

## „What Kind Of Soldiers Does Sweden Need?“

General Micael Bydén, Supreme Commander of the Swedish Armed Forces

**I was asked this question in a letter from a 13-year-old who wished to become a soldier. It is a good question, pointing at our most valued asset: the individual. In a time of increasing security challenges, globally and regionally, every woman and man in the Swedish Armed Forces carries a responsibility to defend our country and the values upon which our society is founded – our freedom, our security, our peace. That requires skills, motivation and personal maturity.**



The Swedish Armed Forces have embarked on a journey. I am pleased to say that we are doing well. We are strengthening our capabilities and we are growing. When visiting

our military units, I meet with dedicated soldiers, sailors and airmen who believe in their job, their leadership and in their own capabilities. There is a renewed self-confidence in the organisation, which bodes well for the future. In combination with a broad political consensus in favour of a strengthened national defence and increased popular support for the armed forces, we are well placed to handle the challenges we face.

Yet, the journey is far from over. It took off in its present form with Swedish defence policy that was adopted in 2015 in light of the deteriorating security situation in the Baltic Sea region. The policy entails a renewed focus on national and regional security in contrast to the earlier emphasis on international operations. After two decades of successive reductions, the new defence orientation called for strengthened capabilities and increased defence

spending. We have intensified the development of a defence force with ready and flexible units, adequately trained and equipped and with a functioning system for mobilisation. Such a defence force, together with a deep and broad international military cooperation, creates the threshold effect against a potential aggressor that we are seeking.

In 2020, a new Defence Bill will be adopted by the Swedish Parliament, providing direction for Swedish defence development from 2021 to 2025. I have been clear about the need for long-term perspectives, a steady direction and the flexibility necessary to meet with the ‘challenges of tomorrow’. We need to grow to keep pace with partners and neighbours and in order to remain a relevant international partner. Why do we need strengthened capabilities? The answer lies in the security development in our immediate neighbourhood. Sweden’s geo-strategic position, in combination with a regional security situation that is complex, unpredictable and uncertain, defines what kind of capabilities we need. Without doubt, our neighbourhood in a broad sense – from the Arctic region through the Baltic region to the Black Sea – will continue to be an area of friction.

It is clear that the strategic importance of the region has increased. In the past few years, we have seen a significant increase in military presence and activity by all ac-

tors in this region. The military positioning in the region is likely to remain and will have a direct impact on Swedish military capabilities.

The security development in this region is first and foremost defined by Russia’s political and military actions. The illegal annexation of Crimea in 2014 fundamentally changed the security architecture of Europe, and it has shaped our own security and defence policy. Sweden’s decision to re-establish a regiment on the island of Gotland should be seen in this perspective – as it is of strategic military interest.

I want to be clear here - the probability of an armed aggression towards Sweden is low. However, we also realise that any act of aggression in the region would inevitably affect Sweden. With the increased military activity in our region, the risk of incidents is higher than before. If not handled correctly the situation could escalate.

Naturally, we are also affected by the global security situation beyond our region. China’s strategic military ambitions, the future for the transatlantic link, increased military and trade interests in the Arctic region, and consequences of climate change, the global society is closely interlinked, and, therefore, we must be able to handle and adapt to new security contexts. We know that the future operational environment will be complex. It comprises a wide spectrum of activities with significant elements of non-linear or hybrid warfare,

including threats ranging from influence operations to conventional armed aggression. The boundaries between war and peace have become blurred. Society's resilience is constantly being tested. Consequently, there is an increasing need for a strengthened cooperation between the Armed Forces and civil agencies throughout Sweden. Together with the Civil Contingencies Agency, the Swedish armed forces are working hard to further develop a holistic governmental approach to common challenges, which we would refer to as 'total defence concept'. We also need structures for cooperation to handle civilian crises, such as the ravaging forest fires that affected the country last summer. New challenges require new capabilities. As we build the Swedish armed forces to be ready to handle tomorrow's realities, we have identified three key capabilities:

- 1) Capability for sustained active operations to counter grey zone activities;
- 2) Capability to have an impact on an aggressor in all domains and in full depth;

3) Capability for sustained defensive operations within our territory.

In our long-term planning, we envisage a defence force that has been recomposed, reinforced and adapted to shoulder a greater responsibility for peace and security in the Baltic Sea region.

How will we achieve these goals? Let me give a few examples.

### Human Resources

A strong defence force builds on human resources. We need to tap into the new generation of highly qualified young people, both to strengthen our capacities and to better reflect the population and thus increase public confidence. In 2017, the Swedish Government decided to reinstall the conscription system, this time gender neutral. Last year, some 3,800 young women and men began their basic military training. Next year, I would like to see that figure increase to 5,000 and later to 6,000. So far, the response has been very posi-

tive, both from the recruits and from the responsible military units. This generation of conscripts will constitute a base for a continued career in the armed forces, either as full-time soldiers, seamen and officers, or as a part-time force.

### Gender Equality

A better inclusion of women into our armed forces is a priority. I see it as a matter of operational effect in the sense that a defence based on gender equality is a stronger defence. Moreover, we want our recruitment base to be 100% of the population, not just 50%. There is a growing international awareness about the merits of a gender equality in military operations and I am proud that Sweden has become one of the leading partners in this area.

### Cyber Security

We must strengthen our capability to operate and to identify threats in the cyber en-

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vironment. We need to protect our society from an aggressor who seeks to influence our society as a whole. Consequently, military skills requirements might look a little different than what we are used to. As from next year, the armed forces intend to recruit a number of qualified “cyber soldier” conscripts who will contribute to a sharper cyber capability, benefitting both the armed forces as well as other total defence agencies.

In order to reinforce our presence in the region, a regiment on the island of Gotland was re-established last year. Gotland has a geo-strategic significance that cannot be denied – the map speaks for itself. The battle-group on Gotland will receive additional surface-to-air capabilities.

Sweden’s security is built on solidarity with others. We need our partners. We must have the ability to provide and receive military support to stay relevant. Therefore, we have intensified international cooperation to unprecedented levels. Our Nordic and Baltic neighbours are natural partners. As this year’s chair of the Nordic Defence Cooperation framework NORDEFCO, Sweden continues to explore areas for Nordic cooperation with a view to enable cooperation in peacetime, crisis and war.

With Finland, we have engaged in an operational partnership that goes beyond peacetime, pending political decisions. There is an extensive interaction on all levels, political and military. The Memorandum of Understanding, which was signed by the two Defence Ministers in July 2018, includes all branches of the armed forces – at a strategic, operational and tactical level. In October 2018, Swedish and Finnish army units participated as an integrated unit in the NATO exercise Trident Juncture and, in March 2019, Finnish troops participated in the Swedish national army exercise Northern Wind under Swedish command.

Beyond Scandinavia, Europe is at the core of our security policy partnerships. Sweden attaches great importance to our cooperation with partners both inside



(Photos: Swedish Armed Forces)

and outside the European Union. Sweden follows the rapidly evolving security and defence cooperation in the European Union with great interest. The emergence of structures such as Permanent Structured Cooperation (PESCO) provides opportunities for synergies and strengthened collaboration on many levels. We look forward to working with our European partners on this process.

Sweden’s bilateral partnership with the United States is broad and deep, based on a common awareness about the strategic importance of Baltic Sea security. It includes interoperability, training and exercises, armament, research and cooperation in multilateral operations. As partners or members of organisations such as NATO, OSCE and UN, we are better placed to handle regional and global security challenges as well as international military missions.

The focus on national defence does not imply that we have turned our backs on international missions. There is no contradiction between Sweden’s longstanding engagement on peace and security, which will continue, and the ambition to strengthen national defence. Since 2015, Sweden has had an intelligence, surveillance and reconnaissance (ISR) contingent in the United Nations peace-keeping force in Mali, MINUSMA. In 2018, Swedish Lieutenant General Dennis Gyllensporre took over as Force Commander for the entire MINUS-

MA mission. Sweden also contributes to the US-led Operation Inherent Resolve as part of the international coalition in Iraq, and to the NATO-led Resolute Support Mission in Afghanistan. Sweden has personnel in all three EU training missions on the African continent.

Back to the question from the 13-year-old youngster: What kind of soldier do we need? To answer that question, I will refer to my vision for the Swedish armed forces in 2025: A stronger defence, responding to every threat, overcoming every challenge.

Such a defence builds on a military capability that constitutes a strong deterrent to all types of threat and attack. It builds on the unique expertise and abilities of every employee and volunteer. It requires that every woman and man in the Armed Forces takes on an individual responsibility. Only together can we build a credible defence force, with available units, creating the deterrent effect needed to make any potential aggressor carefully consider the risks and costs of attacking our country.

I want the Swedish Armed Forces to be a modern, equal and inclusive organisation. My reply to the 13-year-old was given: Sweden needs women and men who can cooperate and solve tasks together. But equally important is to never fail in respect for other people and for our internal differences. That is the kind of soldiers we need.

### Vulnerabilities Instead Of Big Data

(df) Yesterday Plath opened the 10<sup>th</sup> edition of the Intelligence Workshop, which was a highlight to an ever growing number of attendees of the still ongoing Electronic Warfare (EW) tradeshow in Stockholm. At the Intelligence Workshop Lieutenant Colonel Holger Schmör, Deputy Director and Senior German National Officer of NATO's Joint Electronic Warfare Core Staff (JEWCS), gave insights in his understanding of modern warfare and how Artificial Intelligence (AI) should support the military commander.

Two factors are therefore typical for modern warfare scenarios, the uncertainty who might be friend or foe and the protection of own forces. This goes together with an environment, Schmör called "a

world becoming a little bit more traditional again." "Not everything we perceive as new is really new," Schmör described the situation. Good intelligence has also always been vital for military, with good intelligence being not only the sensors but the analysis. And this analysis should focus on vulnerabilities, no matter whether it is made by humans or AI.

"Intelligence does not win a battle, but it can be decisive", Schmör pointed out. "If I want to win, I need to know vulnerabilities. I don't need thousands of pieces. I don't need all the possibilities. I need the vulnerabilities to make my decision. For example a jammer is a target and it is still a platform. The vulnerabilities might be in several areas." A human could make up creative solutions to assess these vulnerabilities, to



make them become chances to win a battle. "But my question is, can AI decide on opportunities?" Schmör asked and pointed out that in the end it all goes down to: "The commander needs to make a decision and this means, the analysis needs to focus on vulnerabilities. But who teaches us asking the right questions?"

[www.eweurope.com](http://www.eweurope.com)

<https://shape.nato.int>

### Tablet With PC Performance

(df) At EW Europe MilDef showed their newest solution for the military: MilDef DE13. Small in size this is a real Windows 10 PC, in terms of performance comparable with an office computer. The tablet is based on a slim aluminum chassis for minimal footprint without losing robustness and high performance in extreme environments.

MilDef DE13 can be utilised as a handheld unit for mobile operations or installed in cramped confined spaces. With these



capacities it might fill up the gap between smart phones and tablets with a familiar Windows operating system.

The MilDef DE13 also features a high-brightness 7" resistive multi-touch display and an Intel I7 CPU. It also comes with a wide selection of customisation options ranging from military connectors to wireless connectivity options.

Talking about standards MilDef DE13 is IP67 rated as well as certified to both MILSTD-810 and MIL-STD-461, therefore proving its ruggedness that is most important for many military environments.

[www.mildef.com](http://www.mildef.com)

### KALAETRON Launched At EW Europe

(jh) Hensoldt took advantage of the EW Europe conference and exhibition in Stockholm, Sweden, to launch the KALAETRON radar warning receiver. A fully digitised company-funded development the sys-



tem has the ability to identify even unknown threats, without having to rely on a threat library. The system is resistant to jamming, can support network-centric operations and enhances the lifetime of existing platforms by overcoming the difficulty of analogue systems to recognise new radar threats. KALAETRON constitutes Hensoldt's first implementation of artificial intelligence in the segment of EW, a capability, which other EW systems from Hensoldt are to take advantage of in the future, too. Platforms to be equipped with KALAETRON include fighter and transport aircraft, helicopters and UAVs. KALAETRON

works in frequency bands from 2 to 40 GHz. The hardware elements comprise a Digital Front End Receiver (DFER), a Central Processing Unit (CP) and an Antenna Front End (AFE).

According to the company, KALAETRON's major achievements include:

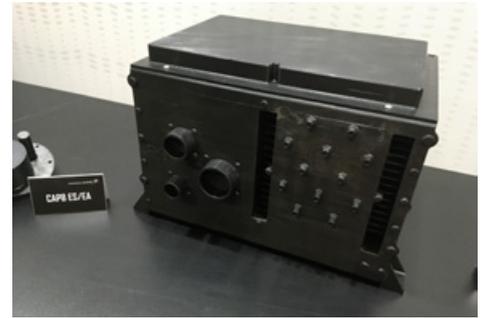
- Tested on missions in an operational scenario;
- Modular digital system which can be flexibly adapted;
- Suitable for upgrade programmes and new acquisitions involving a radar warner in response to modern requirements.

[www.hensoldt.net](http://www.hensoldt.net)

## Electronic Warfare On Airborne Platforms

(df) At EW Europe Lockheed Martin showed several interesting and new electronic warfare solutions. Among them CAP8 ES/EA that is part of the receiver processor form fit function programme for the AN/ALQ-217 Electronic Support Measures (ESM) system. The Lockheed Martin AN/ALQ-217 ESM system can be described as a highly sophisticated ears of advanced tactical aircraft. As a passive sensor system, the AN/ALQ-217 protects the warfighter by identifying and locating sources of radio frequency (RF) emission and providing a full range of ESM operation, the company explained.

The passive ALQ-217 Electronic Support Measures system autonomously scans the environment allowing for a high probability of detection and accurate identification. The system operation is completely tailorable through mission data loads which can be reloaded in flight for adapting to each specific geographic region. The AN/ALQ-217 employs open systems architecture and commercial off-the-shelf processing to ensure long term supportability and growth. It is composed of four antennas, four Active Front Ends (AFE), and a combined receiver and processor. The subsystem architecture divides the RF operating range into three bands: low, mid and high. Full 360° acquisition coverage exists in each band, facilitating powerful



performance. The AN/ALQ-217 is in production and available for domestic and international sales, Lockheed Martin pointed out. In June 2018 Lockheed Martin won the contract to upgrade electronic warfare (EW) systems aboard the U.S. Navy's E-2D Advanced Hawkeye carrier-based airborne early warning aircraft.

[www.lockheedmartin.com](http://www.lockheedmartin.com)

## Flight-Tested ARDS

(df) At EW Europe in Stockholm Raytheon Deutschland announced that their Advanced Radar Detection System (ARDS) was successfully flight tested in September last year. Therefore, this digital receiver technology is now ready for integration with manned aircrafts, UAVs, naval surface vessels or ground-based systems. It is the next generation of the successful and proven Tornado pod, therefore offering reliable technology together with new functions.



“Digital receivers are well suited to support strategic ELINT reconnaissance tasks from high altitudes and great distances as well as tactical combat mis-

sions in theatre. Thanks to its scalable system architecture, the digital receiver can be tailored to various platforms and mission profiles. Reconfigurable firmware and mission-specific algorithms enable a cost-effective customisation”, Raytheon Deutschland said. “This innovative digital receiver technology enables the ARDS to work as an entirely passive system, which localises and identifies emitters quickly while scanning the RF spectrum.”

[www.raytheon.com](http://www.raytheon.com)

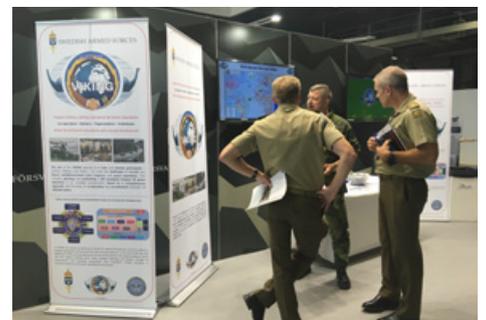
## Exercise Viking @ ITEC

(df) The third congress/exhibition in Stockholm, that is ongoing right now, is ITEC. This forum has a special highlight: a special show floor exhibition experience and conference panel dedicated to the Swedish armed forces and Exercise Viking.

Organised by the Swedish armed forces in cooperation with Sweden's Folke Bernadotte Academy, Exercise Viking is the world's largest multinational collective training event. It brings together military forces, police and representatives from civilian and humanitarian organisations from across NATO, the United Nations and the Europe-

an Union to train in a joint, distributed environment.

“Exercise Viking is one of the few exercises that sees civilian and military organisations from 60 nations train together within a NATO architecture and design framework on command and control operations, and is a good example of the importance of standards based interoperability,” Stefan Sandberg, Simulation Specialist at GEISTT and advisor to the Swedish Armed Forces, said. “The Swedish Armed Forces Zone demonstrate how the Swedish Armed Forces use their current simulation training aids within a NATO architecture to create joint, virtual exercises.



“Exercise Viking provides a platform to test interoperability techniques being developed by NATO working groups, so being able to engage with the personnel putting these techniques into practice will be a unique opportunity for attendees at ITEC.”

[www.itec.co.uk](http://www.itec.co.uk)

## VLF Communication Data Rate Enhancement

(df) At the ongoing Undersea Defence Technology conference and exhibition (UDT) in Stockholm Christian Gast of Hagenuk Marinekommunikation gave an insight into the newest developments in the field of VLF communication. VLF is still key for submarines, Gast pointed out, due to the fact that it offers a very robust energy level all around the world together with an underwater reception with the magnetic part still being propagated underwater. "But



the disadvantages are especially the low bandwidth with 3 to 30 kHz," Gast explained. This is due to the fact that the very extended wavelength of 10 to 100 km has to cope with a rather small antenna. The VLF antenna at the German Hagenuk site is about 350 m high and even though this sounds tall, it

is still almost nothing compared with an – at least – 10 km wavelength. "This leads to a very strict limitation at the data rate with around 200 Bit/s."

After these explanations of physical conditions Gast spoke about the efforts of his company to overcome at least the data limitation. "There is a need for a very special antenna modeling and this matching leads to a narrowband characteristic," Gast explained. "The aim is to combine solid state amplifiers adaptive equalisation, a new matching network topology. With this the data rate could be 600 Bit/s. So we are talking about a possible data rate improvement by the factors 3 to 10."

[www.udt-global.com](http://www.udt-global.com)

[www.hmk.atlas-elektronik.com](http://www.hmk.atlas-elektronik.com)

## New High-Performance Diving Scooter

(df) At UDT in Stockholm Rotinor are showing the Black Shadow. according to the company, this is an extreme high-performance diving scooter for professional purposes. "With its patented E-jet power system, the high-power drive of the RBS is unrivalled. Virtually silent and absolutely emission-free the electric jetstream system works on the principle of water displacement. Water is sucked in by the powerful rotating impeller and forced out in the jet



channel under high pressure," the company stated.

"The powerful motor performance of 8 HP is controlled by 10 power levels. Hereby the operator can alternate individually

between slow or high speed manoeuvres through the water. The RBS can be steered down to a depth of 60 m, thus making it ideally suitable for all kinds of underwater missions and special operations. The hydrodynamic design of the RBS lends the diving scooter a high degree of agility in the water. All steering and diving manoeuvres are carried out simply by shifting the weight of the body. The specially developed harness system enables the operator to easily control the enormous thrust of over 70 kg."

[www.rotinor.com](http://www.rotinor.com)

## Electronic Controlled Rebreather

(df) AT UDT Avon Protection present their MCM100, a deep diving (100 m CE rated), air and mixed gas, electronic control rebreather. The company proudly points out that the MCM100 rebreather was designed and developed around the diver, to deliver enhanced multi-role capability in the form of a new long endurance, electronically controlled rebreather.

This new rebreather is capable of integrating with a range of military diving applications, in particular mine warfare and special forces, including covert subsurface infiltration, submarine release & infiltrati-

on and manned underwater vehicle operations.

"The launch of the MCM100 heralds a revolutionary change in rebreather technology, placing two key elements at the heart of the platform; diver safety and multi-role mission capability," Avon said. "At the core of the MCM100's innovation is its world leading, revolutionary, advanced electronics package, enabling the diver to focus on the task ahead and not the management of the dive or the system. The multi-role design approach and advanced electronics package ingrained in the MCM100 is synonymous with Avon's history of innovati-



(Photo: Avon Protection)

on, design and engineering. Avon's manufacturing capabilities are centred around specialist user groups within the military, law enforcement and firefighting markets, all operating in high threat, high risk, dynamic environments."

[www.avon-protection.com](http://www.avon-protection.com)

## China's Third Aircraft Carrier

(hum) These days, the daily press is providing information about a new Chinese aircraft carrier under construction. On the one hand, such reports are based on the annual report of the U.S. Department of Defense (to Congress) on the modernisation of the Chinese armed forces (dated 02 May 2019) and on an analysis of satellite images of a Chinese shipyard facility carried out by the ChinaPower project, a department of the Center for Strategic and International Studies (CSIS) – a Washington think tank – and published on the Internet on 06 May 2019.

Already in November the Xinhua News Agency announced the official start of construction for Type 002, Project “New Generation Carrier”. The photos now published by ChinaPower-Projekt, taken on 17 April 2019, show a shipyard plant which is Jiangnan Shipyard, northeast of Shanghai. The analysis is essentially based on comparisons with older images - such as those published by CNN in December 2018. Their conclusions remain cautious: what is visible through turbidity and resolution would look like the approximately 22.5 metre long bow and an approximately 48 metre long, approximately 40 metre wide hull segment of a large ship.

Official details on Type 002 are not available. In this respect, according to the analysis team, what can be observed in Jiangnan coincides with what is expected for the

third aircraft carrier of the PLA-N (People's Liberation Army Navy). Observers expect a conventionally powered aircraft carrier with a displacement of 80 to 85,000 tons and a length of up to 320 metres. It will be equipped with an electromagnetic catapult system (EMAL) and will accommodate more aircraft than the two existing Chinese carriers (speculation is 60+). The effort to build a large carrier developed, designed and built in China is seen as the core of the comprehensive modernisation of the Chinese military. According to the ChinaPower project (possibly using data from the Pentagon report), the type ship will be available as early as 2022. Western and Asian experts speculate that there will be three to ten nuclear-powered ships by 2030.

The Chinese Navy currently has two aircraft carriers:

Type 001 – LIAONING, Hull number 16, 304 metres long, 60,000 tons displacement, 48 aircraft/helicopters (26 aircraft, 18 anti-submarine-warfare helicopters (ASW), 4 helicopters Airspace Surveillance (AEW), put into service in 2012. The former VARYAG, a sister ship of Russian ADMIRAL KUZNETSOV, was acquired by Ukraine in 1998, although unfinished after the fall of the USSR. The hull was purchased by the



Chinese in 2000 and was to be converted into a floating casino off the coast of Macau. Two years later it was towed to Dalian to be completed from 2005 to 2011. The Chinese Navy took its first steps in aircraft carriers and gained experience. LIAONING will be available until 2035. It is speculated that it will be used for testing (e.g. for an EMAL) after 001A.

Type 001A – not yet christened, presumed name SHANDONG, still without hull number (presumably 17) (length 315 meters, displacement 65,000 tons, 56 aircraft/helicopters (Chinese sources indicate: eight more than LIAONING), launch 2017, commissioning 2018. Currently still undergoing testing. Its official presentation or commissioning is now expected in October for the annual celebrations of the PLA, after its debut on the anniversary of the Navy in April did not take place. Type 001A is China's first indigenous aircraft carrier – based on the LIAONING or VARYAG. If it will enter service, this can be seen as further progress in Beijing's efforts to project its influence and power far beyond China's borders. And even if there is still a long way to go before an aircraft carrier can be successfully operated, the pace of China's naval construction projects is impressive.

## Third Submarine For Egypt

(gwh) At the shipyard of thyssenkrupp Marine Systems in Kiel, the Commander-in-Chief of the Egyptian Navy, Vice Admiral Ahmed Khaled, christened the third of four submarines of the 209/1400mod class for the Egyptian Navy S43. Afterwards the launch took place. After completion of the submarine's equipment, the takeover tests are scheduled to begin.

The Arab Republic of Egypt ordered two Class 209/1400mod submarines in 2011 and in 2015 triggered the option for two



more submarines covered by the contract. The S41 and S452 submarines were delivered in December 2016 and August 2017 respectively. The version 1400mod has a displacement (emerged) of approx. 1,450

tons and changes to the upper deck and tower compared to the predecessor models. With 62 m length and 6.25 m width with a draught of 5.5 m, the submarine offers space for a complement of 30 and is considered to be a compact, reliable submarine with a long range (740 km at 7.5 km/h under water), high speed under water (up to 40 km/h) together with low signatures. The fourth and final submarine will complete the 2021 programme.

[www.mod.gov.eg](http://www.mod.gov.eg)

[www.thyssenkrupp-marinesystems.com](http://www.thyssenkrupp-marinesystems.com)

## AH-1Z Attack Helicopters For The Czech Republic Gets

(df) The U.S. State Department announced it approved a possible Foreign Military Sale to Czech Republic of four AH-1Z attack helicopters and related equipment for an estimated cost of \$205 million.

“The Government of Czech Republic has requested to buy four (4) AH-1Z attack helicopters, eight (8) T700-GE-701D engines (installed), eight (8) Honeywell Embedded Global Positioning Systems with Inertial Navigation (EGI) and Precise Positioning Service (PPS) (installed), and fourteen (14) AGM-114 Hellfire missiles. Also included is communication equipment, electronic

warfare systems, M197 20mm machine guns, Target Sight System, support equipment, spare engine containers, spare and repair parts, tools and test equipment, technical data and publications, personnel training and training equipment, U.S. government and contractor engineering, technical, and logistics support services, and other related elements of logistics and programme support. The total estimated programme cost is \$205 million,” the U.S. State Department said.

“The Czech Republic is considering either the UH-60M or the UH-1Y/AH-1Z to replace its aging Mi-24 helicopters. The Czech Republic intends to use these helicopters to



(Photo: Bell)

modernise its armed forces and strengthen its homeland defence. This will contribute to the Czech Republic’s military goal of updating its capabilities while further enhancing interoperability with the United States and NATO allies. The Czech Republic will have no difficulty absorbing these helicopters into its armed forces.”

[www.bellflight.com](http://www.bellflight.com)

## Modernisation Of Dutch Armoured Recovery Vehicles

(gwh) For an initial phase, the Dutch armed forces have commissioned Rheinmetall to modernise four armoured recovery vehicles with three Buffaloes. The contract provides for the modernisation of a further 21 vehicles in a second phase. Each phase has a volume of a double-digit million euro sum. The modernisation is intended to extend the service life of the vehicles until 2040. The first modernised recovery tanks are to be delivered to the troops at the beginning of 2021.

In addition to a complete overhaul of the individual armoured recovery vehicles, the modernisation effort includes the conversion to a new digital operating concept, the

installation of modern visual equipment, mission packages with ballistic and mine protection as well as the equipment with new battlefield recovery facilities and universal support platforms.

The new battlefield recovery system has been relocated to the rear of the vehicle. This enables the armoured combat vehicles of the Royal Dutch Army to be coupled under protection in the event of damage and recovered from the battlefield at high speed in



forward motion. The new universal transport platform on the rear of the vehicle can be used flexibly and can, for example, carry additional equipment for recovering other vehicles.

Similar mission configurations are being used by NATO partner Canada and the Swedish armed forces. In December 2018, the Bundeswehr commissioned the modernisation of its armoured recovery vehicle fleet in order to adapt it to the current operational scenarios.

[www.rheinmetall-defence.com](http://www.rheinmetall-defence.com)

## VT4 Standard 2 In Series Production

(gwh) Following the commissioning by the Direction Générale de l’Armement (DGA) of 1,200 vehicles for the second stage of the VT4 programme, Arquus has adapted its production line in Saint Nazaire to the new standard.

To date, 800 VT4s have been delivered. Initial experience has led to 350 changes. New communication and positioning sys-

tems, additional racks, towing devices and camouflage lighting have been integrated. In Standard 2, the VT4 is designed for air transport. 800 VT4 are to be delivered in 2019. The Army’s total requirement of 3,700 VT4 is to be covered by 2025.

The VT4 is an unarmoured, lightweight 4x4 multipurpose vehicle designed for command post and liaison missions. It offers space for five soldiers or four infantrymen equipped with the FELIN system. With



(Photo: Arquus)

a payload of up to 900 kg, the VT4 is designed for domestic and international use in low-risk areas.

[www.arquus-defense.com](http://www.arquus-defense.com)

## Drone Defence With Electrical Energy

(gwh) Raytheon and the Air Force Research Laboratory (AFRL) of the U.S. Air Force are jointly investigating in a €1.8 million programme how Unmanned Aerial Systems (UAS) can be fended off with high-power microwave (HPM) and high-energy laser (HEL) systems.

Both systems use electrical radiation that works without delay at relatively low operating costs. HPM emits powerful microwave bursts that disrupt the communication between the aircraft and the ground station to such an extent that the drones can no longer reach their target. With HEL, laser beams destroy important parts of the



(Photo: Raytheon)

drone's structure and cause the aircraft to crash.

Raytheon had mounted a mobile high-energy laser together with his multispectral target system on a Polaris MRZR off-road vehicle for the demonstration. This system was presented with a larger number of unmanned targets that were successfully detected, identified and finally fought.

Another component in the fight against UAS was HPM. The HPM operator can direct the energy beam onto detected objects and fight an entire swarm of drones with a defensive measure, for example. With a permanent power supply, protection can be guaranteed for an almost unlimited period of time.

The performance level of mobile HPM and HEL systems documented with the successful demonstrations of technically mature systems will be used as a basis for the considerations of the U.S. Air Force for the protection of critical infrastructures, convoys and personnel.

[www.raytheon.com](http://www.raytheon.com)

[www.wpafb.af.mil/afrl](http://www.wpafb.af.mil/afrl)

## ISTAR Services For The Canadian Armed Forces

(df) The Canadian Armed Forces have awarded a C\$51m contract to deliver unmanned aircraft systems (UAS) to QinetiQ. The system, based on the UMS SKELDAR V-200 UAS, will be equipped with a number of sensors including an Active Elec-

tronically Scanned Array (AESA) radar and Electro-Optic Infrared (EO/IR) camera. The vertical take-off UAS will provide Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) services to the Royal Canadian Navy and Special Operations Forces Command, for both domestic and international operations.

QinetiQ will work with four principal partners to deliver the ISTAR services: Canadian-UAV, Leonardo, UMS SKELDAR and Wescam. With multiple systems to be delivered in Q3 this year, the Royal Canadian Navy will then have an advancable maritime UAV platform.

[www.qinetiq.com](http://www.qinetiq.com)

## First Remote-Controlled Tower In Germany

(gwh) In April 2019, the first remote-controlled tower for air traffic control in Leipzig was officially handed over to Deutsche Flugsicherung (DFS). Flight operations at Saarbrücken International Airport are managed by the Remote Control Tower Center (RTC).

The RTC was implemented by Frequentis with sensors from Rheinmetall. The sensors detect aircraft movements in the air and on the ground in both the electronic and optical spectrum. The data is transmitted via robust data lines to the RTC, where the air traffic is directed by air traffic controllers. For air traffic controllers, this is a paradigm shift, as the direct view of the runway is replaced by camera images that can be seen on a monitor wall far away from the airport in a control room. The controllers

see a permanent, high-resolution 360-degree panoramic image of the airport. With the pan and tilt video and infrared cameras installed in Saarbrücken, the air traffic controller can zoom in on details as required. In poor visibility conditions, the high-performance sensors from the military sector show their full potential.

The RTC system also supports controllers in their work by automatically detecting movement and highlighting aircraft in the air and on the ground on the monitors. Take-off and landing aircraft can be tracked automatically with the moving cameras. For safety reasons, all optical functions are redundant.

The sensors are housed in a heatable housing and have an automatic cleaning function. A light gun is also installed in the camera head for emergencies: If the radio contact breaks off, the pilot can be given



(Photo: Frequentis)

signals with a light beam directed precisely at the aircraft.

In addition to increased operational reliability for the remote airport, DFS also has a cost advantage of about 10 to 20%.

Trial operations at Saarbrücken Airport began in December 2018. Since then, more than 2,500 flights have been handled smoothly. Next year, Erfurt Regional Airport and Dresden Airport will be controlled by RTC. The list also includes Münster, Bremen and Friedrichshafen airports.

[www.frequentis.com](http://www.frequentis.com)

## Training With Simulation

(df) At ITEC Leonardo is exhibiting their XR Morpheus, a virtual reality training tool allowing for system familiarisation, operating and maintenance procedures in a synthetic, photorealistic environment. It supports instructors during the preparation and execution of practical training allowing the easy creation of training sessions.

The International Flight Training School, the training academy launched last year by Leonardo and the Italian Air Force, will show how it covers the entire advanced and



pre-operational phase of the military pilot training syllabus. Simulation-based trainer and virtual maintenance training solutions are on display at ITEC. These systems, fully representative of the real aircraft, are

devoted to classroom students (pilots and maintenance technicians respectively).

In the helicopter sector, Leonardo is able to provide the largest scope of flight, mission and maintenance training capabilities and is constantly expanding its global footprint. Telespazio VEGA Deutschland, a subsidiary of Telespazio, a joint venture between Leonardo (67%) and Thales (33%), is exhibiting its latest simulation-based military training systems including the company's involvement in helicopter programmes.

[www.leonardocompany.com](http://www.leonardocompany.com)

## New Radar for the RAF

(df) The Royal Air Force has awarded a contract for an advanced long-range air defence deployable radar to Indra. The company was chosen after tough competition and will deliver the system later this year.

“The Indra LTR25 L-band radar stands out for offering very high long-range detection capabilities, comparable to those of larger fixed radars, but with the added advantage of being able to operate very quickly and be transported in small aircraft, such as the C130,” the company announced. “It is

a robust solution designed to facilitate deployments outside the national territory, to reinforce the surveillance of a specific area on a one-off basis or to be available as backup in the event that one of the fixed radars is attacked or damaged.”

[www.indracompany.com](http://www.indracompany.com)

## VBS3 Simulation Software With New Functions

(gwh) Bohemia Interactive Simulations (BI-Sim) has released a new version of its simulation software Virtual Battlespace VBS3. Version 18.3.4 brings improvements to the subsystem VBS Radio, the simulation of radio and voice communication contained in VBS3 as well as new representations of British and Russian military vehicles and new terrain sections.

VBS Radio has been improved in terms of performance, stability and ease of use. Settings from previous versions can be imported. The new vehicles in the simulation palette include the Titan bridge layer, the AW159 Wildcat helicopter in Army (AH1) and Naval (HMA2) versions, logistic vehicles from Rheinmetall Military Vehicles as well as armoured infantry fighting vehicles and anti-aircraft vehicles from



the Russian operational environment in addition to several protected wheeled vehicles. The three new terrain sections are from British territory.

[www.bisimulations.com](http://www.bisimulations.com)

## Consistent Situation Image For Enhanced Forward Presence

(gwh) With the takeover of the Information Mediation Service (IMS) by the Lithuanian armed forces, a consistent picture of the situation at all management levels can now

be guaranteed for all nations involved in Enhanced Forward Presence. This represents an important step towards comprehensive interoperability of the deployed troops and increases their capabilities and operational value.

The IMS developed as software by ESG is a stand-alone service that ensures the cooperation of different command systems via international interfaces as well as proprietary / national special solutions. It makes it possible for the first time to connect several nations simultaneously using

different standards, thus creating a common picture of the situation.

In May 2017, during an on-site demonstration, ESG demonstrated that the Information Mediation Service it had developed could ensure exactly the required capability – out of the box. At the end of 2018, ESG was commissioned by the NATO Support and Procurement Agency (NSPA) to deliver the Information Mediation Service on the basis of a state agreement between Lithuania and Germany.

[www.esg.de](http://www.esg.de)



## Industry & Trade

### Highlights of Patria's First Quarter Announced

(df) Patria just announced its result for the first quarter of the year, that somewhat fell below the target. Net sales totalled €105.1 million. Operating profit was €-0.3 million. Equity ratio was 49.4% and net gearing 51.8%. The highlights of this first quarter have been so far: In January, President and CEO Olli Isotalo left the company, and CFO Ville Jaakonsalo was named interim CEO for the transition period. CEO change is partly connected to Patria's strategy, under which the company looks for growth especially in international service business. Then Patria and the Finnish defence forces signed an agreement on preliminary and basic pilot training services. The contract covers pilot training and maintenance of

aircraft.

In February Senop, a member of Patria Group, launched the Senop HSC-2 new hyperspectral camera, designed to be the new reference in the evolution of hyperspectral imaging.

Patria made an agreement with the Kazakh airline Air Astana to train their new pilots till 2022.

In the end of February Patria published news about a joint project with the Finnish Innovation Fund Sitra and HUS Helsinki University Hospital, in which a method is being sought to transfer information between the patient and a professional, based on the patient's consent. Patria's role is to provide support in ensuring the cybersecurity of the project's data and information systems.

In April Patria announced to relocate the initial civil pilot training operations from Tampere-Pirkkala, Finland, to the city of Córdoba in Spain. Patria's single-engine DA40 fleet will be based in Córdoba while

theoretical training, simulator training and multi-engine training with DA42 fleet will remain in Finland.

Patria's subsidiary Milrem LCM signed a framework agreement for the maintenance and repair of BV206 tracked vehicles with the Logistics Command of the Latvian National Armed Forces. The agreement is valid for eight years.

The company also announced, that Patria's domestic customer, the Finnish defence forces, has significant projects (HX, SQ 2020) in progress. "The next phase after receiving the preliminary quotations is a content analysis that lasts several months. This is followed by the first phase of negotiations during which the quotations are further specified in cooperation with the manufacturers. Patria will also negotiate with the manufacturers about the industrial participation, which is extremely important and a great opportunity to Patria."

[www.patria.fi](http://www.patria.fi)

### MASTHEAD

#### ESD Spotlight

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### Indra Presents 1st First Quarter Results

(df) Presenting their first quarter results, Fernando Abril-Martorell, Chairman and Chief Executive Officer of Indra said: "1Q19 results are in line with our growth and profitability expectations for the year (guidance 2019). Revenues and backlog continued to show the path of growth already seen in 2018 as a result of the new organisations developed both in Minsait and in T&D, and thanks particularly to the transformation of the commercial offer and the commercial processes and incentives. Backlog surpassed the €4,200 million threshold, resulting in the best-ever figure of backlog. Both Minsait and T&D showed revenue expansion. Within T&D, Transport and Traffic stood out, with both segments showing high growth in the quarter. For its part, Minsait sales also went up, in both

local currency and reported figures, with the Energy & Industry vertical posting a remarkable performance. Furthermore, it is worth highlighting the good dynamics in Latin America, with the main countries posting robust growth, in both local currency and reported figures, and with a lesser FX impact vs 2018. Cash generation was affected by the seasonality of the working capital, as we flagged in the conference call of the 2018 results, by the collections that took place at the end of 2018 which were expected for the first half of 2019, and by higher investments in inventories. To conclude, 1Q19 results are in consonance with our prospects. Our management effort is fully focused on achieving all the targets for the year, with special attention to the profitability (EBIT) of our operations."

[www.indracompany.com](http://www.indracompany.com)