert movement of personnel and goods. Manned aircraft do not adequately provide the required level of persistence due to their limited endurance. Second, there are significant limitations to the number of qualified personnel available to recruit and train for manned ISR programs to ensure constant watch over these areas.

"That is where the Predator® XP Remotely Piloted Aircraft System (RPAS) comes in," he said. "Equipped with GA-

ASI's state-of-the-art Lynx® Multi-mode Radar mated to an integrated high-definition Electro-Optical/Infrared (EO/IR) camera, Predator XP provides all-weather, day/night performance for a wide-area search capability.

"Predator XP is approved and licensed by the U.S. Government and is now available to a broader customer base, including the Middle East and North African regions," Aly pointed out.

"Lynx's Ground Moving Target Indicator (GMTI) mode provides a quick and easy method for locating moving vehicles. The radar's new Maritime Wide Area Search (MWAS) mode, coupled with an Automatic Identification System (AIS), provides the capability to complete a variety of maritime missions successfully, including coastal surveillance, drug interdiction, long-range surveillance, small target detection, and search and rescue operations, he added.

With an endurance of 35 hours and the ability to ascend up to 25,000 feet, the aircraft is designed with state-of-the-art technologies, including an automatic takeoff and landing capability, redundant

flight control surfaces, enhanced avionics, and triple-redundant flight control computers. Predator XP is equipped with both Line-of-Sight (LOS) and Beyond-Line-of-Sight (BLOS) data link systems for over-the-horizon operations. These features make Predator XP the region's ideal "go-to" remotely piloted ISR platform, Aly said.

"Predator XP excels in both military and civil missions as its capabilities are uniquely qualified to support law enforcement, public safety, search and rescue, and emergency response operations. GA-ASI's Predator-series RPAS are integrated with civil airspace integration measures and have been conducting these civil missions within American borders for over a decade, supporting both the U.S. Department of Homeland Security/Customs and Border Protection and NASA," he said.

"GA-ASI is a world leader in ISR technologies and is best known for its Predator family of RPAS, currently in operation worldwide. Amassing nearly 40,000 flight hours per month, the company's aircraft have accumulated over 3.6 million cumulative flight hours to date," Ali concluded.



Predator XP provides persistent ISR

“Partnership and Innovation Critical To Success”: James Hogan

The UAE is actively leveraging partnerships

Partnership and innovation have been a driving force behind the success of Etihad Airways and the UAE” said James Hogan, President and Chief Executive of Etihad Airways, the national airline of the UAE.

Delivering a keynote address to the Global Aerospace Summit, held as part of the Abu Dhabi Aviation and Aerospace Week, Hogan outlined the advantages of the strategic partnerships Etihad Airways has forged through minority equity stakes in Alitalia, Air Serbia, Air Seychelles, airberlin, Etihad Regional operated by Darwin Airline, Jet Airways, and Virgin Australia.

He said, “To become a competitive global network carrier today is incredibly challenging. Partnerships allow us to compete effectively and give us scale and differentiation, as well as reducing cost and delivering major benefits, including operational cooperation, more consumer choice and competition, and job creation.”

Speaking to the Summit’s major theme of partnership, Hogan praised the UAE’s pioneering approach, particularly in the area of aerospace partnerships.

“In the UAE, we are seeing a rapidly expanding broad portfolio based on partnership in aerostructures manufacturing, engine and component financing, and maintenance, repair and overhaul,” he said.

“The UAE is actively leveraging partnerships with the world’s biggest aviation players including Rolls-Royce, GE, Boeing and Airbus as it becomes a leading



James Hogan, President and CEO of Etihad Airways

global player and centre of excellence.”

Hogan described how partnerships are more important than ever in an increasingly globalised economy, as well as the need for businesses to continually innovate to stay relevant – another central theme of the Summit that drew leading aerospace figures to the UAE capital for two days of debate and presentations.

He said: “The UAE aims to become one of the most innovative nations in the world within seven years and enter the Global Innovation Index top 20 by 2021.

“Already, we are seeing the creation of a national culture that encourages innovation and entrepreneurship through partnership, with the private sector encouraged to establish innovation and scientific research centres and adopt new technologies.

“This is a philosophy we also hold dear at Etihad Airways. We know that a sustained innovation process is fundamental in a competitive environment such as aviation. It is absolutely central to providing remarkable products and services

to our guests now and into the future.”

Hogan cited examples of Etihad Airways’ work in developing innovative products and services, highlighting The Residence – the world’s only three-room cabin in commercial aviation with a dedicated Savoy-trained butler – on board the airline’s Airbus A380 fleet.

Emphasising the importance of innovation to today’s environmentally conscious travellers, Hogan also spoke of Etihad Airways’ work with partners on the sustainable production of aviation biofuels in the UAE.

Hogan closed his address by challenging delegates to embrace innovation because consumers expect to deal with switched-on organisations in a new digital society.

He said, “The world isn’t changing – it’s already changed. Partnership and innovation are critical in a new globalised economy and success in an increasingly digital future depends on an ability to implement effective technologies and rethink strategy, culture and talent”.

Tawazun launches two new companies during ISNR 2016



Tawazun stand at ISNR 2016



Al Hosn body armor

Tawazun Holding announced the launch of two new companies; Advanced Pyrotechnics (ATP) and Al Hosn Armored Systems during its participation in the 7th edition of the International Exhibition for Security and National Resilience, ISNR Abu Dhabi 2016.

The two new companies were present within Tawazun's stand at the ISNR 2016, along with a number of other subsidiaries, including Jahezeya, Remaya and others.

Held under the patronage of H.H. Sheikh Hazza bin Zayed Al Nahyan, Deputy Chairman of the Abu Dhabi Executive Council, ISNR Abu Dhabi 2016 was held on 15-17 March at the Abu Dhabi National Exhibition, ADNEC, and organised by the UAE Ministry of Interior and Reed Exhibitions Middle East.

H.E. Saif Mohamed Al Hajeri, CEO of Tawazun, stressed the importance of ISNR Abu Dhabi 2016, noting that it offered a chance to shed light on the latest achievements of Tawazun group of companies in the national security field.

"Since it was first launched in Abu Dhabi, we have always been keen to take part in this event. It provides us with the opportunity to display our latest innovations, products and solutions in the fields of national security, emergency, crisis and disaster management. Our participation in ISNR Abu Dhabi 2016 was particularly important as we introduced the advanced security services and products of the Advanced Pyrotechnics (APT) and Al Hosn Armored Systems to exhibitors and visitors," Al Hajeri said in a statement.

Visitors to Tawazun's stand at ISNR 2016 were introduced to the one million square meter Safety Security and Disaster Management City known as Jahezeya.

Jahezeya is a training facility, which is designed to re-enact and recreate past incidents and perceived future threats. It serves as a platform to provide scenario-based training of single and multiple events in various training zones and provides professionals with a unique experience to train, communicate and interact with their counterparts while performing the operations in realistic settings. The new city, expected to be

operational by year 2019, will also offer accommodation and classroom facilities set in a community environment.

Remaya International also exhibited at Tawazun's stand at ISNR 2016. Remaya provides advanced shooting solutions through designing, developing and managing shooting ranges.

Remaya currently operates the Caracal Shooting Club in Abu Dhabi and Al Ain Shooting Club. It also offers consultancy services for building and enhancing shooting ranges using the latest shooting equipment. In addition, it provides advanced training for specialists.

In their first appearance at the ISNR Abu Dhabi, Al Hosn Armored Systems and Advanced Pyrotechnics (APT) highlighted their products and technologies in their respective fields of specialities.

AJBAN 440A: SAFE AND MOBILE

To be launched at Eurosatory 2016 in Paris

NIMR's newest vehicle development, the AJBAN 440A, to be launched at Eurosatory 2016 in Paris, is a highly protected yet mobile 4x4 light tactical patrol vehicle. With a four man cabin armoured against IED, blast and ballistic threats, it is fitted for mission communications and self-defence with a roof mounted weapon.

This highly configurable platform is designed for multiple mission requirements, such as command & control, logistics or utility vehicle.

Designed and manufactured in the UAE, the AJBAN 440A provides superior performance in hot desert climates, maintaining a stabilised internal temperature of 25C in harsh climates up to 56 degrees ambient air temperature. The highly protected cabin, which comfortably carries four fully equipped troops, has been developed and certified for exceptional roadside IED and ballistic threat survivability. The protected cabin is fitted with a rear cargo box, roof mounted self-defence weapon and an extensive array of option mission systems.

Powered by a Cummins 6.7L diesel engine combined with an Allison 6-speed automatic transmission and double wishbone independent suspension the AJBAN 440A provides a potent combination of performance, protection and mobility on all types of terrain.

Standard accessories of the AJBAN 440A include a battery power management system, run flats, a central tyre inflation system and a winch.



NIMR vehicles are in service with Armed Forces across the MENA region

Using the latest CANBus technology, the AJBAN 440A is ready for GVA compliant system integration including BMS for both automotive and mission battery sets.

The vehicle may be equipped with a wide array of optional systems and equipment, including Fire Suppression System, Smoke Grenade Launchers, Engine Fire Suppression System, Critical Engine Protection, Gun Mount and Remote Weapon Station, C41 Command and Control and ISTAR System. It may also be fitted with Mission Batteries & Radio Rack, Higher Capacity Winch, Gun Mount, Grenade Launcher, NBC System, Cabin Fire Suppression, 360HP Engine, Spare (5th) Wheel, Cold Weather Engine Start, RPG Protection, Thermal Management System, Armoured A-Frame Tow bar and Driver night-vision.

The AJBAN 440A vehicle is currently in active service across the region. NIMR supports the vehicle lifecycle for a period of 20 years, providing a complete solution to the customer.

NIMR is a major manufacturer of light and medium weight wheeled military vehicles. Based in the United Arab Emirates, NIMR vehicles are in service with Armed Forces across the MENA region and have a reputation for versatility, ruggedness and performance. With a complete in-house design capability and modern production facilities, NIMR provides a total solution to meet defence needs.

Having built a reputation for exceptional performance in the harshest desert conditions, NIMR vehicles provide the tactical mobility required to meet a diverse range of operational requirements on the modern battlefield. Based on a unique, modular 4x4 and 6x6 chassis and driveline, NIMR provides utility, logistic and command variants as well as protected patrol vehicles, all with a range of protection options.

Cobham, RFHIC to Develop New GaN Solid State Radar

Cobham and RFHIC Corporation of Korea have established a strategic partnership to incorporate RFHIC's Gallium Nitride (GaN) technology into Cobham's next-generation RF products. Cobham and RFHIC will jointly develop GaN High Power Amplifier (HPA) modules that will be integrated into a prototype 175 KiloWatt (KW) solid-state transmitter. Cobham Integrated Electronics Solutions, a business unit of CAES at its Exeter, New Hampshire site, will execute development activities under this Memorandum of Agreement.

Bob McArthur, Business Area Vice President for Cobham Integrated Electronic Solutions said, "Its benefits include a significant increase in Mean Time Between Critical Failure (MTBCF), substantial decreases in operational and sustainment costs, and graceful degradation in the event of hardware failure, as opposed to single point of

failure or instantaneous shutdown."

"Cobham is revolutionising radar, communication, and EW markets with its proprietary solid state transmitter, using RFHIC's GaN amplifier technology," said Dr. Samuel Cho, Founder and Chairman of RFHIC Corporation.

Cobham has successfully developed a 35KW prototype S-Band Solid State Transmitter for air traffic control and weather radar applications. RFHIC has

a comprehensive product portfolio from discrete components to integrated high power amplifiers. The combined expertise of Cobham and RFHIC will enable further exploration of domestic and international civil and military radar applications for GaN-based solid-state technologies. Additionally, the partnership between Cobham and RFHIC may help provide offset obligations between Korean Military and US Navy contracts.



Cubic Awarded US\$76.4 Million IDIQ Contract

Cubic Global Defense (CGD), a business unit of Cubic Corporation recently announced that it received a US\$76.4 million contract from the Defense Logistics Agency (DLA) Land and Maritime to supply key components for the AN/ARS-6 (V-12) Personnel Locator Systems (PLS). The contract is a five-year base indefinite delivery/indefinite quantity (IDIQ) contract with a performance completion date of December 2020.

Cubic's PLS is part of the standard Combat Search and Rescue (CSAR) system used by US and NATO forces to covertly locate downed or missing personnel from the air, while concealing the warfighters' location from the enemy. The AN/ARS-6 PLS is an airborne

guidance system that provides secure, encrypted communication between rescue forces and isolated personnel during civil and combat rescue missions. It is installed in close-air-support aircraft, such as helicopters and fixed-wing attack aircraft, and interfaces with all US deployed combat survival radios and standard civil emergency distress beacons.

"Nothing is more important than rescuing civilians or military personnel at risk. These systems are critical in the search and rescue of our warfighters," said Bill Toti, President of Cubic

Global Defense. "We take this responsibility very seriously, and are very proud of our role in designing and delivering the best PLS systems in the world to bring our warfighters home."



Cubic Personnel Locator Systems

Italian Air Force Eurofighter Typhoons Seen at Red Flag

Italian Air Force Eurofighter Typhoons have made their first appearance at one of the world's best-known military exercises. Exercise Red Flag, at the Nellis Air Force Base in Nevada, is a realistic combat training exercise involving the air, space and cyber forces of the United States and its allies.

Eight Italian Eurofighter Typhoons, from the 4th, 36th and 37th Fighter Wings in Grosseto, made their inaugural appearance at the Base, led by Detachment Commander Marco Bertoli. They took part in a series of exercises along with 76 other aircraft exploring different combat scenarios, utilising a military training area with more than 15,000 square miles of airspace.

The Nevada Test and Training Range (NTRR) is the US Air Force's premiere military training area and the Exercise



RAF Eurofighter Typhoon at Nellis. Credit Jamie Hunter

provides 1,900 possible targets, realistic threat systems, and an opposing enemy force that cannot be replicated anywhere else in the world. Nellis AFB and the NTRR are the home of a simulated battlefield, providing combat air forces with the ability to train to fight together in a

peacetime environment, and to survive and win together. The responsibility for executing Red Flag lies with the 414th Combat Training Squadron. Aircraft depart Nellis twice a day and remain in the air for up to five hours.

AAR Awarded US\$49 Million for US Army NGATS Shelters

AAAR was recently awarded a contract for the United States Army Next Generation Automatic Test System (NGATS) Shelters with a total contract ceiling valued at US\$49 million over five years. AAR has received a first delivery order valued at US\$2.5 million to include first article units for two shelter variants, as well as production units. The shelters will be designed by AAR Mobility Systems in Cadillac, Michigan; and produced at their Goldsboro, North Carolina facility.

The award calls for the design, test, and production of two types of 20-foot ISO shelters that will support the NGATS, including an Automatic Test Equipment (ATE) shelter, which is a maintenance shelter that houses the actual test

system, and the NGATS storage shelter that stores the system-specific hardware required to test the systems components.

David P. Storch, AAR CEO, said, "This contract demonstrates Mobility's longstanding ability to design and engineer new and creative solutions to meet our customers evolving needs."

"Our innovative rugged design offers similarities between the shelters, simplifying the Integrated Logistics Support, and is significantly lighter than the threshold requirement," said Lee Krantz, Senior Vice President, AAR Mobility Systems. "This weight savings translates to increased payload to accommodate more test equipment and supplies for longer missions, or allows the US Army to take advantage of reduced fuel consumption for transport."



ATE Shelter



Storage Shelter

NGATS Shelters

Saab To Deploy Multilateration Systems at Dubai Airports

Saab recently announced that it has been awarded two contracts by Dubai Aviation Engineering Projects (DAEP) to supply and install a Wide Area Multilateration (WAM) system at Dubai International Airport (DXB) and a Surface Multilateration system at Al Maktoum Airport (AMI). The company is one of the world's leading multilateration surveillance providers and is responsible for more than half of all global installations.

The DXB WAM system will pro-

vide surveillance of the aerodrome using Saab's latest MDS technology that will support Precision Runway Monitoring (PRM) and allow the airport to increase its throughput by enabling simultaneous landings on the two parallel runways. The WAM system will augment the existing surface multilateration system already installed and commissioned at DXB to increase the surveillance coverage to 50nm from the airport.

The AMI surface multilateration system will allow the airport to ac-

curately track aircraft positions on the airfield so that controllers can monitor the movements of all transponder equipped aircraft and vehicles. Saab's VeeLo NG vehicle locator will be installed on ground vehicles to positively identify them and enable their positions to be tracked by the system. With Saab's multilateration, air traffic controllers will be able to maintain situational awareness despite any obstructions or inclement weather that may constrain visual observations from the tower.

Boeing's Echo Voyager can Operate Autonomously for Months

Boeing recently introduced Echo Voyager, its latest unmanned, undersea vehicle (UUV), which can operate autonomously for months at a time thanks to a hybrid rechargeable power system and modular payload bay.

The 51-foot-long vehicle is not only autonomous while underway, but it can also be launched and recovered without the support ships that normally assist UUVs. Echo Voyager is the latest innovation in Boeing's UUV family, joining the 32-foot Echo Seeker and the 18-foot Echo Ranger.

"Echo Voyager is a new approach to how unmanned undersea vehicles will operate and be used in the future," said Darryl Davis, President, Boeing Phantom Works. "Our investments in innovative technologies such as autonomous systems are helping our customers affordably meet mission requirements now and in the years to come."

Echo Voyager will begin sea tri-

als off the California coast later this summer. Boeing has designed and operated manned and unmanned deep-sea systems since the 1960s.

"Echo Voyager can collect data while at sea, rise to the surface, and provide information back to users in

a near real-time environment," said Lance Towers, Director, Sea & Land, Boeing Phantom Works. "Existing UUVs require a surface ship and crew for day-to-day operations. Echo Voyager eliminates that need and associated costs."



Echo Voyager will begin sea trials later this summer

Finmeccanica Wins Contract to Upgrade Kuala Lumpur's ATCC

Finmeccanica has been awarded a contract to replace the current Air Traffic Control Centre (ATCC) with a new ATCC located at Kuala Lumpur International Airport (KLIA). The company has been selected as the leading Original Equipment Manufacturer (OEM) to partner with Malaysian company AAT, for the overall provision.

Work has commenced and the project is due to be completed by 2018. The project includes the design, development and construction of a new air traffic management centre to replace the current system in place at Sultan Abdul Aziz Shah Airport. Primary and secondary radar, Automatic Dependent Surveillance – Broadcast technology (ADS-B), a Ground-Based Augmentation System (GBAS), a Global Navigation Satellite System (GNSS), VHF radios, AFTN/AMHS gateways and navigation aids are components of the supply.

The comprehensive solution clearly demonstrates Finmeccanica technology leadership in the provision of complex systems.

Finmeccanica was selected as it met the strict technical and functional specifications imposed by Malaysia. It was also seen to offer a smooth and safe operational transition proposal from the current centre in Subang to the new centre in Sepang with little or no integration risks.

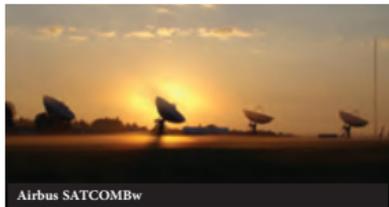
Finmeccanica is a major international provider of large-scale, complex solutions for Air Traffic Control and Management (ATC/ATM) systems. Over the past half century, the company has delivered more than a thousand primary and secondary radars in more than 150 countries, providing users with innovative, proprietary technology solutions based on efficiency, safety, performance, and environmental sustainability.



Airbus Defence & Space to Operate German Military Satellite

Airbus Defence and Space has been awarded a €145 million contract by the procurement agency of German Armed Forces (BAAINBw) for the long term operation of the SATCOMBw secure satellite communications system. Airbus Defence and Space has been operating the SATCOMBw system since 2006. This contract, which has been renewed for the next seven-and-a-half years, includes the in-orbit operation of the military COMSATBw1 and COMSATBw 2 satellites as well as the operation of their teleport and associated networks in Weilheim, Germany, until 2022.

The two military communication satellites COMSATBw-1 and COMSATBw-2 provide German armed forces



(Bundeswehr) in operation with military UHF and X-band plus additional capacity in C and Ku-band over a coverage stretching from the Americas to Eastern Asia.

In addition to the two satellites, the SATCOMBw programme provides a secure ground communications network and control system. Command centres, vehicles, aircrafts and ships deployed

around the world are linked directly into the base communications networks for voice, video, database access and IP (Internet Protocol) services.

"We are proud to support German armed forces for its

worldwide missions and to keep managing the operation after our successful delivery of the SATCOMBw system", said Stefan Gramolla, Head of SATCOMBw programme at Airbus Defence and Space.

Airbus Defence and Space has been responsible for the overall SATCOMBw system design, integration and delivery of a fully operational capability.

final design of UAE Memorial



and heroism," His Highness added.

His Highness also stressed that the endless love, loyalty and sense of belonging that the nation's heroes demonstrated will remain a source of pride and honour not only for their families, but also for the nation as a whole, and Emiratis will always cherish and commemorate with pride their heroism and sacrifices.

The monument will comprise a series of stunning metal panels, each supporting the next, signifying the support and strength between soldiers, families and citizens in the face of adversity. It has been designed by British artist Idris Khan, and was selected from proposals submitted by three outstanding artists of international repute.

The monument will form the centre-piece of the Memorial Park, which will be a place of reflection, strength, pride,

power, unity and eternity. The name of each hero will be individually honoured within the park.

The Memorial Park will include a large plaza with terraced seating, public gardens and a pavilion for quiet contemplation; a unique reflective pool will mirror the nearby Sheikh Zayed Grand Mosque. The Memorial Park will also feature a visitor centre to promote understanding of the role of the UAE's national heroes in serving and safeguarding the nation.

The MFAO, which was founded to follow-up on the affairs of the families and children of national heroes, and provide them with necessary support, will supervise the phases of work on the Memorial Park.

The MFAO has launched a dedicated website for the Memorial, thememorial.ae, where visitors can access information

on the latest developments concerning the Memorial and read more about the UAE's national heroes. Visitors will also be able to interact on the website through messages and other activities.

"The memorial site will be designed as a major national and cultural destination that honours the heroes of the UAE and the patriotic values they represent," the MFAO said. "It will also be an expression of the UAE's appreciation for the ultimate sacrifices of its sons for the sake of the nation."

The MFAO said the memorial would translate into reality the desire of UAE President Sheikh Khalifa to "immortalise the names of the men who gave up their lives while performing their national duty to keep the UAE flag flying high" •

Mohamed bin Zayed approves

The monument is being constructed to honour the memory of fallen Emirati soldiers

His Highness Sheikh Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces, recently approved the final design of the UAE Martyrs' Memorial, which will stand as a lasting tribute to the nation's fallen heroes.

The monument, to be built in time for this year's Commemoration Day on November 30, will be situated in the Memorial Park close to the Sheikh Zayed Grand Mosque.

His Highness Sheikh Mohammed Bin Zayed had ordered the construction of a martyrs' memorial in Abu Dhabi in honour of fallen Emirati soldiers. The aim of building this national landmark is to honour the martyrs who sacrificed their lives

for the nation and to keep their names engraved in the memories of Emirati citizens. The memorial is aimed to inspire present and future generations and keep the UAE flag flying high, exemplifying the glory and dignity of the nation.

His Highness has also instructed the Martyrs' Families' Affairs Office (MFAO), at the Crown Prince's Court to supervise the implementation of the memorial and follow up the necessary plans in coordi-

nation with relevant bodies and organisations.

"The values of patriotism, loyalty and selflessness displayed by the sacrifice of the UAE's national heroes have immortalised them in the collective memory of all Emiratis, including their leadership," said HH Sheikh Mohamed bin Zayed.

"The UAE Memorial symbolises the ultimate sacrifice of our heroes, who have set for us the greatest example of giving



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provide eight employees for the vocational development centre worth AED 10,312,798.

A AED12,428,147 worth contract with Al Hamra Trading Est.; a AED 9,487,110 worth contract with Eye ON Technology; a AED1,846,489 worth contract with International Golden Group; AED1,742,828 worth contract with GulfNet Security Systems Company LLC ; and AED602,000 Aworth contract with Qartaja Trading Est.

Cooperation with Countries

At the event, the General Command of Abu Dhabi Police, GHQ, signed an agreement concerning security cooperation with the Italian Carabinieri, or Military Police. The agreement was

signed by the Commander in Chief of Abu Dhabi Police, Major-General Mohammed Khalfan Al Rumaithi, and for the Italian 'Arma dei Carabinieri', by Lt. General Tullio Del Sette. The agreement deals with technical arrangements for joint cooperation between the General Command of Abu Dhabi Police and the Italian Carabinieri in the field of security.

The MoI signed a memorandum of understanding (MoU) with the Ministry of Interior of Sudan in the field of security cooperation. The MoU was signed by Lt. General Saif Abdullah Al Sha'far, Undersecretary at the Ministry of Interior on behalf of the UAE Ministry of Interior and First Lieutenant General Hashim Osman Al Hussein Saad,

Director General of the Sudanese Police. The MoU aims to reinforce security cooperation between the two brotherly countries in the areas of crime fighting and the exchange of experiences in areas of training, information and best police practices.

Lt. General Saif Abdullah Al Sha'far, Undersecretary at the Ministry of Interior attended the signing of a MoU between the Ministry of Interior, represented by the Police College and Rabdan Academy on cooperation in education and training. Colonel Waleed Al Shamesi, Director General of Abu Dhabi Police College, and Dr. Faisal Obaid Al Ayyan, Executive Vice President, Rabdan Academy signed the MoU, in the presence of officials from both sides. The MoU aims to strengthen cooperation and communication between both parties, in the areas of training and education; to exchange information, knowledge and experiences and take advantage of the various activities and active participations in all relevant areas.

The most prominent contracts are as follows:

The MoI signed three supply contracts worth AED104,340,000, including a contract for supplying and delivering e-passports (ordinary and emergency) worth AED46,340,000 with Emirates Computers.

The value of the second contract with National Ambulance was AED44 million, to deliver fully equipped ambulances and provide operating and management services for the northern emirates.

The third contract was signed with Saeed Salem Khalfan Commercial Agencies, with a value of AED14million, to supply and deliver mid-sized four-wheel fire trucks.

MoI also signed four supply contracts for a total value of AED231,697,342, notably a contract to supply, install and operate tools, equipment, software, training, and maintenance of e-Ports projects with Electronic Identity Management and Security Solution (EIMASS) worth AED187,800,342; two contracts with Atlas Communication worth AED43,897,000 to supply, install, and operate the main station, base stations of Tetra System, with the training; and to supply, install, and operate visual communications network (LTE) and supply wireless devices. The MoI also signed a contract with Bin Salmeen Computers and Office Supplies, worth AED6,494,455 to supply, install, and operate CCTV cameras on the digital network system.

The Abu Dhabi Police General Headquarters signed 18 contracts with a total value of AED548,045,430. These contracts included: five contracts with Emirates Fire and Rescue Company worth AED262,771,848, to provide services and training to quick responding civil defense teams in Abu Dhabi and the northern emirates; four contracts



with National Ambulance to provide paramedics and provide ambulance services to the Emergency and Public Safety Department with the value of AED179,512, 822.

Three contracts were signed with Caracal Light Ammunition to provide different types of ammunition worth AED 19 million; two contracts with Atlas Communications to renovate the wireless network (Tetra) and their accessories, and for an incident and crisis management system project worth

AED19,011,662; a contract with Emirates Solutions for Integrated Security (ESIS) to supply, install and develop the control system of the operations room worth AED23,429,300.

A contract with Al Dhafra International Projects Group worth AED 19,008,000; a contract with Electronic Identity Management and Security Solution (EIMASS) to develop and expand the capacity of the iris recognition system worth AED14,999,000; and a contract with Ethos Integrated Solutions to



istry of Interior's (MoI) classic car exhibition and other specialised vehicle shows, a photo gallery, and the launch of the 2016 ISNR Innovative Ideas Awards.

The 530 exhibiting companies, including global leaders such as BAE Systems, Dyncorp, L-3 Communications, NEC

Global, and Thales, showcased solutions across public safety, disaster management, border security, connected law enforcement, and critical national infrastructure protection.

Aftershock 2

H.H. Sheikh Saif attended the 'Aftershock 2' live demonstration on responding to crises and emergencies, which aims to introduce a uniform structure used by the UAE to coordinate emergency responses. It also aims to promote the readiness of various security bodies to handle major crises through the Integration Doctrine applicable to all the security bodies at the MoI.

The 40-minute Aftershock 2 live demonstration featured a simulation show on dealing with crises and disasters that may affect modern cities. The scenario included a cargo jet falling on a chemical plant, leaking poisonous substances, and panic among the plant's workers. The live demonstration showcased the response speed of the various security and police bodies, as well as the highly professional management of the situation, as the injured workers were provided with the necessary first aid and the fire resulting from the accident was brought under control.

The live demonstration was executed by traffic patrols; guards and special tasks patrols; rescue and ambulance personnel; civil defence; security media; mobile control room; specialised security patrols dedicated to dealing with hazardous chemical substances; a mobile police hospital; a K9 security inspection department; post explosions investigation teams; a major crimes investigation unit; and a fire investigation team.

The live demonstration reflected the MoI staff, units and personnel's preparedness in ensuring prompt responses, controlling the field, and restoring daily life activities to their normal track. It witnessed wide attendance by different local, regional and global media outlets.

Contracts Signed

The total value of contracts signed by the MoI and the Abu Dhabi Police General Headquarters exceeded AED1b.



tional companies from the public and private sectors. He was briefed about what was being displayed by companies such as devices, modern equipment, advanced technologies, software and hardware safety, security and risk prevention, and rapid response to emergencies.

In parallel with ISNR 2016, a number of exhibitions were held under its umbrella: ISNR Exhibition, Infosecurity Middle East, a branch of Infosecurity Europe; 40 technical security workshops that were held in collaboration with global cyber security specialists; Emergency Response and Disaster Prevention Exhibition; Firefighting Mid-

dle East; and Occupational Safety and Health Middle East. The event hosted more than 70 international delegations and included five exhibitions, more than 60 seminars and 10 live events. New and innovative security-related products and solutions were also presented during this year's edition.

Robust Presence

Prominent national Emirati companies and a number of leading international companies participated in the event. The exhibition provided strong business opportunities for local and multinational companies operating in the Middle

East, in multiple areas including cyber security, homeland security, emergency response and workplace safety.

ISNR had several new events and pavilions such as the Future of Policing Pavilion and the Innovation Podium, which provided specialised platforms to review latest products, solutions and services. The new events included various shows such as the police dog K9 demonstrations and fire fighting shows that were held on the sidelines of the UAE World Firefighter Challenge. An area was designated for Occupational Safety and Health Middle East's live shows. Other events included the Min-



His Highness Lt. General Sheikh Saif bin Zayed Al Nahyan, Deputy Prime Minister and Minister of the Interior, opened the seventh International Exhibition for National Security and Resilience (ISNR 2016)

Resounding Success for ISNR

Contracts worth AED1b signed at the three-day global safety and security exhibition

Under the patronage of H.H. Sheikh Hazza bin Zayed Al Nahyan, Deputy Chairman of Abu Dhabi Executive Council, H.H. Lt. General Sheikh Saif bin Zayed Al Nahyan, Deputy Prime Minister and Minister of the Interior, opened the seventh International Exhibition for National Security and Resilience (ISNR Abu Dhabi 2016).

ISNR is one of the prominent events on the calendar for global security and safety in the MENA region. It provides public and private sector decision-makers with the latest concepts and technology in the fields of security and protection of critical installations and facilities, and preparedness and response to emer-

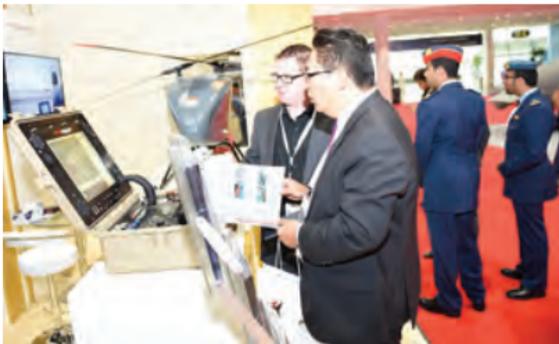
gencies and risk prevention.

In a statement at the opening of ISNR Abu Dhabi 2016, Sheikh Saif said, "The UAE was one of the first to identify the global security challenges and developments in our world, thanks to its wise leadership. It worked to cement the economic and investment structures in a secure and safe environment, using highly-qualified human resources, with the latest tools of the era."

He added, "The UAE is one of the most secure and stable countries in the world. This requires all of us; individuals and institutions, to work tirelessly and relentlessly to keep the security and stability and preserve the national gains achieved by the UAE in various fields. Holding this exhibition is an enormous opportunity for the governments in the

region and private sector security and safety companies to come together to exchange experiences with the participating delegation and companies; review the latest international systems, tools, equipment, and technologies in the fields of security, safety, crime fighting and prevention."

H.H. Sheikh Hamed bin Zayed Al Nahyan, Chief of the Abu Dhabi Crown Prince's Court, also toured the participant pavilion of the Ministry of Interior and national and international companies. He expressed his happiness at the notable developments witnessed by the pavilion, especially the increasing number of visitors, which confirms its prestigious status. Sheikh Hamed also expressed his admiration at the exhibits showcased at the pavilions of the na-



attack hits the intended target and at the same time does not injure friendly troops. This task is carried out by a forward air controller (FAC) or a Joint Terminal Attack Controller (JTAC).

The JTAC uses a large amount of highly technical and ultra-modern equipment. Communications is provided by several radios, capable of providing VHF, UHF and satellite voice and data communications compatible across the coalition forces deployed.

Building on its long experience of the virtual training market and its proven Joint Fires/Combined Arms training package, Saab Training & Simulation is addressing these challenges with its Joint Fire Synthetic Trainer simulation

system (JFIST).

The modular JFIST system is scalable and configurable for different customers with different requirements. It provides high fidelity worldwide databases of training areas, in all weathers, day and night with more than 2,000 simulated land, sea and air objects. The scenarios include airspace management, UAS integration, IR designated targets, illuminations and tracers, helicopter landing zones and terminal guidance.

Aerostat-200

Abu Dhabi Autonomous Systems Investments (ADASI) displayed Aerostat 200, a moored surveillance system that can remain airborne for one week with-

out the need for maintenance, said Sulaiman Al Shamsi, Operation Director, ADASI.

Aerostat-200 is a large fabric envelope filled with helium, and can rise up to an altitude of 1,000 feet while tethered by a single cable. It can lift a 70 kg payload to an operating altitude providing low-level, downward-looking radar coverage.

Adasi also showcased its Al Sabr system, a UAV using a rotorcraft design and a fully autonomous vertical take-off and landing platform, as well as parachutes and other high-quality, customer-tailored and easy-to-use military equipment. Al Shamsi said 80 Emirati engineers are working for Adasi's autonomous systems sector.

An autonomous system can be programmed to automatically carry out specific operational missions (with a certain level of self-governance), under the control and guidance of a human-operator at mission level.

Pilatus PC-21

Pilatus highlighted the PC-21 at the Simulation and Training Exhibition. To train the next generation of military pilots, Pilatus developed the PC-21, especially designed and built with students in mind. With air force budgets getting tighter, the all-new PC-21 provides a low-cost but highly effective training platform for pilots destined to fly jet fighters, without actually requiring them to fly jets until much later in the program. To do this, Pilatus expanded the design and performance envelope to take this single engine turboprop into an area that was previously the domain of jet aircraft.

The PC-21 far surpasses all other turboprop trainers in terms of aerodynamic performance, cockpit equipment, flexibility and ease of maintenance.

The next edition of UMEC will be in 2018.

tems. TheMIS is a base platform for the Digital Infantry Battlefield Solution (DIBS) which will be developed with an aim to reduce the number of human troops on battleground.

P.1HH HammerHead

The Piaggio Aerospace P.1HH HammerHead is a new, state-of-the-art UAS designed for Intelligence, Surveillance and Reconnaissance (ISR) missions. Its combination of performance and operational characteristics is at the very top end of the UAS MALE category.

An unmatched combination of range, wide operative speeds, fast climb gradient, high operative ceiling and potential variety of payloads, provides end-users with a powerful yet flexible Defense System that outperforms other MALE Systems, identifying the P.1HH HammerHead as a Super MALE UAS.

Its capabilities include being able to host several payload combinations and to perform multiple missions: aerial, land, coastal, maritime and offshore security, COMINT/ELINT, electronic warfare as well as other roles.

STC

Belarus' Special Training Centre (STC) was founded for the special and counterterrorism training for Special Forces of Belarus. Since 2007, STC conducts legally authorised training for foreign special force units. The Centre has vast experience in training of professionals of these units all over the world in Africa, South America, Middle East, CIS and Transcaucasia.

The Centre conducts training using the most advanced methods and technologies used in the sports of records and high achievements, as well as the use of innovative functional training programmes for the development, improvement and restoration of professional capacity.

STC's operational areas of deployment cover the Middle East, Africa, South America, Asia and CIS. More than 5,500 specialists underwent training in the Centre (more than 2,500 are foreign specialists) and STC has successfully implemented 32 international projects (average duration of each project ranges from three weeks to nine months).

KAI Tactical UAV

The Korea Aerospace Industries (KAI) showcased a tactical UAV under conceptual design phase that can carry a payload of 500kg. KAI has acquired system design, production, flight test control and other high-tech technologies required for unmanned aircraft de-

velopment. The UAV model displayed at UMEX has two variants, one with a V-tail and the second with a twin-boom tail. Both will have a wingspan of approximately 17m and up to 18 hours endurance. The main wing is designed for multi use. The system is customizable to meet customer's requirement. It has retractable EO/IR and L/G for improved stealth capability and built-in bay for mission equipment.

JFIST

SAAB highlighted its Joint Fire Synthetic Trainer simulation system (JFIST). Forward air control is the provision of guidance to Close Air Support (CAS) aircraft from a forward position on the ground, or in the air, to ensure that their





more capable in terms of its range and lift capability. The Predator XP was born out of these two.

Karayel Tactical UAV

After passing critical flight tests last year, Turkish major Vestel Defence is now scouting for exports abroad and looking at a wide range of collaborations with interested companies in the UAE. Aziz Sipahi, General Manager, Vestel Defence and Ayesas told Nation Shield on the sidelines of the UMEEX that Vestel is a regular participant at IDEX and Dubai Airshow, and considers the UAE as an important partner in the Middle East and is keen on long term tie ups.

"First of all, Abu Dhabi and Dubai are very important for this region. Secondly in the UAV field our company has come to a certain mature capability level. We understand that the UAE is looking for collaborations in the UAV field to improve their capability in the same segment. In this technical area we can offer support to the UAE companies to expand their UAV capability. On the other side, culturally and geographically

we are close to this region and in the long term we look forward to be working closely with the UAE.

"Karayel is a tactical UAV and it is a mature system which is used by Turkish Armed Forces. It is the first system in the region which is designed according to NATO standards. More importantly the whole design, the electronics, software and the manufacturing are all done by ourselves. We can also make any modification according to customer needs."

Coyote

Raytheon Missile Systems took a formal step into the UAV arena in early 2015 when it acquired Sensintel, Inc., a manufacturer of small UAV's based in Tucson, Arizona, US. Now the company is making an impact with its Coyote unmanned air systems, and is under contract with multiple US government agencies to provide UAV's for a variety of programmes.

Coyote is a small, tube-launched UAS that was developed as a maritime surveillance platform for the military. Coy-

UAE is the first export customer of Predator XP

ote's wings fold over each other so it can be housed inside a tube that is about three-foot long by five-inch diameter. That tube can be launched from a host aircraft or a ground-based launcher. After launch, the wings fold out and the UAV flies off on its mission.

"Coyote can fly for over an hour, at least 50 miles from its host aircraft, and into the lower altitudes where manned aircraft cannot safely fly. It can gather and transmit data from the most intense area of the storm," said John Hobday, Raytheon Lead for Advanced Unmanned Systems.

THEMIS UGV

The Estonian defence solutions provider, Milrem, showcased the capabilities of the first-of-its-kind hybrid modular unmanned ground vehicle THEMIS (Tracked Hybrid Modular Infantry System) in an exclusive demo at the show. THEMIS is a multi-mission vehicle platform that can assist and replace soldiers on the battlefield in complex and hazardous tasks and is able to reduce operational risks and work as a force multiplier.

Unlike existing UGVs, THEMIS is a highly modular platform that allows different superstructures to be mounted and integrated onto the middle vehicular platform for complex missions such as rescue, transport, reconnaissance.

THEMIS is the first modular hybrid unmanned ground vehicle in the world. The vehicle can be used for a very wide variety of applications, from simple transportation to advanced weapon sys-

the conference's opening speech covering these emerging sectors, which represents a major area of defence spending and are enabling militaries to respond in new, agile and flexible ways to fast changing regional security challenges.

Desert Hawk, K-MAX and Fury

Lockheed Martin made an impact at the UMEC with a diverse portfolio including Desert Hawk, K-MAX and Fury, suitable for any mission requiring advanced system capabilities. Desert Hawk provides day and night support to small unit intelligence, reconnaissance, surveillance, target acquisition, and related operations. Widely hailed as a critical force multiplier, Desert Hawk has been employed in support of combat operations since 2005 and has accomplished thousands of sorties under austere conditions and recently surpassed 30,000 flight hours in operational environments.

The K-MAX UAS is a transformational technology for any operator needing cargo or heavy-load insertion support. The UAS is designed specifically for heavy-lift, K-MAX enables Marines, soldiers and civil and commercial logistics personnel to deliver supplies day or night to precise locations without risk to human life or safety. Fury is a long-endurance, survivable Unmanned Aircraft that puts strategic capabilities into an expeditionary package.

Integrator UAS

The US-based Insitu which won a contract from UAE Armed Forces for its Integrator UAS is known the world over for its unmanned aircraft systems and hub-and-spoke operations, is looking for long term relations in the Middle East, said Mark Bauman, Program Director, Integrator and RQ 21A Blackjack.

"Our capabilities have been proven



in combat with our global defense customers since 2004 and we are glad to be participating in UMEC and to talk about these capabilities and the kind of operational support we can provide to our customers," he said in an interview with the Nation Shield during UMEC.

As for Insitu's Integrator UAS, which is said to be the most versatile payload platform in its class, he said it too had great potential in the Middle East. "In fact Integrator was founded on the vast operational experience that Insitu has attained through ScanEagle. We employ a number of capability enhancers in the development of the Integrator and have demonstrated its usefulness within the region recently," Bauman said.

"A key enabler in Insitu products is that we do not need customization to fly in these austere environments whether it is the tremendously cold arctic environment or the hot and dusty desert climate. No customization is required on either system to employ those capabilities and ensure that you meet the operational needs of the customer."

Predator XP

General Atomics Aeronautical Systems first started working in the Middle East about 10 years ago. At that time the company did not have the required approvals to sell unmanned aircraft systems that were manufactured. Jim Thomson, Regional Vice President, International Strategic Development, Middle East/North Africa said: "The approvals are very tightly controlled by the US Government in terms of export. We only had customers in United States and one or two others in the UK and Italy. Around 2012, we engaged with the UAE government specifically the air force and came to an agreement in 2013 for the sale of the Predator XP. It happens to be the first sale of the system to any country outside of the United States and NATO. So it is a big step not just for our company but for the UAE as well."

Predator XP is based on the original Predator that was designed in 1994 by General Atomics, which first flew in Bosnia in 1995, and really started the UAV revolution. There was also the Predator B, which was a larger and was



to train pilots on Blackhawks aircraft worth AED80.377m.

Infoc Simulation signed a deal worth AED160m and local player Al Badi won a AED50m contract to train technicians and operators from Republic of Belarus on Volate tanks.

Abu Dhabi Autonomous Systems Investments (ADASI) won a AED62.888m deal to supply spare parts for Sebar project.

Day two was also busy. The UAE signed three more deals worth over AED1.47b. An AED1.327b contract was signed with Abu Dhabi Autonomous Systems Investments Company (ADASI) to buy eight PIHH drones, equipped with day and night cameras, radars and telecommunication devices, in addition to training, spare parts and maintenance.

A deal regarding training helicopters pilots at Baker Australian College was concluded at AED143.3m, and a contract worth about AED992,000 was signed with Aeryon Labs Inc. to buy SkyRanger small Unmanned Aerial Systems (sUAS).

Day three saw the signing of seven

UMEX have proved a resounding success with the government inking deals over AED2.45b

more deals worth a total of AED216.193 m, which included a contract with International Golden Group Inc. for AED30m, another with East Gate Enterprises for crew training on explosive devices worth AED25m, and the purchase of small and medium sized arms from US company Cubic middle East Inc. for AED15.646m.

A contract went to a US company for AED44.147m, and another, worth AED44.9m was closed also with International Golden Group for fire training to be used by the presidential guard col-

lege. Deals for the purchase of aircraft engines from Denel Suk worth AED7m, and the rental of a system for war game training worth AED49.5m from German company Rheinmetall Defence Electronics were also made, bringing the total value of deals signed to AED2,454,357,000.

Highlights

A specialist conference accompanying UMEX and the co-located Simulation and Training Exhibition 2016 took place at the show with delegates hearing how new unmanned technologies and accompanying simulation packages are dramatically changing the front-line.

The conference focused on the theme 'defining the future of innovation', with the participation of senior members of various armed forces, the industry's leading lights and the sector's leaders from around the world, discussing how to leverage unmanned systems to serve defence, security and civil purposes in efficient, accurate and flexible ways.

Major General Pilot Ibrahim Nasser Al Alawi, commander of UAE Air Force and UAE Air Defence Force, gave



His Highness Sheikh Hazza bin Zayed Al Nahyan, Deputy Chairman of Abu Dhabi Executive Council, inaugurated the second edition of UMEM



SALES SOAR AT UMEM 2016

Unmanned system event hailed as major success

The stand-alone Unmanned System Exhibition (UMEX 2016) and the affiliated pilot edition of the Simulation Conference and Exhibition have proved a resounding success with the government inking deals over AED2.45b in a mere three days as well as generating extensive awareness.

The unmanned system industry is generating huge interest in military and civilian circles around the world and the decision to prioritise it by the UAE has clearly been vindicated with the recent event at ADNEC in the UAE capital as part of Abu Dhabi Aviation and Aerospace Week and organisers are likely to see UMEM become a 'must attend' from now on.

UMEX was held under the patronage of His Highness Sheikh Mohamed bin

Zayed Al Nahyan, the Crown Prince of Abu Dhabi and Deputy Supreme Commander of the Armed Forces. His Highness Sheikh Hazza bin Zayed Al Nahyan, Deputy Chairman of Abu Dhabi Executive Council, inaugurated the second edition of UMEM, and the first edition of the Simulation Conference and Exhibition.

UMEX provides a professional platform for manufacturers to meet operators and establish lucrative business relationships while promoting the ecological, environmental, civil and humanitarian benefits of unmanned systems and military simulation and training.

The three-day event attracted a high turnout of visitors and participants who were able to access the latest international products and scientific innovations in the unmanned systems' defence sector.

Brigadier General Rashid Mohammed Al-Shamsi, Chairman of Higher

Organising Committee of UMEM 2016 and the first edition of the Simulation Conference and Exhibition 2016 said: "Many companies this year have shown their interest to participate at the next conference and exhibition by 2018. We hope by 2018, there will be more participation, bigger land area and more products to showcase."

Deals...

On day one the UAE signed six deals worth more than AED767m with international and local companies to help strengthen the country's unmanned and aerospace defence sector.

Quebec Simulation Systems won a deal to install internal training systems consisting of 20 shooting systems for AED 9.107m, said Al-Shamsi. Other major deals went to CAE Inc. for the sale of AED404.8m simulation systems and the International Flight Academy

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His Highness Sheikh Mohammed Bin Zayed had ordered the construction of a martyrs' memorial in Abu Dhabi in honour of fallen Emirati soldiers. The memorial is aimed to inspire present and future generations and keep the UAE flag flying high, exemplifying the glory and dignity of the nation.

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NATION SHIELD

A Specialized Monthly Journal on Military and Strategic Affairs
Issued By UAE Armed Forces.
Established In August 1971.

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Lessons from the Year of “Determination and Hope”

On 26 March 2015, Operation Al-Hazem (Decisive) Storm was launched by the Arab Coalition to Restore Constitutional Legitimacy, led by the Kingdom of Saudi Arabia on demand from the Yemeni Government and with strong international support. Now that a year has elapsed after the launch of this operation and its complementation with Operation “Restoring Hope” on 21 April 2015, it may be viable from the strategic perspective to review its lessons and effects in all respects.

Operation Al-Hazm Storm was only a response to the attacks of the Houthi militias and the forces loyal to former president Ali Abdullah Saleh against the Yemeni people and their attempt to seize power by force in this sisterly country. Having been defeated in consecutive battles, the Houthi and Saleh were forced to look for political settlements. The Houthis, Saleh militias and their regional supporters did not seek negotiations from the beginning, but balance of power imposed a new equation. Without Al-Hazm Storm Operation, the Houthi and his allies would not have decided to sit at the negotiation table with the rest of Yemeni parties.

Politics is the end of the war tunnel, as learned from history. Therefore, the Arab Alliance countries, led by KSA, support any political solution or settlement based on the Gulf initiative, the output of national dialogue and the UN Security Council Resolution No. 2216. These countries understand that Al-Hazm Storm and Restoring Hope operations have achieved many strategic goals, mainly undermining the expansionist sectarian scheme which sought to control Yemen, surround the GCC countries strategically and undermine the regional security and stability. Thus the decisive military intervention by the Arab alliance succeeded in disrupting this sectarian plan completely.

Al-Hazm Storm Operation supported the Yemeni people and restored Yemen to its natural strategic Arab milieu. History will record that our wise leadership, led by His Highness Sheikh Khalifa bin Zayed Al Nahyan, UAE President and the Supreme Commander of the Armed Forces and our Armed Forces, have participated efficiently and effectively since the very early hours of Al-Hazm Storm Operation and had an effective operational role in liberating Yemen cities. Our Armed Forces heroes have manifested their combat capabilities and efficiency. The participation of our Armed Forces in Al-Hazm Storm Operation was an explicit expression of a combat doctrine which believes in truth and justice and helps the oppressed. The blood of our righteous martyrs, which was poured on the land of Yemen and mixed with the blood of their Arab brothers, has been a firm proof that Emiratis have sacrificed their souls to protect the national security of their country and to defend the constitutional legitimacy in a dear Arab country.

Based on the above, our prudent leadership believes that the role of our valiant Armed Forces in assuring the security and stability of Aden and other Yemeni cities, and providing help for the Yemeni Government to control liberated areas, is an essential and strategic mission so that the government may be able to take up its role and provide the necessities for the Yemeni people.

By:

Staff Lieutenant-Colonel

Yousef Juma AL Hadad

Editor in Chief

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Editorial



VISIT US AT DSA EXHIBITION STAND 1059

عجبان 440A المدرعة هي آلية دوريات ذات دفع رباعي (4X4) تمتاز بنسبة تدرج عالية وتتنوع للاربعة افراد. وهي مزودة بكابينة مصفحة توفر الحماية اللازمة للطاقم ضد العوات المتفجرة والقذائف الباليستية واللافام. ويمكن استخدام الآلية لمهام أخرى منها الاتصالات والدفاع الذاتي من خلال منصة منظومة السلاح المركبة على الآلية. بسر شركة نمر للسيارات دعوتكم لزيارة جناحها رقم 1059 في معرض DSN لمشاهدة آلية عجبان 440A المدرعة ذات الدفع الرباعي (4X4).

The AJBAN 440A vehicle is a protected patrol 4x4 with a four man cabin armoured against IED, blast and ballistic threats. It is fitted for mission communications and self-defence with a roof mounted weapon. Visit us at DSA on stand 1059 to view the AJBAN 440A.

*Conquer The Elements
Gain The Advantage*



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**TAWAZUN Launches
Two New Companies
at ISNR**

**Saab Swordfish MPA:
Offering Cutting-
Edge Performance**

**Standard
Missile-6: One
Missile, Many
Missions**

Issue File

The Sectarian Dimension of Iranian Politics

