

# European Security & Defence

**8/2017***International Security and Defence Journal***COUNTRY FOCUS: HUNGARY**

## Night Vision



### EU in Action

European military and civilian missions and operations



### Conventional Submarines

Strong demand is being spurred on by new security challenges

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## Much Ado About Little



**P**athos, kitsch and euphoric resolutions have always been part of the style repertoire of European summits. If they were formerly reserved for the real landmarks of European integration, their use today is inflationary. Since the outbreak of the financial crisis more than a decade ago, the European Union has been working on a steadily growing number of problems that it is failing to master. Wherever the attempted solutions lack the power of persuasion, at least their staging and full-bodied rhetoric are supposed to convey confidence. If you summarise all the important courses that have recently been set in this way, the question arises as to whether there is still any policy field in which a secure and prosperous future for Europeans has not long since been heralded. Unfortunately, the citizens of our continent are too stubborn to be infected by this optimism. Far too many of them have already said goodbye internally to the EU. In some Member States this mood is so strong that it shapes the government's course. Today's task is more than management of current crises. The EU itself, as we know it today at any rate, is undergoing a test.

In such a situation, it may seem rather ambitious to want to open a new chapter in European integration in a field that has hitherto been more in the background.

On 13 November, the foreign and defence ministers of 23 of the current 28 EU Member States agreed on a comprehensive package of commitments and measures intended to make pragmatic progress towards a security union under what is called Permanent Structured Cooperation (PESCO). At the beginning of December, the first projects were identified in which cooperation was to be promoted in different constellations.

Just a few years ago, it would have been necessary to explain laboriously to the public why the EU as civilian power suddenly also wanted to gain military weight. Today this is different. Citizens are worried and unsettled. They are aware how precarious the security situation is in many crisis-hit regions on the southern and eastern periphery of their continent. The terrorist threat has long since become daily routine for them. Surveys show a clear change of

mood. Citizens expect politicians to invest more in internal and external security and to tackle cross-border problems in cross-border cooperation. Who, if not the EU, should be able to provide a suitable framework for this?

And yet, prudence is required. Actionism is not a concept yet. On the contrary. To advance this or that project in an uncontrolled fashion on the basis of current opportunities and interests can very quickly lead to a veritable waste of resources. Moreover, PESCO is not a new brilliant idea, but an instrument provided for by the Treaty of Lisbon a decade ago. It does not have to be interpreted as an expression of lethargy or neglect of duty that this possibility has not yet been used. Several bilateral or multinational collaborations have been launched even without this framework. Such "coalitions of the willing" do not necessarily gain in flexibility and efficiency if they are embedded in the larger context of the EU. This applies in particular to the very extensive cooperation agreed by France and Germany in July 2017. Both countries together account for more than 50 percent of the defence budget of all 23 PESCO nations. Their bilateral collaboration could very quickly be deprived of any momentum if it becomes a kind of EU project through the PESCO backdoor.

But above all, it is important to ensure that everything the Europeans do fits into the plans of NATO and in the end those duplicate structures they have solemnly sworn to avoid do not take shape. Hitherto, you could count on the British to pay attention to this. Since they are also saying goodbye to the EU's Common Security and Defence Policy (CSDP) with Brexit, this voice of transatlantic reason has fallen silent. France does not want to raise it and Germany cannot. The poor media image of the Trump administration makes it easy to use anti-American resentment in order to pass off Europe going its separate way as taking on responsibility for itself. The security of our continent is not served thereby. It will continue to be guaranteed in the future only by the tried and tested alliance with the Americans (and the British).

**Peter Bossdorf**

## Country Focus: Hungary

(Photo: via Miroslaw Gyrösi)



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## Georgian Military Modernisation

(Photo: NATO)



**It is not yet clear whether the current reform will be more successful than the previous ones.** **Page 42**

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(Photo: German Naval Yards)

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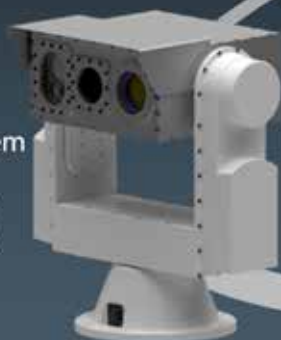
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Compass / Tilt Indicator / Image  
Recording)



## ■ Drone Surveillance for 12 Hours

(ck) The French company Aero Surveillance introduced a tethered option for its Quad and Octocopter ASV 30 400 and 800 series UAVs, designed for Police and Security applications. The tethered system is capable of hovering at up to 100 metres altitude

Photo: AeroSurveillance



for up to 12 hours at a time, providing persistent surveillance solutions and 360° full motion video by day and night. The cable link enables the system to provide virtually unlimited aerial surveillance at a reasonable price. The ASV 30 Quadcopter with four or Octocopter with eight rotors can also operate in free mode for up to 60 minutes. The system has a payload of up to 6kg and a range of up to 10km in free mode, and comes with a dual-display ground control station designed to operate in both free and tethered mode simply by switching power modules. With onboard image processing for enhanced resolution, image stability and object tracking, the electro-optical payload is capable of detecting moving objects at up to 15 km.

## ■ Airbus Helicopters Completes HForce Firing Tests in Hungary

(ck) Airbus Helicopters recently completed a ballistic test of an HForce weapon system on an H145M on Pápa Airbase in Hungary. The test included guns (FN Her-

Photo: Airbus Helicopters



stal HMP400), unguided rockets (Thales FZ231) and cannon (Nexter NC621), with an electro-optical targeting system by Wescam (MX15) and a helmet mounted sight display by Thales (SCORPION). HForce is an incremental weapon system that can be

fitted ("plug and play") into Airbus Helicopter's military platforms such as H125M, H145M and H225M for operations where equipment flexibility is a vital criterion. It is designed to meet the requirements of defence agencies seeking light attack mission capabilities. The H145M is a military helicopter derived from the H145, designed for arduous Special Forces and police missions: the H145 fleet has flown more than 80,000 flight hours. With a maximum take-off weight of 3.7 tonnes the H145M can be used for armed reconnaissance, ground fire support, anti-tank warfare, escort, tactical transport, MEDEVAC and CASEVAC. Customers for the H145M include Germany, Serbia and Thailand.

## ■ New 2.75" Rocket Launchers

(ck) Arnold Defense, a St Louis-based manufacturer of 2.75" rocket launchers, presented its new, ultra-light LWL-XII and the combat-proven M260 2.75"/70mm weap-

Photo: Arnold Defense



on systems at the 2017 Dubai Air Show. The LWL-XII weighs just over 27kg. Traditionally, 2.75" rocket systems have been used as an area suppression weapon, ordinarily deployed by aviation assets, but Arnold Defense is currently developing the FLETCHER smart, laser-guided 4-round launcher, which is vehicle-mounted. FLETCHER uses laser-guided rocket technology to meet the demands of air, land and naval, mounted and dismounted asymmetric warfare. Arnold Defense is one of the world's largest suppliers of rocket launchers, manufacturing systems that can be customised for any size, weight or capacity for air, ground, and naval platforms. The company has manufactured more than 1.1 million 2.75" rocket launchers since 1961 for the US Army, US Navy, US Air Force and many NATO customers.

## ■ BRIMSTONE: Successful TYPHOON Integration Trials

(ck) A series of live firings of the BRIMSTONE precision strike missile from a Eurofighter TYPHOON has been successfully completed. The aim of the trials was to provide weapons integration clearance for

Photo: BAE



operational use: the trials, conducted by BAE Systems in Warton, Lancashire, UK, form part of a programme of new enhancements which will be rolled out across the Royal Air Force (RAF) to bolster TYPHOON's combat capability. BRIMSTONE will provide TYPHOON with a low collateral, pin-point accurate air-to-surface weapon, enhancing the aircraft's swing-role performance. The BRIMSTONE missile is now available for further evaluation by the RAF. BRIMSTONE is part of the Phase 3 Enhancement (P3E) package which also includes mission system and sensor upgrades. P3E is the final part of Project Centurion – the programme to ensure a smooth transition of TORNADO GR4 capabilities on to TYPHOON for the RAF.

## ■ High-Speed Ballistic Protected Shutters

(ck) EFAPROTECT is a highly specialised business division of EFAFLEX Tor- und Sicherheitssysteme GmbH & Co. KG, Munich, Germany, developing and manufacturing some of the world's fastest

Photo: EFAPROTECT



ballistic-protected and anti-burglary doors. EFAFLEX is claimed to be the only company worldwide to focus exclusively on high-speed shutters, and presented its latest developments at Milipol in Paris in November 2017. The company has taken its 40 years of design and engineering experience to



develop a world first in the ballistics industry: the world's fastest vertically opening / multi hit-resistant shutter. The brand is synonymous with premium quality and precision engineering, and the new shutter is both burglar-resistant up to RC4 and has exceptional opening and closing door blade speeds of up to 2 metres per second. EFAPROTECT shutters combine maximum operating speeds, ballistic protection and functional security with availability in a variety of protection classes, certified according to country-specific guidelines. They will feature EFAFLEX's unique patented spiral design which is virtually wear-free for reduced maintenance, minimal down time and ameliorated through-life costs. It is anticipated that EFAPROTECT will fast follow in the footsteps of EFAFLEX to become the high security protection shutter of choice within industries including law enforcement, military, maritime, government, banking, hotels, private estates and embassies.

### ■ New Radioisotope Detector from FLIR

(ck) FLIR has developed a new handheld radioisotope detector called the FLIR identiFINDER R440. This radiation detector provides one-hand operability and rapid



Photo: FLIR

detection and identification during survey missions and secondary screening operations. Weighing 1.5kg, the identiFINDER R440 is a small and light radioisotope identification device (RIID) with a 2" by 2" sodium iodide (NaI) detector. It offers some 3.5 times more sensitivity than similarly-sized RIIDs, so that responders can detect radiation from greater distance and behind heavier shielding. Due to an extended energy range, the identiFINDER R440 can detect gamma radiation and can also indicate the presence of neutrons found in special nuclear materials. The user interface and easy-to-read data of the identiFINDER R440 allow easy integration with existing operational protocols. The device has built-in wireless communications and features a new 360° degree EasyFinder mode that pinpoints and leads the operator to the ex-

act location of a radiation source. The FLIR identiFINDER R440 meets the American National Standards Institute (ANSI) N42.34 standard, has been drop-tested up to one metre, and is the industry's only IP67-rated RIID, which means it can withstand rain, splashing, and accidental submersion.

### ■ FLIR identiFINDER R300 for US Homeland Security

(ck) The US Department of Homeland Security is to buy an unspecified quantity of FLIR identiFINDER R300 spectroscopic personal radiation detectors under a contract valued at US\$ 17.174M. For a period of five years, FLIR is to deliver these devices to the Domestic Nuclear Detection Office (DNDO), a branch of the US Department of Homeland Security (DHS). The delivery is part of the Human Portable Tripwire (HPT) programme, and deliveries will extend until mid-2019. The identiFINDER R300 is a belt-worn spectroscopic pager that eliminates false alarms and false positives by providing a continuous radiation detection capability and threat identification. Under the contract, all DHS branches can procure HPT systems and associated services, including warranty, maintenance support and training.



Photo: FLIR

### ■ New FN SCAR Carbine and Pistol

(ck) FN Herstal, one of the world's leading manufacturers of small arms, introduced a new subcompact carbine at MILIPOL Paris 2017. The new FN SCAR-SC is a recent addition to FN's SCAR family, which is in use with the US Special Forces. The 5.56x45mm (.223) calibre gun has an extremely com-



Photo: FN Herstal

pact design that makes it well suited for homeland security operations. Adapted for mobility and flexibility, the FN SCAR-SC has semi-auto only or selective fire capabilities, non-reciprocating charging handle and various add-ons including a red dot sight, tactical light, a variety of foregrips and a sound suppressor. The FN SCAR-SC comes with a telescopic buttstock as standard. Optional buttstocks include fixed, foldable,

adjustable (for length and height) with either concave or convex butt plate and a foldable offset buttstock for aiming and shooting with an anti-riot or bulletproof helmet visor. When fully extended with a telescopic buttstock, the gun has a length of 65cm and a weight of 3.1kg. It has a magazine capacity of 30 rounds and a cyclical rate of 550-650 rounds per minute.

Also at MILIPOL Paris FN Herstal presented a new pistol. The FN 509 9x19mm pistol is a striker-fired weapon designed for security forces. A major feature is its short recoil, brought about by the low bore axis. The slide and grip feature non-slip surfaces; the magazine latch, slide release and safety are ambidextrous, and interchangeable back-



Photo: FN Herstal

straps permit adaptation to all hand sizes. This pistol has been tested with a variety of 9x19mm ammunition types including FN EP and EPT cartridges. The FN 509 has fixed 3-dot luminescent sights, providing target acquisition even in low light conditions. It also features a tactile and visible loaded chamber indicator and a 17-round capacity magazine that allows a visual ammo check. The handgun weighs 960g with a full magazine.

### ■ IPT for A330 MRTT

(ck) Airbus Defence & Space has entrusted Indra, a manufacturer of simulators, to develop a tactical and Integrated Procedures Trainer (IPT) for training pilots of the A330 MRTT aerial refuelling tanker aircraft. Delivery is scheduled for 2019. The trainer is a key element for pilots to familiarise themselves with the aircraft: all pilots must pass mandatory training before assuming control of the real aircraft, which requires the completion of a number of flight hours on simulators. The simulators permit training / exercising situations which are impossible to reproduce using a real aircraft without fatal consequences. These include engine failure, aircraft stalling and emergency landings. The trainer replicates the aircraft's instrument panel with the aid of touch screens. The trainer enables pilots to learn by „putting their hands on the wheel“ of the aircraft from the very beginning, to move on to „flying“ in the Full Flight Simulator during the final stage.

This preparation is eminently practical and results in a faster, improved training process so that pilots are ready to fly an aircraft at maximum safety levels as soon as possible. Indra's IPT may also be connected to the Part Task Training system (PTT) used by boom operators for refuelling from the A330 MRTT, so pilots can train in this complex operation, in which they must coordinate with the both the boom operators and the crew of the aircraft being refuelled. The contract for developing the A330 MRTT trainer is in addition to one already awarded to Indra in 2015 to develop the level D Full Flight Simulator (FFS) for the same aircraft. Indra has supplied over 200 simulators to over fifty clients in 23 countries.

## ■ Kongsberg Sonars for GÖTEBORG Class Corvettes

(ck) As part of Saab's upgrade programme for the GÖTEBORG Class corvette fleet Kongsberg Maritime will deliver ST2400 Variable Depth Sonar systems (VDS) for anti-submarine warfare (ASW) to the Royal Swedish Navy. Kongsberg Maritime has manufactured naval sonars for ASW and mine hunting for more than 30 years, and the main purpose of the ST2400 VDS is to detect submarines, mines and unmanned underwater vehicles in littoral waters. The ST2400 VDS upgrade will strengthen the GÖTEBORG class corvettes' ASW capability while operating in the Baltic Sea. The ST2400 VDS is a medium-frequency sonar with an emphasis on operations in shallow waters. It is a compact design, weighing under 3 tonnes, and it can be rapidly deployed for high speed manoeuvring. Key features of the ST2400 VDS include omni and sector transmission, electronic map overlay, sound propagation, advanced tracking and detection, as well as a built-in simulator for training. The system overcomes traditional towed array sonar issues with ambiguity, buoyancy and omni coverage.

## ■ IWI Introduces New Pistol

(ck) At MILIPOL 2017 Israel Weapon Industries (IWI) presented the new MASADA line of striker-based pistols for military, law enforcement, and civilian markets. The first model, the full size 9x19mm MASADA, has several safety mechanisms including a firing pin block safety, a trigger reset with built-in trigger safety, and a fast, easy and safe takedown – with no need to pull the trigger. The pistol has an easily racked slide with improved front and rear cocking serrations, enhanced ergonomics with the IWI grip angle, and a low barrel axis for reduced recoil. The body has a glass-reinforced poly-

Photo: IWI



mer frame as well as a polygonal cold hammer forged barrel with a 1:10 right-hand twist rate. The pistol comes with ambidextrous operating controls and fixed 3-dot tritium illuminated Meprolight night sights. It has an overall length of 18.6cm with a barrel length of 10.4cm and a weight without the magazine of 650g. The MASADA will be available in four colours: sniper grey, OD green, black, and flat dark earth.

## ■ French Army to Receive First MMPs

(ck) The French defence procurement agency, the Direction Générale de l'Armement (DGA), has accepted delivery to the French Armed Forces of the first batch of 50 missiles and 20 firing posts of the new Missile Moyenne Portée (MMP) system from MBDA. Deliveries were conducted between 15 and 23 November 2017. The new system will gradually replace the Milan and the

Photo: MBDA



HOT missiles mounted on VAB Armoured Fighting Vehicles and it will be issued to French Army infantry and cavalry units, and to Special Forces of the Army, Navy and Air Force. The MMP programme will see the delivery of 400 firing posts and 1,750 missiles across all of the French Armed Forces by 2025: first deliveries will be used to train future users. The weapon system will be deployed in operations in the course of 2018. The DGA, which awarded MBDA the MMP contract in 2013, qualified the system in July 2017, clearing the way for serial production. The government-run technological trials at the DGA's test centre in Bourges confirmed that the system met the requirement of the armed forces. The MMP

offers both 'fire-and-forget' and 'man-in-the-loop' capabilities. The first enables fixed or mobile targets to be engaged without intervention by the operator during the missile's flight. The second allows the operator to change targets mid-flight, to refine the point of impact, or to divert the missile; it also opens up the possibility of firing at hidden targets beyond the direct line of sight. The weapon system can be used by day and night, and its multi-purpose warhead is effective against vehicles, armour, infrastructure and personnel. It has a range of over 4,000 metres. The missile can be fired from confined spaces which is crucial for urban combat, and it can be shoulder-fired by dismounted infantrymen or fitted on the EBRC Jaguar armoured reconnaissance and combat vehicle, which is due to be delivered to the French Army in 2020.

## ■ New Meprolight Red Dot Sight

(ck) Meprolight, a manufacturer of electro-optical systems, thermal and night vision equipment, self-illuminated sights, and Laser Range Finder systems for military,

Photo: Meprolight



law enforcement and civil applications, presented a new additional version of its MEPRO M5 Red Dot Sight at Milipol 2017. The new version has a Bullseye reticle that allows extended operating time while providing quick acquisition of a target using a large display window. The MEPRO M5 Red-Dot Sight is an energy-efficient, compact sight that provides thousands of operating hours with a single "AA" commercial battery. Featuring LED technology and rugged MIL-STD design, the sight has a large display window to ensure target acquisition with both eyes open. Offering numerous reticle brightness intensities, the MEPRO M5 suits every tactical scenario. To facilitate night operations and long-range target engagement, the MEPRO M5 is compatible with GEN II and GEN III NVGs as well as with magnifying scopes. Its human engineering allows positioning of NVGs and magnifiers close to the sight's optics with no decrease in the field-of-view and without compromising convenient switch operation.



## ■ Anti-Vehicle Barriers from Mifram

(sb) Mifram Security, a developer of anti-terror solutions, threat protection systems and fortifications for the military, presented several fully-developed vehicle barriers for the prevention of vehicle-ramming attacks at Milipol 2017. Mifram's portable road barriers include models that stop vehicles weighing up to 40 tonnes, moving at speed. Mifram introduced three easy-to-operate portable barriers, made of elastic materials that absorb the energy of the vehicle, allowing the transfer from kinetic energy to potential energy, driving the momentum of an intruding vehicle into the ground to



Photo: Mifram

bring it to a complete, nearly immediate stop. The FBM flat drive-over folded barrier is a multipurpose anti-ram vehicle barrier which can stop vehicles weighing up to 2,500 kg, including cars, trucks, tractors, motorcycles, and ATVs. The barrier is suited for deployment in urban areas as individual units fit together to suit varying vehicle and road sizes. The PYRAMID drive-over folded barrier for heavy vehicles is a two-way barrier that blocks entrances and exits at the same time, and is ideal for deployment in urban areas. The modular anti-ram barrier can stop vehicles of up to 7 tonnes. It requires no concrete foundation, can be activated either hydraulically or manually and can serve either as a temporary or permanent barrier. The RMB stops heavy trucks weighing up to 40 tonnes. The barrier allows the transfer of kinetic energy to potential energy, causing the vehicle in the process of stopping to tip upwards in the air, thus minimizing the damage caused by the impact.

## ■ FREMM for Canada?

(ck) Canada wishes to acquire a proven NATO warship design that could be modified to meet Canadian Navy requirements, and the Naval Group from France together with Italian shipbuilders Fincantieri, with the support of both French and Italian governments, will present an "off-the-shelf" solution to Canada based on the FREMM frigate design in pursuit of a contract for



Photo: Naval Group

the supply of 15 surface combatant ships for the Royal Canadian Navy. The frigates would be built in Canada at Irving Shipbuilding, maximising Canadian industrial participation and job creation locally through a transfer of technology as well as integrating Canadian suppliers into the two companies' global supply chains. Naval Group and Fincantieri have previously collaborated on major naval projects, including the joint development of the FREMM frigate, which is now able to execute missions in all warfare domains such as AAW, ASW, ASuW, Land Attack, and Command Ship, for example. The general purpose and anti-submarine warfare variants are already in service in two leading NATO navies.

## ■ Norsafe Launches New MARATHON 900 RHIB-D

(sb) Norsafe is a developer of robust military boats for use in extreme weather conditions. Its latest product is the multi-mission high speed craft MARATHON 900 RHIB-D. Its rigid bulwarks and D-fender configuration increase the available deck space; cargo track configurations make the layout



Photo: Norsafe

flexible and optimised for user-specific configurations. Ergonomics and safety in extreme conditions have been factored into the design; all main controls and switches are within direct reach of the pilot and the console has been designed with large flat surfaces to install additional mission-specific equipment. The navigational lights have been positioned so that they do not reflect or light up the vessel during night operations and the radar arch has been produced with high-tech woven GRP mats reducing vibration and stress on electronic sensors and equipment mounted on a large flexible mounting surface. The vessel can also be delivered with self-righting capabilities. Crew and passengers can be seated us-

ing either shock absorbing seats or saddle seats with laminated foam-core seating. Seats and saddles are fitted to cargo-rails making reconfiguration and optional layouts easy to implement. Movement around the MARATHON 900 RHIB-D is helped by grab-rails, robust anti-skid surfaces in step zones and ample work lights when needed. The overall length of the boat is 9.57m and maximum displacement is 3,850kg.

## ■ UK Selects NovAtel for Type 26

(ck) NovAtel's GPS Anti-Jam Technology (GAJT) has been selected by the UK for the Royal Navy's Type 26 frigates to meet a requirement as part of a protected navigation system. The Type 26 frigates are intended to replace the Type 23 frigate as the work-



Photo: NovAtel

horse of the British fleet, undertaking the Royal Navy's three core roles - warfighting, maritime security and international engagement - on the world stage. GAJT protects GPS-based navigation and precise timing receivers from intentional jamming and accidental interference, ensuring that the satellite signals necessary to compute time and position are always available. It is a Commercial Off-The-Shelf (COTS) product, and comes in versions suitable for land, sea, fixed installations and smaller platforms such as Unmanned Aerial Vehicles (UAVs). Warships, military vehicles and platforms, networks and timing infrastructure all benefit from anti-jamming protection. There is no need to replace GPS receivers already installed, as GAJT works with civil and military receivers including SAASM and M-Code.

## ■ Czech Republic to Buy UH-1Y Utility Helicopters

(sb) The US State Department has approved a possible FMS to the Czech Republic for 12 UH-1Y utility helicopters, at an estimated cost of US\$575M. The sale is expected to cover 12 UH-1Y utility helicopters, along with 25 T-700 GE 401C engines (24 installed and one spare), 13 Honeywell Embedded GPS/INS (EGI) (one spare), and 12 7.62mm M240 Machine Guns. The request also includes BRITE STAR II FLIR system, the

AN/AAR-47 Missile Warning and Laser Detection System, AN/ALE-47 Counter Measure Dispensing System (CMDs) and the AN/APR-39 Radar Warning Receiver (RWR), Joint Mission Planning Systems, Helmet Mounted Displays, communication equipment, small calibre gun systems including GAU-17A and GAU-21, electronic warfare systems, Identification Friend or Foe (IFF) Mode 4/5 transponder, spare and repair parts, tools and test equipment, technical data and publications and personnel training. As with all FMS deals, this proposed sale will support the foreign policy of the US by improving the security of a NATO partner. The Czech Republic intends to use these helicopters to modernise its armed forces and strengthen its homeland defence and to deter regional threats, while further enhancing interoperability with the US and other NATO allies.

## ■ New Plasan Armoured SUV

(sb) Israeli armouring specialist Plasan has launched a new variant of the SandCat STORMER for police and counter-terrorism units. The SandCat STORMER is a light tactical armoured vehicle with a high protection level. It is designed to serve in various mission profiles requiring a highly manoeuv-

Photo: Plasan



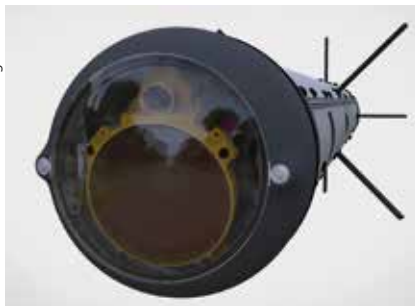
vrable and highly-protected vehicle, such as – increasingly – urban law enforcement, peace-keeping, homeland security and border patrol. The SandCat STORMER is equipped with the SCAT system to address low-intensity conflict levels of violence with a variety of non-lethal and less-than-lethal options, providing precise and proportionate crowd control, preventing civilian casualties, and without risking the system operators. SCAT is a roof-mounted RCWS with day & night imaging, command and control system, dazzler, multi-shot 40mm smoke/gas grenade launcher, Long Range Acoustic Device, and an optional rifle. The SandCat STORMER offers optimisation between protection, payload, and cost through the use of composite materials to defeat threats, particularly in urban areas and civilian operations. It offers relatively low cost of ownership by using a reliable commercial Ford F550 Super Duty chassis

with a powerful engine and four-wheel-drive. The armoured cabin accommodates up to 10 passengers.

## ■ SPIKE LR 2, 5th Gen for IDF

(ck) Rafael Advanced Defense Systems has been awarded a contract with the Israel

Image: Rafael



Defense Forces (IDF) to supply more than 1,000 SPIKE LR 2, 5th generation electro-optical, precision-guided missiles. The SPIKE LR 2 has a range of 5.5 km when fired from ground launchers (an increase of over 35% from the 4km range of the original SPIKE LR) and up to 10km when fired from a helicopter using the RF Datalink. The IDF is a long-time operational user of the SPIKE Missile Family, and the addition of the SPIKE LR 2 will enhance both its infantry engagement range and its lethality against a wide variety of targets. The SPIKE LR 2's connectivity through the IDF's network of sensors and effectors will enhance overall force capabilities. The IDF's LR 2 procurement complements the IDF's fielding of the Integrated Control Launch Unit, the new digital networked launchers that provide improved tactical connectivity for third party target allocation. SPIKE LR 2 is a multipurpose missile with full commonality to the SPIKE Missile legacy. The LR 2 is integrated with all existing types of SPIKE launchers in use today, enabling all of them to fire both LR and LR 2 Missiles

## ■ Sweden to Buy PATRIOT

(ck) Notwithstanding the unpleasant cost shock PATRIOT delivered recently to Poland, Sweden intends to buy Raytheon's PATRIOT air defence missile system for US\$1.2Bn, amid heightened regional tensions and global offensive ballistic missile technology improvements: Iran, North Korea and Russia, among others, have made significant advances in their missile technology. The Swedish government will make a final decision on the acquisition during 2018. Raytheon will aim at deliveries beginning in 2020, and for the system to be operational by 2025 at the latest. Raytheon has built more than 220 PATRIOT fire

units and delivered them to customers in 13 nations including The Netherlands and Germany. In September 2017, US and German soldiers fired the first of dozens of live PATRIOT and STINGER missiles at the NATO facilities in Crete, aimed at strengthening the response to potential attacks from Russia and any other countries. The exercise on the Greek island includes a series of emerging "real world threats" such as the use of drones, electronic warfare and electromagnetic pulses. The exercise came amid a big push by the United States, Germany and other NATO members to rebuild their short-range air defence systems after the shock of Russia's annexation of the Crimea region and its support of separatists in the Donbass region of Ukraine.

## ■ New Practice Ammo for LEOPARD 2

(sb) Rheinmetall will supply the German Bundeswehr with new practice ammunition for main battle tanks. This is the German Army's first-ever order of the new DM98 full-calibre 120mm practice ammunition. The first 10,000 rounds of DM98 ammunition will reach the Bundeswehr before the end of the year. Rheinmetall expects to receive an order for a further 3,200 cartridges at the beginning of 2018, with shipment due in the first quarter of the year. The entire order is valued at €24.7M. Rheinmetall Waffe Munition GmbH developed the 120mm full-calibre round as a successor to the DM18. Essential characteristics of the new round include a geometry and length comparable to its DM18 predecessor and above-average accuracy at ranges exceeding 2,000 metres. It also features a tracer function that assures steady visibility in all light conditions. In response to an operational requirement, the new round – initially known as the RH88 – was qualified in 2015 for all variants of LEOPARD 2 main armament, with Denmark serving as the pilot customer. In 2016 it was successfully qualified with a second packaging system by the Bundeswehr, and introduced as the DM98. The official designation in English is "Cartridge 120mm x 570, DM98 TP-T", with the final initials standing for target practice tracer. These two German orders mean that by the end of 2017, Rheinmetall will have supplied over 20,000 rounds of RH88/DM98 ammunition to four different LEOPARD 2 user nations in three years.

Photo: Rheinmetall





## ■ Berlin Police Orders SURVIVOR R

(ck) The Berlin Police have ordered a protected SURVIVOR R vehicle from Rheinmetall Vehicle Systems Division RMMV. Tailored to meet the requirements of the Operations Directorate, this vehicle is earmarked for delivery in July 2018. The order is worth a six-figure Euro amount. After Saxony, Berlin is the second German region to equip its police force with the SURVIVOR R. Made by RMMV, the SURVIVOR R meets the imperatives of security and mobility. Developed in cooperation with Austrian vehicle maker Achleitner, the SURVIVOR R is ideally-suited to police SWAT-type operations: vehicles of this kind are important in high-risk situations when special operators need to be transported safely to an area of operations. The SURVIVOR R is based on a 4x4 MAN truck chassis, outfitted with a steel armour passenger compartment. Capable of reaching a top speed of over 100 km/h, this vehicle combines automotive engineering with force protection technology from Rheinmetall. The vehicle's armoured



Photo: Rheinmetall

monocoque cab can be equipped with add-on protection elements; a ventilation system for filtering out nuclear, biological and chemical agents is standard. The design and appearance of the police version of the SURVIVOR R is intended to convey a de-escalating, non-military impression. The vehicle can carry up to eleven law enforcement officers and their equipment as well as extensive communications and command and control hardware. Civilian off-the-shelf and standard military components result in a sensibly priced vehicle. This makes the SURVIVOR R a cost-efficient, easy-to-maintain vehicle with low lifecycle costs and high operational readiness.

## ■ Robonic to Deliver KONTIO to Sweden

(sb) As reported briefly in our Finland Country Focus (see ESD 7/17), Robonic, a subsidiary of Safran Electronics & Defence, has signed a contract to deliver a third-generation KONTIO pneumatic launcher to the Swedish Defence Materiel Administra-



Photo: Safran

tion (FMV) for use at its Vidsel Test Range. Robonic, based in Tampere, Finland, is a Safran Electronics & Defence-owned engineering company that manufactures unmanned air system launchers. Delivery will take place before the end of 2017. Designed to launch tactical unmanned air systems and target drones, the pneumatic launcher is capable of catapulting several types of aerial target drones aloft. The KONTIO launcher is a mobile universal launcher with a large mass and speed envelope, which make it suitable for numerous variants of targets or tactical unmanned aerial vehicles. It is designed to launch air vehicles of up to 140kg with a 70 m/s exit velocity or alternatives up to 500kg at 37 m/s.

## ■ Hellenic Navy Avionic Upgrades

(ck) Rockwell Collins will modernise the cockpits of Greek P-3 aircraft with its Rockwell Collins Flight2 integrated avionics system, which has been selected by Lockheed Martin to bring Hellenic Navy P-3 aircraft



Photo: Rockwell Collins

into compliance with upcoming mandates for unrestricted global airspace operations. The Flight2 integrated avionics upgrade will convert the flight deck into an all-glass cockpit, making for easier viewing of critical information on the primary and multi-function flight displays, and the engine instrument display system. Additionally, integrated communications and Identification Friend or Foe (IFF) Mode-5 capabilities ensure mission readiness. Already installed on 15 Greek C130s, Flight2 is built on architecture compliant with Communications, Navigation, Surveillance and Air Traffic Management Systems (CNS/ATM), sup- portable and sustainable to meet current and future aviation mandates.

## ■ Saab Subsystems Order for METEOR

(ck) Saab will deliver subsystems for the MBDA METEOR Beyond Visual Range Air-to-Air Missile (BVRAAM) missile system. The order value amounts to approximately SEK150M and deliveries to MBDA will take place during the 2020-2021 period. Sweden is working with France, Germany, Italy, Spain and the UK to develop and field the METEOR, with MBDA as the programme's prime contractor. This order from MBDA comprises deliveries of radar proximity fuse subsystems (PFS) for the METEOR missile system. The PFS is developed and manufactured by Saab and integrated in all METEOR missiles: the PFS detects the target and calculates the optimum time to detonate the warhead in order to achieve maximum effect. The METEOR is an advanced, long-range, agile air-to-air missile system that is uniquely designed to counter sophisticated airborne threats. In 2016, the Swedish Air Force's GRIPEN fighters became the world's first combat aircraft to declare an operational METEOR capability, as part of GRIPEN's MS20 capability upgrade.

## ■ EMILY to Power Polaris

(ck) The EMILY 3000 fuel cell by SFC Energy, a provider of hybrid power solutions to the stationary and mobile power generation markets, is the power generator on board Polaris Defence's modified MRZR-D4 high mobility tactical vehicle. The MRZR-D4 is an ultra-light tactical vehicle developed by Polaris Defence to meet the mobility needs of international special operations forces, and expeditionary and light infantry forces in off-road missions and facing emerging threats. On board of the MRZR-D4 an EMILY 3000 fuel cell provides reliable tacti-



Photo: SFC

cal power for extended mobility and mission endurance. The EMILY fuel cell is an autonomous power source on board that recharges batteries anytime, anywhere. SFC fuel cell and accessory products carry a NATO stock number codification and are approved for air transportation according to UN3473.

## ■ California Launch for First Spanish Military Satellite

(ck) Hisdesar, the Spanish government satellite services company, announced the launch window of military radar satellite PAZ as January 30, 2018. The US company



Photo: Airbus

Space X will put PAZ into orbit through its Falcon 9 launcher in the Vandenberg (California) area base after two years of delay due to the war in Ukraine: originally, the Ukrainian-Russian consortium Kosmotras was to put the PAZ into orbit in 2015 from the city of Dnipro, but the war intervened. The satellite will be able to take more than 100 images per day, with which it will cover an area of more than 300,000 square kilometres every 24 hours, with high-resolution images. The satellite's main contractor is Airbus Defence & Space, managing a consortium of 18 Spanish companies and universities.

## ■ New Welding Technology for Armoured Steel

(ck) Larger parts and components for armoured vehicles have to undergo a careful manual welding process to ensure highest safety properties at and around the connection points of the steel plates. Stahlkontor, a Germany-based specialist for the processing of high grade steels for defence and civil applications, has now patented a new fully automated joining technology. The proprietary „Dual-LaserHybrid-Process“ (DLHP) reduces stress-induced risks of cracking and breakage in the welding zone. This new process has successfully undergone ballistic and blast tests at civil and defence authority establishments and has proven itself to be a reliable, safe and faster way to produce vehicle components made of armoured steel. DLHP combines simultaneous Laser and MAG welding with a special inductive heat treatment of the armoured steel plates, and the main aspect of this process is the significant reduction of stress-induced risks of cracking and breakage in and around the weld seam, eliminating a weak point of the vehicle component when under pressure loads from explosives or ballistic attack. As a

mechanised, reproducible and comprehensively documented process, DLHP welding also reduces the risks caused by the manual MAG welding process, which is commonly applied in the defence and security environment. Ballistic and blast tests according to WTD standards have successfully been carried out at the German Test and Evaluation Unit for Defence Technology („Wehrtechnische Dienststelle WTD“). DLHP welding is now in its final phase of patent application and testing.

## ■ IWI's New Bullpup

(sb) Israel Weapon Industries (IWI), a producer of small arms for law enforcement agencies and the military, presented its new 7.62x51mm calibre IWI TAVOR 7 rifle at Milipol 2017, as an addition to the TAVOR bullpup rifle family. The IWI TAVOR family of assault rifles was developed in cooperation with the Israel Defense Forces (IDF) and is in service in the IDF Infantry and Special Forces. The TAVOR 7 is an ambidextrous

Photo: IWI



weapon on which the user can switch the ejection port and the charging handle from one side to the other. The ambidextrous features include safety lever, magazine release, and bolt catch similar to the X95. The IWI TAVOR 7 also includes an M-LOK fore-end (2 M-LOK slots at 3 and 9 o'clock) as well as a MIL-STD 1913 Picatinny rail to allow the use of multiple devices and accessories. The rifle's body is built from high-strength, impact-modified polymer, and it has a hammer-forged, chrome-lined, free-floating barrel. Additional features include a short stroke gas piston with a 4-position variable gas regulator including an OFF position designed for special operation needs, a rotating bolt system that ensures safety for the user, and a pistol grip that can be changed or modified. It is available in four colours: sniper grey, OD Green, Black, and Flat Dark Earth, with replaceable barrels available in 432mm or 508mm, for various uses. The rifle has an overall length of 723mm and without a magazine weighs 4.1kg.

## ■ Teijin Aramid Introduces ENDUMAX SHIELD XF33

(ck) Teijin Aramid has developed a polyethylene-based armour fibre called ENDUMAX SHIELD XF33. This is a UHMWPE (Ultra High Molecular Weight Polyethylene)

that enables weight reduction, leading to enhanced mobility and / or increased armour protection level with no increase in overall weight: new threats demand enhanced protection at lighter weights to increase user mobility. New armour systems have to not only provide protection to security professionals, but also to ground vehicles, maritime platforms, and assorted airframes used in carrying out the mission. ENDUMAX SHIELD XF33 can be used for high-performance hard body armour plates, helmets and rigid panels for vehicle and maritime protection. ENDUMAX SHIELD XF33 achieves a superior performance-to-weight solution for body armour inserts, such as NIJ III standalone as well as in conjunction with ballistic vests. Thanks to the structural integrity achieved with low processing pressures, the use of ENDUMAX SHIELD XF33 for vehicle and maritime protection enables easier processing of larger panels with few or no seams, which minimises potentially vulnerable joints and increases design freedom for optimum panel cuts, thereby making the solution more cost-efficient.

## ■ TenCate Adaptable Armour System

(ck) TenCate Advanced Armour has developed a new threat-compliant body armour system that can be adapted to accommodate different threat levels within the same system by using add-on plates to the

Photo: TenCate



TenCate Multi-light CXP461IC Basic Light plate. Two modular add-on plates can be accommodated in the carrier system and be inserted or extracted to optimise the protection level of the complete system. The new body armour system is relevant for units operating in zones with alternating threat levels such as Special Forces and infantry operating in urban environments. TenCate Advanced Armour presented its new TenCate Multi-light CXP461IC Basic Light plate and the additional Operator and Breacher plates

at Milipol 2017. The TenCate Multi-light CXP461IC Basic Light provides protection against NIJ level III+AK47MSC in accordance with NIJ 0101.06 at only 720g and can accommodate the Operator or Breacher plate to increase the protection level to 5.56x45 SS109 or AP ammunition up to NIJ level IV respectively. The TenCate Multi-light CXP461IC Basic Light plate is up to 25% lighter than currently marketed AK47MSC plates. The plates offered in the system leverage the protective capability of the Basic Light plate to reach a protection level against higher classification threats. This provides the operator with the possibility to tailor ballistic protection level against a mission-by-mission requirement, equips the operator for a broader range of operations, and decreases the need for units to stock plates for specific operational requirements.

### ■ TOR-M2 for Belarus

(sb) The Government of Belarus and Russia's Almaz-Antey defence contractor have signed a deal on the delivery of another battery of TOR-M2 air defence missile systems to Belarus. The first batteries of TOR-M2 surface-to-air missile systems entered service with the 120th anti-aircraft missile Brigade of the Air Force and Air Defence Troops in 2011-2012. In early 2014, the 120th Brigade set up an air defence battalion comprising three batteries armed with TOR-M2 missile systems. The TOR-M2 air defence missile systems also went into operation with the 740th anti-aircraft missile brigade in 2016. The TOR-M2 air defence missile system is an effective means to hit aircraft, helicopters, manoeuvring unmanned aerial vehicles, missiles and also other precision weapons flying at medium, low and extremely low altitudes in an adverse air and jamming / EW environments. The TOR-M2 is characterised

by its high manoeuvrability, mobility, quick response, automation of combat operations and its efficiency in engaging a broad range of targets.

### ■ WEW Pods for US Army

(ck) WEW Container Systems has received a contract to deliver additional CAMEL low-profile water tank modules for the US Army: WEW will deliver 167 tanks to prime contractor Choctaw Defense for integration into the CAMEL II Unit Water Pod System. The system includes the 800USgal. CAMEL tank integrated into a frame and mounted



Photo: WEW Container Systems

onto the M1095 trailer. The trailers will either be newly manufactured or refurbished by Choctaw. Delivery to Choctaw Defense began in August 2017, with production of up to six units per week thereafter. The extremely low-profile system is a key element of the US Army's primary water distribution system for platoon level and below. WEW delivered 327 CAMEL tank units to Choctaw Defense in 2013-14 as part of the US Army's CAMEL II Unit Water Pod programme. The thin-skinned water tank, which incorporates five patents, is insulated and jacketed and equipped with an internal baffle system to prevent water surge during rugged operations over rough terrain. It also has freeze protection. Other variants equipped with generator sets can be integrated with a chiller system to provide temperature-controlled water, as well

as compact water-treatment for saline and contaminated water sources. The tank is capable of sustaining positive pressure and partial vacuum to compensate for diverse operating conditions including during air-lift, commensurate with modern military logistic requirements arising from multi-modal operations.

### ■ Electro-Optical Systems from Belarus

(sb) Modern combat operations dictate special materiel requirements. One of the main criteria is multifunctionality. That is why combined electro-optic systems have become more and more popular, and BeIOMO Holding and STC LEMT from the Republic of Belarus specialize in such devices for Special Operations Forces, Infantry and Police. The TV/R 2 is a portable electro-optic observation device which has the optimum number of functions for use on the battlefield – a thermal imaging channel which allows detection of human targets – by size and characteristics – to ranges exceeding



Photo: BeIOMO

2,000 metres, a laser rangefinder for distance measurement providing an accuracy of  $\pm 1$  metre, magnetic compass, angular sensor, GPS. This combination of sensors and functions covers all the requirements for sniper tasks, for example, or night time operations. Regarding night combat, image fusion is one of the key technologies also offered by BeIOMO and LEMT as the solution to the problem of choosing between night and thermal vision. The Belarussian TN-KS Observation Device offers both Image Intensification and Thermal Imaging on one platform – channels may be used separately or together. This offers the advantages of both systems – target detection at long range and high-quality, detailed images at closer ranges. Also, the combined device makes it possible to use IR target designators which are generally not compatible with thermal vision technology. The TV/R2 is undergoing trials with Belarussian Special Forces, and the TN-KS is in the prototyping stage: both were presented at MILEX 2017. BeIOMO and LEMT will be present at several specialist defence exhibitions throughout 2018.

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# Russian-Iranian Relations: A Mixed Bag

**Eugene Kogan**

**The declaration that Russia and Iran are strategic partners lacks both solid foundation and strategic perspective.**

Despite the sense of urgency generated by regional and global concerns, Russia and Iran have failed to establish broad-based economic, scientific, technical, educational and societal ties. In terms of arms exports, Russia still sees Iran as a customer, while Iran is doing its best to distance itself from Russia and to become self-reliant; Iran has recently turned to China in order to diversify its weapons imports away from Russia. Whether this divergence will continue remains to be seen. One thing is certain: Iran is interested in buying commercial aircraft from Europe and the United States rather than Russia, even if the latter insist on it. Whether or not this could lead to a collapse of bilateral relations is not a matter of course, but both issues, the burgeoning Iranian defence industry and the purchase of commercial aircraft from countries other than Russia, must be carefully monitored. Finally, the potential for Iranian gas exports to Europe, Gazprom's main market to date, may further intensify the discomfort in this relationship that is based not on trust but on the need for cooperation to ward off American interests in the region.

## Russian and Iranian Mixed Interests

Russia and Iran differ on the topics of Armenia and Israel. Iran is to some extent interested in expanding its business relations with Armenia, while Russia is either not really interested in expanding the relationship or is constantly resisting Iranian overtures. The case of the possible construction of the Southern Armenian Railway, which failed to secure external funding, not even from Iran, underlines the ambivalence of Iran and the disinterest of Russia, since the



Photo: kremlin.ru

**Vladimir Putin and Hassan Rouhani, President of Iran, shaking hands during Putin's visit to the Gas Exporting Countries Forum summit in Iran in November 2015. Despite the friendly appearance, Russia has been blocking Iranian attempts to export gas to Europe.**

railways would not connect Iran with Russia. This connection would only have been possible if Georgia had agreed to allow rail transport through Abkhazia, which is not the case. Thus, the railway project lost out against a competing Azerbaijani-Iranian initiative, which has accelerated since 2016. Hussein Yaghoubi, Director General for International Affairs at the Central Bank of Iran, said on 27 October 2017: "Under the recent agreement, Azerbaijan has agreed to allocate US\$500M for the construction of railways."

Russia is not prepared to support Iran's hostility toward Israel. Russia prefers to keep an eye on Iran. At the same time, Russia is preventing Israel from unilaterally attacking Iran. Nevertheless, Russia and Iran are ready to work together to keep other coun-

tries away from the Southern Caucasus and the Eastern Mediterranean. It can be said that pragmatism was and still is the core of bilateral relations. Despite their pragmatic approach, the two countries differ when it comes to promoting their position in the world. Russia perceives itself as a world power on the international stage on par with China and the USA. Nevertheless, Russia and Iran are opposed to US-led intervention in the region, be it in the Southern Caucasus or Syria. The United States was and still is the driving force behind the economic sanctions imposed on Iran in the past and on Russia following the annexation of the Crimea in March 2014. It must be recalled, however, that Moscow has supported the UN Security Council resolutions imposing economic sanctions on Iran

## Author

**Eugene Kogan** is a defence and security expert based in Tbilisi, Georgia.



Photo: Vitaly Kuzmin / Wikipedia CC

**Loader-launcher and 9A83ME launcher of the Russian S-300VM ANTEY-2500 SAM missile system at the MAKS Airshow in 2011. Iran is interested in buying modern Russian SAM systems.**

for its nuclear programme in 2006-2008 and 2010. Whether the opposition to the United States and the existing world order is a sufficient reason to unite the two countries in the long term is not a matter of course and remains open to debate. Russia continues to regard Iran as its armaments customer. But as early as May 2016, the Rouhani government decided to diversify the country's arms and military technology imports and to focus more strongly on China as a counterpart to Russia. Until now, China, unlike Russia, has not sold arms to Iran, but that is no longer excluded. This development must be monitored carefully. In addition to turning to China, Iran is also striving to become self-reliant, and that is what worries Moscow, because Russia is not interested in having Iran as a potential arms competitor in the countries near Iran, but rather a country that procures arms exclusively from Moscow and pays for them in hard currency. In addition to preserving Iran as an armaments customer, Russia is also interested in maintaining a positive relationship with Iran's regional rivals Israel, Saudi Arabia and Egypt. Moscow wants to preserve its flexibility and not allow Iran any chance to corner it. However, Iran's hostility to Israel constitutes a difficult balancing act for Russia. Israel wants to ensure that Russian weapons sold to Iran do not fall into the hands of Israel's enemy Hezbollah. Moscow takes into account Israel's concerns, but this requires Russia's constant attention in dealing with Iran and Israel, without

alienating them both. It seems that Iran has so far accepted the balancing act of Moscow. Perhaps Iran is just waiting for the right moment to change the balance of power. It is clear that Iran is ready to be patient for the time being. For how long is hard to say.

Despite Moscow's understanding of Israel's concerns about Russian arms sales to Iran, Moscow has no qualms about supplying weapons to Tehran. Russia insists on the full price paid by Iran for Russian weap-

ons. Putin's pursuit of better relations with Israel did not prevent Putin from forging closer ties with Iran when he refused to call Iran's affiliated armed group Hezbollah a terrorist organisation and to prevent Russian weapons from falling into the hands of Hezbollah. Whether or not Prime Minister Benjamin Netanyahu's government rejects Putin's policy of considering the concerns of both sides is irrelevant to Putin, although Putin has a good relationship with Netanyahu and Netanyahu is often in Moscow. Netanyahu visited Moscow in August 2017 for the sixth time since the Russian intervention in Syria in September 2015. Putin will do the best for Russia and not the best for Israel or Iran.

Consequently, the Russians were less concerned than the Israelis about Iran's improved technical nuclear capabilities and the political rationality of its leadership, while at the same time the Russians warned of the dangers of an Israeli preemptive strike against Iranian nuclear facilities, the danger of which only became apparent in April 2010. Putin's pragmatism can therefore be described as pure cynicism on the basis of clearly formulated priorities, which both the Israeli and Iranian Governments reluctantly accept out of caution.

### Diverging Interests or Wishful Thinking

In the energy sector, Iran and Russia are potential competitors. The 140-kilometre-long gas pipeline, which was officially inaugurated in 2007, supplies natural gas from Tabriz, Iran, to Armenia. Contrary to Iran's



Photo: Wikipedia CC

**A Chinese J-10 aircraft at the Zhuhai Airshow. The J-10 is part of the core arsenal of the Chinese Air Force. China wants to sell 150 J-10 fighters to Iran. The J-10 is an all-weather, multirole fighter with modern air combat capabilities against both land and air targets. Iran currently has around 500 aircraft, mostly older jets like the F-4D, Su-24, F-5E, J-7M and the F1.**





Photo: Mikhail Arutunian / Wikipedia CC

**The new headquarters of Gazprom Armenia in the capital Yerevan. The Russian state-owned company Gazprom controls the entire gas distribution network in Armenia, thereby denying Iranian companies access to the Armenian market.**

original plans, the pipeline cannot be used for larger exports outside Armenia, as its diameter has been reduced at the request of Russia. Consequently, the annual capacity of 2.3 billion cubic metres of natural gas is not sufficient for export to Europe. Today, the entire gas distribution network in Armenia is controlled by Gazprom Armenia, a wholly-owned subsidiary of Russian Gazprom. In other words, "Give the Emperor what belongs to the Emperor" and accept reality.

As sanctions against Iran were eased in January 2016, Gazprom began new negotiations to increase its presence as an investor in the Iranian energy sector. But the experience in Armenia has led many Iranian experts to be wary of Russian policy and Russia is unlikely to gain a foothold in the Iranian market, as the Government of Rouhani is not prepared to open up the lucrative market, even if Iran needs time and investment to achieve its goals. Whether or not Iran will turn to the EU for investment in the energy sector is something that cannot be discussed here. Nevertheless, it can be said that Tehran is considering this. But much also depends on the willingness of European investors to sign up. EU investors are reluctant to provide funds for fear of US sanctions.

Moscow is also concerned that Iran, Azerbaijan or even both of them could be in-

involved in energy projects that could undermine Russia's position in the European and Turkish energy markets. In August 2016, President Vladimir Putin called on his Azerbaijani and Iranian counterparts in Baku to

cooperate more closely on oil and gas. The trilateral format helped Moscow formulate a plan to supply Northern Iran with natural gas via Azerbaijan in exchange for Iranian LNG to be supplied to Russian companies in the Persian Gulf. This, in turn, would allow Iran to reduce its dependence on Turkmenistan as the only natural gas supplier, while the Russian authorities could ensure that at least part of the Iranian gas does not enter Europe. However, the total quantity of Iranian gas that will reach Europe is likely to displease Russia.

Russian-Iranian trade is declining. For example, in 2015, trade between the two countries amounted to US\$1.2Bn, compared with US\$1.7Bn in 2014 and with US\$3.5Bn per year in 2010 and 2011. However, according to the Department of Asian Affairs of the Russian Ministry of Defense (MoFA), trade between Iran and Russia recovered to over US\$2Bn in 2016, with energy, machinery and weapons sales accounting for the lion's share of transactions. According to RBC Information Systems of Russia, Russia supplied weapons worth more than US\$300M to Iran. Nevertheless, this modest upturn can hardly be described as a breakthrough, as both sides expected higher sales. But reality turned out to be different.

By mid-2016, long-discussed joint projects in the energy sector were still on the drawing board and the construction of the second and third power units of the Bushehr nuclear power plant that were discussed back in November 2014 had not yet begun.

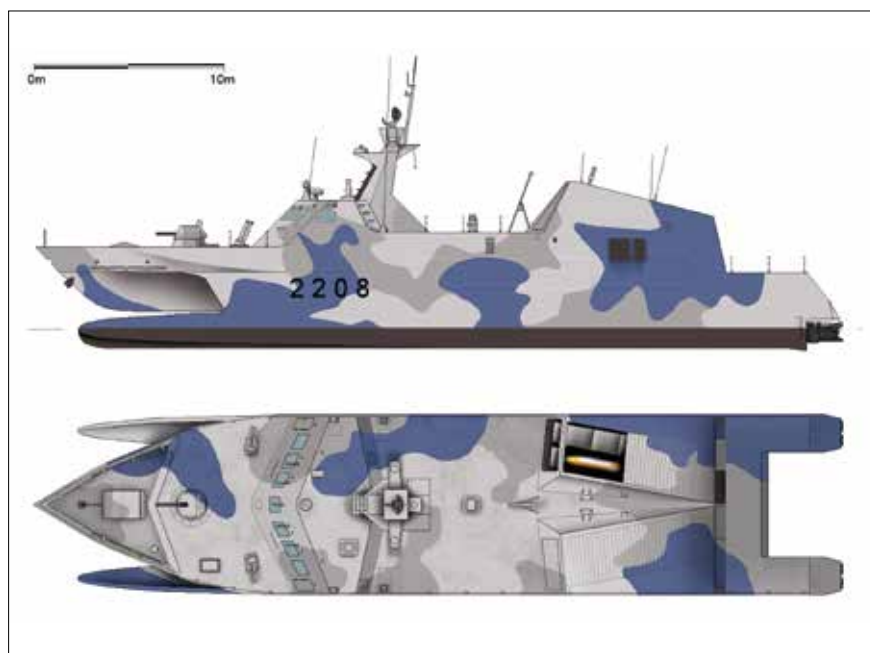


Photo: Wikipedia CC

**The Chinese Fast Attack Craft 2208 – Type-022 HOUBEI Class. China offered the HOUBEI Class high-speed missile boats to Iran. China also sold the boat to Pakistan. China and Iran already have a long-standing navy-to-navy relationship.**



Therefore, it is premature to say whether Rosatom, Russia's major nuclear energy corporation, is looking for new orders to compete after it finishes constructing reactors at Bushehr. We need to remember that most Iranian companies are short of money, which means that their Russian counterparts have to find the finances for each project. Since Russia is also experiencing a credit crunch, only a small part of the projects receives government loans.

For instance, this was the case with the construction of a thermal power plant in Bandar Abbas and with the supply of rail wagons by Uralvagonzavod. Russia's Vnesheconombank (VEB) signed an agreement with an Iranian Bank of Industry and Mining over a loan worth US\$1.2Bn for the development of the plant in Bandar Abbas. Uralvagonzavod won the contract for the supply of 5,000 wagons, the first batch of which was shipped in September 2016. In addition, Russia and Iran signed a US\$2.5Bn deal in late July 2017 to set up a much-needed rail wagon factory. Both sides will set up a new joint venture, 80 percent of which will be owned by Russia, but financed 100 percent by Russia.

In the summer of 2016, the Russian government released two loans (one of which as cited above was provided by VEB) to Iran totalling €2.2Bn (or about US\$2.5Bn), but a promised US\$5Bn loan to Tehran to promote industrial co-operation has yet to materialise. There are plenty of doubts regarding its materialisation.

During Putin's visit to Tehran on 1 November 2017, Russia and Iran agreed on strategic energy transactions worth up to US\$30Bn for the development of Iranian oil and gas fields as well as for research cooperation. But the agreement does not yet mean that it will be implemented.

It can therefore be said that the above-mentioned diverging interests and/or dreams must be approached carefully in order to improve the current situation and implement the above-mentioned projects.

### A Small Change in Relations or just an Illusion

Nonetheless, since the signing of the Joint Comprehensive Plan of Action (JCPOA) between Iran and the P5+1 world powers – the United States, the United Kingdom, Russia, France, China and Germany – in 2015, the Supreme Leader of Iran, Ayatollah Ali Khamenei, enthusiastically supported the initiative to deepen relations with Moscow while remaining cautious towards the West. The Iranian government has focused on Khamenei and has supported the development of relations with Russia,

in particular with a view to strengthening defence capabilities. So far, no concrete arms deals have been concluded between Russia and Iran, although frequently published figures of about US\$10Bn have been announced for a potential deal. The JCPOA aims to lift the UN arms embargo by October 2020. Until then, all sales of offensive weapons systems to Iran must be approved by the UN Security Council. This is the reason for the unsigned arms agreements, but negotiations are continuing.

Iran will continue to use its close relations with Russia to improve its defence structure, implement its regional policy and protect its interests at the international level. Russia's right of veto in the UN Security

Council, while Russia is boasting about its bilateral relations. This has nothing to do with Moscow's sense of superiority, as some researchers claim, but with different political positions. Russia plays the role of world power and Iran acts as a regional power. In addition, both sides accept the fact that the diverging positions are unlikely to change in the foreseeable future and that both sides must therefore find a *modus vivendi*.

In summary, it can be said that even with the increase in trade in 2016, Russian economic relations and investment in Iran are below average and not very impressive. The number of Iranian tourists travelling to Russia in 2016 was rather low (about 80,000) compared with the number of Iranians



Photo: Uralvagonzavod

**The Russian state-owned defence company Uralvagonzavod delivered more than 5,000 railway wagons to Iran. The Type 12-581 wagon designed for export to Iran has a capacity of 66 tonnes.**

ity Council is an important instrument for defending Iran's interests against possible Western sanctions, and the Iranian leadership values continuous Russian aid. At the same time, Moscow is concerned about the development of the Iranian medium-range ballistic missile programme, but this concern is now rarely or not at all made public. In September 2017, Iran had successfully tested a new medium-range missile despite Russian frowning.

The Iranian-Russian relationship is not a strategic partnership, but a wary partnership in which both sides pay close attention to each other and take special precautions to avoid misunderstandings and misinterpretations or possible mishaps. Lack of coordination, despite the support of Ayatollah Ali Khamenei, could be one of the determining factors for the wary relations between the two countries.

In addition, Iran is hesitant when it comes to publicly highlighting its relations with

travelling to neighbouring countries such as Armenia (189,000), Azerbaijan (about 220,000), Georgia (142,000) and Turkey (1.7 million). On the other hand, Iranian expatriates from the USA and Britain travel to Iran to visit their relatives and get to know the country their parents left more than 40 years ago.

The arms deals in preparation are currently awaiting the lifting of the UN Security Council's arms embargo. Whether China can counteract Russian arms sales to Iran must be carefully monitored.

It is therefore unlikely that Iran will become Russia's strategic partner, and most Moscovites and Tehranis can hope that a pragmatic relationship will develop based on the interests of the two countries as defined by their respective leaderships. Whether the pragmatic relationship can develop into a more substantial and comprehensive relationship remains to be seen. ■



## In the Wake of Post-Atlanticism

**Beka Kiria**

Director of the Gagra Institute

Historically, the first stage of global order transformation took place after the First World War, having a temporary soothing effect while a number of great economic powers were in the process of recovery. On top of that, an intricate system of alliances before WWI induced imperial and colonial rivalry for wealth and resulted in the fiasco of the European balance of power.

The second stage of the global paradigm shift occurred after the Second World War. International actors claimed neighbour territories and expansionism had been the driving force behind nationalistic states expanding their territorial boundaries by means of military aggression.

At the end of the Second World War, the US perceived its involvement in the European Security framework as the top national priority in order to avoid the emergence of a new hegemonic power in Europe on the debris of the European balance of power. The risk that the Soviet Union could succeed where Nazi Germany had collapsed elicited the US-European security partnership which formed the basis of the Atlantic political order.

Subsequently, during the Cold War, bloc-based security systems emerged and European states along with the US established a number of security institutions. The aim of multi-layered institutional arrangements was to prevent Soviet pressure and influence in the rest of Europe.

After collapse of the Soviet Union, the US was the only remaining superpower. After a while though, China has emerged among highfliers while the Russian Federation came back to the political stage making the world order become multi-polar.

Earlier, hegemonic dominance by the US successfully fostered the NATO enlargement process starting with the German reunification, the Visegrad Group, the Vilnius Group and finally reaching aspiring countries like Georgia, Ukraine and Macedonia. However, due to geographical proximity, NATO faced challenges and difficulties from a newly emerged Russian Federation.

In spite of intensive cooperative frameworks with particular stakeholders in targeted countries and regions, a possible NATO membership of Georgia and Ukraine became a difficult task due to Russian aggression with strong opposition to any NATO expansion plans.

On top of that, the long-term strategic shift by the US from Europe to Asia puts the Euro-Atlantic security cooperation into question. There is no clear projection if the US security planners focus on the Asian continent and let Europe face challenges alone, or if the transatlantic relationship remains steady.

Moreover, the EU is enthusiastic about developing a European military dimension which could undermine NATO and weaken interoperability within NATO. However, the Russian activities in Ukraine are jeopardising the concept of a whole, secure and free Europe resulting in US roll-back of its rebalancing strategy. In a chain of political reactions, Russia unreasonably acts as a protective fence to China, hindering the US re-balancing strategy against China while the European Security structure is challenged by Russia.

In this geopolitical game, the Western position must re-focus on a practical cooperation and extended dialogue with the Central Asian region since geographically Central Asia is divided between Russia and China. Currently, institutional outreach of the EU and NATO is almost non-existent there.

Thus, a key to success is to look through the prism of China at the Central Asian region. Needless to say, these territories in the past were under Chinese imperial influence. Still, recent military activities and economic developments illustrate that China's current bid on its own Central Asian provinces – Xinjiang and Tibet – is significantly projecting power at Central Asian countries.

The outreach of EU institutions is very weak in this region. EU presence in Central Asia is understood through the chain of "neighbours of EU neighbourhood". Besides, comparing the EU's presence to that of China, Central Asian countries are immediate neighbours for Beijing. By contrast, referring to the Russian approach towards Central Asian countries, these states are still claimed to be in the sphere of Russia's influence similarly as the South Caucasus is claimed as Russia's backyard.

In advance, common European values in the 21st century in the scope of the transatlantic relationship seem to be losing their importance. Emerging powers – China, Brazil and India – are far more attractive and vital for US interests, but strategic move from Europe to Asia temporarily sacked the US strategic manoeuvre due to Russian political awakening which poses an open challenge to the European Security framework.

Finally, in spite of all challenges and difficulties based on the wider global context, the strategic move from Europe to Asia is a critical necessity for US interests. Meanwhile, however, the US is facing a complex political juggle, keeping the strong Euro-Atlantic bond, avoiding the realisation of the EU's military dimension, protecting European Security framework from Russian aggressive stance and keeping the Asian re-balancing strategy.

# Making Sense of the Shanghai Cooperation Organisation

Stephen Blank

**The Shanghai Cooperation Organisation (SCO) is one of the most interesting yet elusive phenomena in contemporary world politics. While it is rather difficult to get a handle on what it is accomplishing and to what degree it is successful, its membership has grown to include India and Pakistan and Iran is knocking at the door.**

This essay attempts to analyse some of the current and possibly foreseeable trends involving the SCO as it adapts to a new membership and a highly dynamic international setting. One example of the SCO's response to the rising power of Asian states has been to incorporate India and Pakistan into the membership. This clearly represented a trade-off between Russian support for India's membership and China's promotion of Pakistan's entry into the SCO. But by doing so the organisation has also now incorporated into its midst not just the Indo-Pakistani rivalry but also Indo-Chinese rivalry as well. And, as we shall see below, this is not the only international rivalry that has impinged upon the workings of the SCO.

So while the recent Indo-Chinese crisis over the Doklam area near Tibet has been resolved peacefully for the moment, its repercussions will also spill over to Central Asia and are not confined to the Indo-Chinese borders or even South Asia. Indeed, as a result of this clash, China has learned that it can no longer confidently assume that it can push India around and India

has immediately registered that lesson in self-confidence by stating that it will play a larger role in Southeast Asia, another area where they both jostle for influence. But by the same token we can expect that we will also see in Central Asia an expanded rivalry, not least within the framework of the SCO, since India and Pakistan are both members. Even more intriguingly, India, at the recent BRICS summit succeeded in getting the communiqué to single out Pakistan

Indo-Chinese rivalry in Southeast, South, and Central Asia is a long-standing affair and a keystone of China's overall foreign policy strategy has always been to confine India to influence only on the subcontinent and even challenge it there. Thus in the context of the SCO, which China habitually employs as a venue for making the bilateral deals that go to comprise its huge Belt and Road Initiative that has aroused considerable Indian suspicion, the appearance of

Photo: Wikipedia CC



*The 2017 Summit of the Shanghai Cooperation Organisation met in Astana, Kazakhstan.*

## Author

**Dr Stephen Blank** is a Senior Fellow at the American Foreign Policy Council. He is the author of numerous foreign policy-related articles, white papers and monographs, specifically focused on the geopolitics and geostrategy of the former Soviet Union, Russia and Eurasia. He is a former MacArthur Fellow at the US Army War College. This is a revised, expanded, and update article based on the article "Whither the Expanded SCO: After the India-China Clash" which appeared in the "Central Asia Caucasus Analyst" in October.

as a state sponsor of terrorism and pressure it to desist from those policies. How these trends will resonate within the SCO in the future is, for now, anybody's guess. But they do show some of the dynamics that are already at work among the new and old members of the SCO.

Even if the Doklam crisis had not occurred, the appearance of enhanced contention if not rivalry between Beijing and New Delhi within Central Asia in general and the SCO in particular as well as the abiding Indo-Pakistani rivalry would take place as a result of the SCO's new membership structure. The

this Indo-Chinese rivalry within the SCO will almost certainly generate interesting and even possibly unpredictable dynamics and not only in Central Asia.

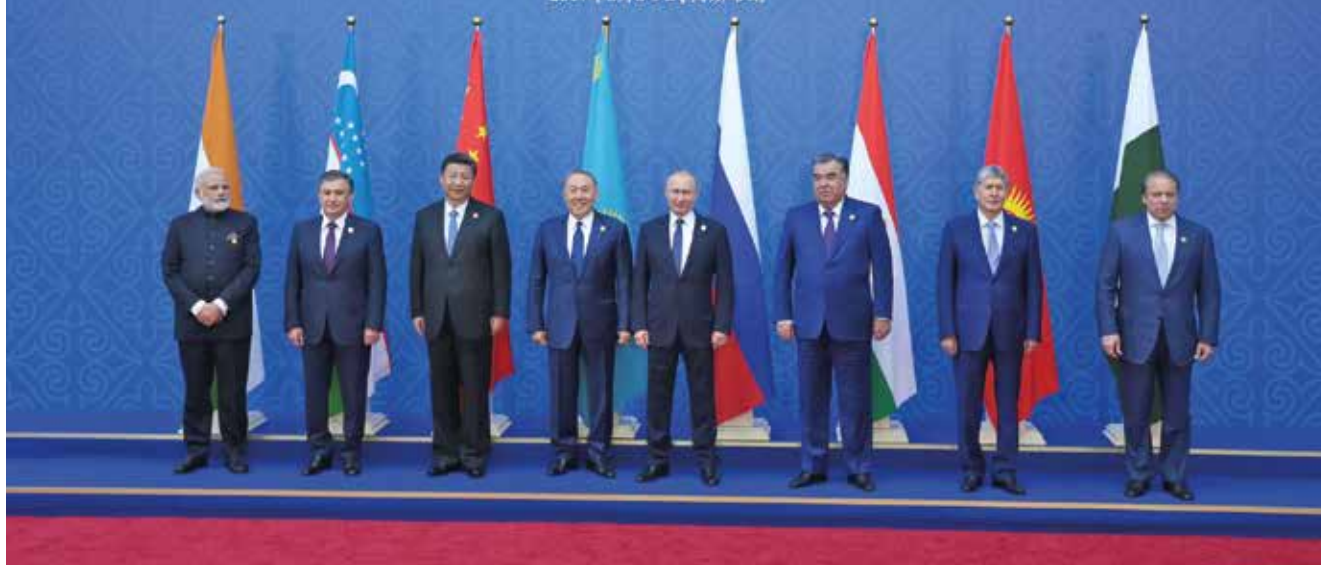
As both parties' capabilities and power grow this rivalry will probably become even more acute and far-reaching both with regard to the intensity and frequency of manifestations of this rivalry, and probably in regard to embracing ever wider geographical and/or issue clusters or zones. Certainly this "spillover" will include Pakistan. And the future of the Sino-Pakistani relationship, especially after the BRICS





上海合作组织成员国元首理事会会议  
2017年6月8-9日, 阿斯塔纳

Photo: Kremlin.ru



**On 8-9 June 2017 the heads of the SCO states met in Astana, Kazakhstan, for the 2017 summit.**

communiqué, merits careful scrutiny. The leaders of China and Pakistan have regularly intoned the “all-weather” friendship between them. Indeed, Pakistan has become a central part of China’s Belt and Road Initiative to the extent that China is not only building a road from its border to the port of Gwadar but also investing between US\$46Bn and US\$59Bn in Pakistan alone. China also announced this support

dian targets is increasingly intolerable to an India determined to play a great power role in Asia. Consequently in recent years Delhi has not only sought a massive enhancement of its indigenous defence capability (with uneven results) but has visibly expanded its ties and presence with Southeast, Northeast Asia and Afghanistan as well as with the United States. Trump’s Afghan strategy also explicitly calls on India to play a greater role than it already does in Afghanistan, presumably in some as yet unspecified form of coordination with Washington. However, while India evidently is ready to expand its civilian profile in Afghanistan, it clearly will not commit military forces to that country.

ference and thus championing Pakistan’s proxy over that of the US. and India suggests that there is little likelihood (for now) of breaking that Sino-Russian consensus that more and more comes to resemble a working alliance based on Russia’s growing dependence on China’s economic and political support in Asia, Europe, and the Middle East if not elsewhere. Indeed, media reports and expert analyses point to ever increasing signs of joint Sino-Russian activity in Latin America, Europe, and the Middle East beyond East, South, and Central Asia. Beyond Afghanistan we know that the Doklam crisis generated much anxiety in Moscow because it raised not just the prospect of armed conflict between India and China but might have forced Russia to take a stand in favour of one its two principal Asian partners at the other one’s expense. Although Russia’s ideal policy in Asia, going back to Yevgeny Primakov, would be to have a triangle with China, India, and itself all pushing the same policies; this dream has repeatedly foundered on Indo-Chinese rivalry. And more recently it has also become apparent that Moscow’s growing dependency and relative weakness vis-a vis China is eroding prospects of a triangle or even a Sino-Russian duopoly to be a true relationship of equals.

In this context, the signs of Chinese support for Pakistan have been a notable issue, because since 2012-13 there has been a marked improvement in Russo-Pakistani relations to the point where both sides are conducting joint military exercises in the North Caucasus in September 2017. Russia is now selling arms to Pakistan and discussing major energy deals with it. Perhaps most importantly Moscow, for some



Photo: Wikipedia CC

**At the SCO 2017 summit, India and Pakistan became members of the organisation.**

for Pakistan and thus its support for various terrorist groups inside Afghanistan in the wake of President Trump’s newly announced Afghan strategy. Yet one month later it signed off on the BRICS communiqué attacking Pakistan. So it remains to be seen just how much fidelity to this part of that communiqué Beijing will display and to what degree, if any, the acceptance of that language betokens a shift in Chinese policy.

At the same time all this Chinese support for Pakistan and Pakistan’s deliberate support of terrorist groups’ attacks upon In-

## Background

China has long viewed the SCO as one of the building blocks of its vision of Central Asia and long resisted Indian entry into it for reasons that stem from its determination to brook no rivals in the quest for Asian great power status. Instead it preferred Pakistan but could only get its way as part of a package deal whereby both states entered into the SCO, thereby also mollifying Russia, India’s principal supporter. However, and given the dynamic evolution of Russo-Chinese relations and overall Asian relationships in the last few years, it is currently doubtful if, in a crisis, Russia would continue to prefer India. Probably, in fact, it would try to remain neutral in any subsequent Indo-Chinese conflict or major crisis but would ultimately have to lean towards China, albeit with great regrets. Indeed, Sino-Russian cooperation in regard to inviting the Taliban to a peace con-

time, has been transferring weapons to the Taliban, Pakistan's proxy, and supporting its inclusion in a future Afghan government as part of a Sino-Russian-Pakistani peace plan that counters Indian and American interests in Pakistan and that has elicited a

Beijing at the BRICS summit will affect the dynamics of the SCO or the larger dynamics of Indo-Pakistani-Sino-Russian relationships in South and Central Asia.

After the Doklam crisis, where India for the first time compelled China to treat it

to the degree that it is able to enlist greater Indian support for the government in Kabul. Thus there is good reason for believing that India's enhanced confidence and willingness to stand up to China's assertive and hegemonic behaviour will soon

be manifested within the SCO and the region at large. Thus the BRICS summit may have represented the first fruits of India's newly gained assertiveness or confidence.

Similarly to the degree that China actually follows through by putting pressure upon Pakistan to reverse course with regard to sponsorship of terrorism that will bring India and China closer together, to Russia's delight and Pakistan's discomfiture. On the other hand, if there is no follow-up to the BRICS communiqué then the Indo-Chinese and Indo-Pakistani rivalries at the heart of the SCO will grow in size and scope and further erode the SCO's ability to play any kind of role as a regional security provider or manager. How that kind of outcome would affect the dynamics of its members' multiple relationships could become a very interesting trend. But at present it is too early to determine which way events and Chinese policies will go.

Photo: Kremlin.ru



**The restricted format meeting of the SCO Council of Heads of State in Astana in 2017.**

decidedly cool response from the Afghan government in Kabul. Since this policy directly contradicts critical Indian interests and policies it is entirely plausible that one reason for the Russo-Pakistani rapprochement at India's expense has been Chinese influence on both its friends to be more friendly to each other even as this gambit weakens Indo-Russian ties and fully conforms to China's long-term policy of boxing India into its subcontinent and frustrating New Delhi's efforts to expand its influence into Central Asia.

Previously China has regarded the SCO as a building block of its hegemonic standing in Central Asia and a vehicle for pursuing expanded bilateral ties with the Central Asian members. Therefore that organisation has hitherto been the site of many Sino-Russian disputes that have hindered the SCO's ability to play the role envisioned by China or to maximise the SCO's aspiration to be an effective security provider in Central Asia. Inasmuch as the SCO's charter and summits regularly decry terrorism and call for support against it while China and Russia now embrace Pakistan who is sponsoring terrorism in Afghanistan and against India. Beijing and Moscow have not only vitiated the SCO's effectiveness and legitimacy of the SCO, they have also incorporated the overlapping Indo-Chinese and Indo-Pakistani rivalries into the heart of the SCO. Consequently it remains to be seen whether the seeming change of heart evinced by

as an equal instead of retreating, we can easily imagine future situations regarding Afghanistan and Central Asia where their mutual rivalry as well as Chinese support for Pakistan will obstruct efforts to use the SCO as a platform for genuine and meaningful regional security cooperation among the members. This will be particularly the case as Washington steps up its military commitment to Afghanistan and

as an equal instead of retreating, we can easily imagine future situations regarding Afghanistan and Central Asia where their mutual rivalry as well as Chinese support for Pakistan will obstruct efforts to use the SCO as a platform for genuine and meaningful regional security cooperation among the members. This will be particularly the case as Washington steps up its military commitment to Afghanistan and



**In June 2017 a military stand-off occurred between China and India as China attempted to extend a road on the Doklam Plateau and Indian troops moved in to prevent this. India claimed to have acted on behalf of Bhutan. Bhutan has formally objected to China's road construction in the disputed area.**

Graphics: Nilesh Shukla, Wikipedia CC



These relationships are not the only ones of interest in the SCO. There is also considerable evidence of a growing Middle East-Central Asia connection. Tajikistan vetoed Iran's membership in the SCO. This is not only because of Tajikistan's long-running suspicions concerning Iranian supported religious agitation inside the country or among Tajik students abroad. Evidently due to large-scale Saudi investments in domestic religious institutions in Tajikistan, Dushanbe proved receptive to Saudi efforts to restrict Iran's influence in the larger Muslim world and vetoed its entry into the SCO. This is merely one way in which Middle Eastern-Central Asian crosscurrents are now operating.

In other examples Qatar has invested substantial sums in building monumental mosques in Tajikistan but has resisted Dushanbe's requests for huge industrial, mining, and infrastructural investments. So here the dependency runs from weak, poor Central Asian states to rich and potentially generous Arab investors or state investor funds in return for which an obvious quid pro quo is expected as in the Tajik case. Probably as the Middle East continues to be torn by internecine rivalries among the regional states we will see more efforts by Central Asia to elicit aid in return for political support from these governments and possibly a corresponding willingness on the part of Middle Eastern states to look for investment opportunities and political support in those states against their local rivals.

## The Russia-China Dimension

However, it remains the case that the key SCO relationship is the Russo-Chinese one. Arguably this relationship too is an evolving one. It is already well established that China has supplanted Russia as the principal investor and regional economic power in Central Asia. It still appears to be the case that the prevailing sentiment among US experts is that while the Russo-Chinese partnership has grown in the last few years, it still is not all that troublesome a phenomenon. It is also thought that, due to what these experts believe is the inherent contradiction between them and Moscow's refusal to be the "younger brother" in the relationship, this entente will sooner or later break up. However, the evidence of the last few years repeatedly points to Moscow abandoning Western initiatives in favour of alignment with China and not only in Central Asia. The current Korean crisis has strengthened Sino-Russian ties, and China has supported Moscow's Afghan policy of including the Taliban in any future Afghan government by endorsing this so-called

peace process towards that end. Beijing has also never spoken publicly about Moscow's gun running and intelligence sharing with the Taliban even though the Taliban's status as a terrorist organisation is incontrovertible. Moreover, despite the often-cited Russian grievance or sense of grievance about potentially becoming the weaker partner in the relationship, there has been no sign of this in policy or official rhetoric. China's caution in handling Russia therefore continues to pay ample dividends even as it is steadily consolidating its superiority over Russia.

In particular we see that even in areas where Russia has historically independently thrown its weight around as a great power, it feels compelled to lean on the

energy investments in Russia, all of which are high-priority sectors for Moscow.

Certainly we have yet to see any sign of real strife or discord as regards Central Asia whether they occur in the SCO or beyond it. While the SCO may have been established as an instrument by which to regulate Sino-Russian relations regarding Central Asia and provide a framework for China's emergence as a major regional actor, it seems clear with each passing day that China now is the key and dominating power in the SCO and Central Asia. While Russia proclaims its military might and willingness to defend the area against terrorism, it clearly is reluctant to have to make good on that stance as its negotiations with the Taliban suggest. Thus while

Photo: Kremlin.ru



**Vladimir Putin in 2013, during a flight over military exercises near Sakhalin. During Putin's trip to Sakhalin, Rosneft CEO Igor Sechin reported to Putin on the completion of the drilling operations in the Sea of Okhotsk. Sakhalin's geographic location and established relations with the Asia-Pacific countries provide a base for the establishment of a global energy centre there.**

shadow if not the substance of Chinese support for the sustenance of its position. In Europe there is now an increasing number of reports of Sino-Russian cooperation in "active measures" and economic policies in Eastern Europe, such as joint activities connected to Chinese investment in the Greek port of Piraeus. Similarly the joint naval manoeuvres of 2015 in the Mediterranean and of 2017 in the Baltic show Russia invoking Chinese power as a crutch in its efforts to demonstrate its great power presence and capability in those two theatres. In the Arctic and in energy affairs too we see China gaining equity in Russian firms to an extent that five years ago would have been unimaginable. For example, China is now the third largest investor in Rosneft and is present in other critical Arctic and

Moscow poses as the gendarme of Central Asia, China is its banker. And there are signs of thought in Beijing that at some future date it might have to act in the region to protect its investments. Recent political and military gambits point to the expansion of Chinese strategic perspectives.

For example, China could also use its new anti-terrorism law, which allows for foreign counter-terrorist operations, to intervene in Middle Eastern or Central Asian states against terrorist operations with these countries' consent. China's army has already appeared in Pakistan-occupied Kashmir. In this same context, the White Paper talks about expanding military exchanges, creating a regular mechanism for security cooperation and joint anti-terrorist activities including continuing maritime operations like that in the Gulf of Aden. In this



context the base at Djibouti assumes new importance as a crucial facilitator of Chinese trade and naval presence in the Indian Ocean and as the basis for rapid deployment of naval power to North Africa, the Middle East, and even South Asia while protecting key trade routes to Africa, the Middle East, and Europe. So there are already ample precedents, material, and strategic incentives to foster a new military alliance in Central Asia in the guise of anti-terrorism. Neither is there as yet any sign of discordant Sino-Russian policies or differences between Moscow and Beijing (and not only in Central Asia) that cannot be resolved by the kinds of intergovernmental consultations that have now become the norm in their bilateral relations.

## Consequences

The consequences of these trends are likely to make themselves felt soon, especially if Indo-American discussions about how India can and will contribute to the American strategy in Afghanistan leads to a major expansion of India's overall profile in both Afghanistan and Central Asia. Or if there is a major change in Chinese tolerance for Pakistan's support of terrorists against India and Afghanistan we will also see major changes across the Sino-Indian agenda, including in the SCO. While there is still no discernible rupture between Moscow and Beijing; were that to occur the repercussions would be felt immediately and obviously not only in the SCO. On the other hand, a steadily tightening alliance will also trigger noticeable and important consequences across many regions, not just Central Asia.

To the degree that China continues to give Pakistan what amounts to a blank check for its policies as long as they do not materially injure Chinese interests, Central Asia will grow in importance as an area of increased Sino-Indian rivalry and that rivalry will be visibly expressed within the SCO. Middle Eastern ties with all the members of the SCO are also clearly growing and that dynamic will also continue to make itself felt in multifarious ways among all of those actors. Finally there is no reason at present to expect the eruption of major Sino-Russian discord whether it is about Central Asia or another area. Indeed, if anything, it is becoming ever more clear that Russia's pretensions or claim to great power status are ever more based on the expectation of Chinese support and hence Chinese sufferance. For example, while Russia has called for an international cooperation to reconstruct Syria it has solicited China because it certainly does not have the necessary funding. Neither will it accept refugees from the war-torn Middle East also

due to straitened resources. Thus the SCO will probably continue to be a rather dubious foundation upon which to build an enduring and legitimate security system in Central and South Asia, even if it attracts new members. Beyond that, India has for some time publicly expressed its scepticism and reservations concerning the Belt and Road Initiative. It also recently announced its intention to partner with Japan in building a rival project to Africa, an area of extensive Chinese economic-political and even military investment, such as in the Chinese naval base at Djibouti. Although Central Asian governments are in no position to renounce the benefits that accrue to them from participating in China's initiative, they also probably would welcome any counteracting Indian investment initiative especially as they have welcomed both Indian and Japanese investment in the past. And since investment here plays as much of a political role as it does an economic role we could reasonably expect that a larger economic dimension will be grafted onto the strategic and political rivalry that already exists in Southeast and South Asia. And if Washington weighs in with substantial support for an Indo-Japanese initiative or actually proposes its own plan, China will undoubtedly feel the competition.

For their part Central Asian states will welcome anything that adds to their individual and collective capability to manoeuvre among alternative investors and foreign donors, not to mention foreign great powers. So they have a material interest in using India to regulate or restrict the Chinese presence especially as Russia no longer can or will play the role of an economic counterbalance to China in Central Asia. These manoeuvrings will undoubtedly be reflected in the future proceedings of the SCO. Indeed, the SCO has already been the scene for competitive discussion of rival Russian and Chinese schemes for economic progress in Central Asia. So there is every reason to expect more of the same in the future in this regard.

## Implications

For Russia, India's membership in the SCO in the context of New Delhi's more overt and contentious rivalry with China across Asia also raises interesting problems. While both India and China have an interest in moderating their rhetoric to keep crises and disputes from mushrooming out of control; the fact of this rivalry obstructs its vaunted dream of a strategic triangle. Although Moscow would clearly prefer to have India buffer China it now depends too much on China for economic and political support in Asia and globally to be able to easily dial back its support for China. India has already

Photo: Kremlin.ru



**Vladimir Putin met with the President of the People's Republic of China Xi Jinping at the APEC Economic Leaders' meeting in Danang on 10 November 2017.**

started looking to European and American allies in Asia in response to its perception of Russia's tilt to China. So the tightrope, upon which Moscow must now walk, in no small measure due to its own policy failures, is already standing and beckoning. Russia may have no ultimate choice but to placate China due to their shared border and immense military capability and Russia's global ambitions. But will Russia and India be easily able to cooperate in Central Asia and the SCO? This is not a simple question for despite the long-standing mutual friendship Russia is now becoming a sponsor and supporter of Pakistan against India, such as by selling Pakistan weapons. And India is unable to accept that status quo. China may desire that its friends be friends with each other but India may also insist upon that and thus upon a corresponding distance from its enemies, namely Pakistan and to a lesser degree China.

Those policy considerations are likely to emerge rather soon in Central Asia given the differences over Afghanistan, China's Belt and Road Initiative, and US pressure upon India regarding Afghanistan. Should we see in the future as well a major US regional initiative for Central Asia, that too would add to the strains now becoming visible in the Indo-Russian relationship. All of these factors will almost certainly come into play in the framework of the SCO given its expanded membership and might actually make it a more interesting if even less effective instrument of regional security than it already is. In view of the numerous fires now burning in Asia, the SCO may come sooner rather than later to enjoy "interesting times."

# Azerbaijan - Gateway to Central Asia

**Korhan Özkilinc**

Azerbaijan's geographic location makes it a melting pot of cultures. In addition to Oriental, Central Asian and European cultures, the Azerbaijani people share ethnic roots with the Turks. Its predominantly Shiite Islam faith connects Azerbaijan with Iran, and through its historical past it has close ties with Russia.

**T**he region around the Caspian Sea and the Central Asian countries of Kazakhstan and Turkmenistan have become important energy suppliers to the world and a geopolitical pipeline hub in the last twenty years.

The region is rich in oil and gas reserves, and it is not surprising that the world's most powerful states are struggling to control the Caspian region. But the political situation is tense, because the Caspian region has different ethnic groups with more than five dozen languages, several religions and many historical conflicts. No wonder, then, that the region is called the "Eurasian Balkans".

In 1844, the first boreholes in the country's oil industry were drilled in Bibi Heybat's oil field. At the end of the 19th century, Azer-

baijan was the world's largest oil producer. After the First World War, Baku was occupied by England. After the collapse of the Soviet Union and Azerbaijan's independence, the United States, Europe and Asia have made considerable efforts to exert more influence in the region at Russia's expense. Of course, Russia and Iran were sceptical about the Western expansion on their doorstep. But the test of strength between the north-south axis (Moscow-Yerevan-Tehran) and the west-east axis (Washington-Ankara-Tbilisi-Baku) has not yet reached its peak. Nevertheless, Russia and Iran's rule of Azerbaijan would be a global security risk. It is therefore Azerbaijan's destiny to ensure the balance of power in the region, which is a political art.

## Historical Background

The Democratic Republic of Azerbaijan was proclaimed on 28 May 1918, but its freedom lasted only 23 months. On 27 April 1920 the country was conquered by the Bolsheviks. After seventy years under Soviet rule, the national liberation movement succeeded in gaining independence from the Soviet Union on 18 October 1991.

But war followed on foot. Historical animosities in the Caucasus led to the war between Armenia and Azerbaijan over the Nagorno-Karabakh region in 1988. The territory was then occupied by the Armenian armed forces, and, on 10 December 1991, Nagorno-Karabakh declared its sovereignty by referendum. In the spring of 1994,



Photo: OSCE

*Baku, capital of Azerbaijan, has become a prosperous hub for global energy supplies.*



Azerbaijan had lost the entire Nagorno-Karabakh region. The ceasefire negotiated by Russia and the OSCE (Organisation for Security and Co-operation in Europe) cannot enter into force because the region is permanently at war. In principle, seven territories of Azerbaijan are recognised as occupied, and the UN Security Council designates Karabakh as part of Azerbaijan through UN General Assembly Resolutions 822, 853, 874 and 884 and UN Security Council Resolutions 19/13 and 57/298.



Photo: Adam Jones, Wikipedia CC

**The village Khudaferin in Nagorno-Karabakh was destroyed during the conflict and its Azeri population "ethnically cleansed".**

## Geopolitical Perspectives

The legitimacy and power of the country is regulated internationally through trilateral relations and regionally through bilateral relations.

### Azerbaijan – Iran – Russia

Azerbaijan and Iran cooperate economically and in military-related matters, but not as strongly as they do with Turkey. The sharing of raw materials in the Caspian region is worth mentioning. The core of the trilateral relationship, however, is the development of two strategic transport corridors. The final protocol for the South-West Transport Corridor Project was signed on 19 June 2017. It provides for joint participation by the countries of Azerbaijan, Iran, Georgia, Ukraine and Poland. The project is part of the already launched Trans Caspian Interna-

The second transport corridor "North-South Transport Corridor Project" was launched on 16 May 2002 with the participation of many countries. This will be a catalyst for relations between Russia, Azerbaijan and Iran. The most important thing is not only the economic importance of the corridor, but also the acceleration of the integration of the Eurasian economic union and Russia's connection to the Persian Gulf. Both corridor projects are mainly strategic access to Sunni-dominated Balochistan (Turkish peoples), which extends over three countries Iran, Afghanistan and Pakistan, and is the subject of a tug-of-war between two powers, India and China. The Baluchis are poor, but they are rich in natural gas, crude oil and raw materials, as well as the TAPA and IP natural gas pipelines. In this respect, the Chinese want to secure energy supply from the Middle East and the export of goods to Europe via Pakistani Balochistan. India, too, has the same strategy as China, which is why they are expanding their economic corridor from Iranian Balochistan.

The two strategically located ports of Chabahar (Iran) and Gwadar (Pakistan) may have an important geostrategic role in ten years or even earlier. The rivalry between India and China is a manifestation of this. The Chinese project "One Belt One Route" in particular competes with the "International North South Corridor" project. Trilateral cooperation between Russia, Azerbaijan and Iran is therefore extremely important.

Over the past ten years, Baku has invested some 20 billion dollars in transport infrastructure, ports, motorways and railways with the intention of linking them to the International Corridor projects. The country thus catapulted itself into a key international position.

### Azerbaijan – Georgia – Turkey

If the historic Silk Road is revived, Azerbaijan, Turkmenistan and Turkey will cooperate not only in infrastructure projects, but also in connecting the world's largest natural gas reserves, from Central Asia via the Caspian Sea, Azerbaijan and

Georgia to Turkey – the Transanatolian gas pipeline TANAP.

Construction began on 17 March 2015 and commissioning is scheduled for 2018. The aim is to transport 16 billion cubic meters of natural gas per year from the Shah Deniz gas field to Europe and later to increase the transport capacity to 31 billion cubic meters.

The TANAP pipeline will be extended from Turkey through the Trans-Adriatic pipeline (TAP). Its construction also started in 2015, with a total annual capacity of 20 billion cubic meters. TAP runs through Greece, Albania and the Adriatic Sea to southern Italy. TAP and TANAP are not only considered very important by Europe, but also receive the political support of NATO.

### Azerbaijan – NATO

The first step of Azerbaijan towards NATO was taken in March 1992 with its admission to the North Atlantic Cooperation Council. Both sides met at the highest level on 4 May 1994, and the President of Azerbaijan Heydar Aliyev signed the Partnership for Peace (PfP). The focus was on the "Programme to End Armed Conflict and Achieve Peace". Implementation began in 1996.

During the visit of NATO Secretary General Javier Solana to Baku in 1997, President Heydar Aliyev declared that the necessity and obligations of the PfP programme were very important, and NATO Secretary General Javier Solana stressed the importance of the country in the Caucasus region.

In the same year, Azerbaijan joined the Euro-Atlantic Cooperation Council and officially attended a meeting of the Heads of State and Government of the Euro-Atlantic Cooperation Council in Madrid in July 1997. In his historic speech, Heydar Aliyev called on NATO to insist on overcoming the armed conflicts in the Caucasus. Failure to resolve them would constitute a major threat to European security.

In November 1997, Heydar Aliyev signed the decree "Action Plan to Strengthen Co-operation between the Republic of Azerbaijan and NATO". In the same year, the Azerbaijani representative began his



Photo: NATO

**NATO Secretary General Jens Stoltenberg met with Azerbaijan's President Ilham Aliyev in Brussels on 23 November 2017.**

tional Transport Route. The main objective is to connect the countries of India, Pakistan and the Persian Gulf via Azerbaijan and Georgia with the ferry across the Black Sea and then Ukraine and Poland with the markets of Europe. On this route, around 100 million tonnes of goods are shipped from India to Europe and vice versa at full capacity each year.



mission at NATO headquarters in Brussels. Since 1997, military cooperation between Azerbaijan and NATO has been continuously expanded through a variety of projects, programmes and reforms, so that Azerbaijan has adopted NATO standards. In 1998, NATO representatives held a con-

ferences emphasises the need for the transition to a new phase of partnership between NATO and Azerbaijan as a continuation of sustainable relations. Cooperation in bilateral relations has so far been intensified. It is interesting how Azeri relations to Russia and NATO develop. On 7 September



Photo: Office of the President of Azerbaijan

**Ilham Aliyev, President of Azerbaijan, visited Iran on 1 November 2017 and met with Iran's President Hassan Rohani and Russia's President Vladimir Putin to talk about economic cooperation.**

ference with Azerbaijan on pipeline safety. Three years later, on 19 November 2001, Azerbaijan became an associate member of the NATO Parliamentary Assembly and has 5 out of 66 members of the Parliamentary Assembly. In November 2002, President Heydar Aliyev again called on the Heads of State of the Euro-Atlantic Cooperation Council to hold a meeting to resolve the conflicts in the South Caucasus. Also, the successor and son of Heydar Aliyev, the current President Ilham Aliyev,

in 2017 NATO and Azerbaijan discussed various NATO programmes and one day later, on 8 September 2017, the General Staffs of the Armed Forces of Azerbaijan and Russia met for a meeting on military cooperation. In the same week, the armed forces of Azerbaijan, Georgia and Turkey conducted joint military exercises. It is also expected that Azerbaijan will not join NATO in the next decade. If Azerbaijan really becomes a member of NATO, that is another matter.



Photo: Office of the President of Azerbaijan

**On 30 October 2017, Ilham Aliyev, President of Azerbaijan, celebrated with Turkish President Recep Erdogan the opening of the Baku-Tbilisi-Kars railway which will connect Azerbaijan to Turkey. The Prime Ministers of Georgia, Kazakhstan, and Uzbekistan also attended the opening ceremony.**

## Azerbaijan - Turkey

Turkey is a geopolitically active country with a complicated relationship towards the Caucasus region. Turkey and Azerbaijan share cultural, linguistic and religious values and maintain constructive relations. Turkey, as a NATO partner, plays an important role in shaping security structures in the Caucasus region, namely in training military personnel and shaping the defence industry in Azerbaijan. Turkey has therefore played a greater role in the integration of Azerbaijan into NATO standards.

In 1999, an agreement was concluded between two countries on the support of Azerbaijani security forces by Turkish security forces and then sent to Kosovo with a Turkish contingent for KFOR. At the same time, Turkey founded the Military Academy of Azerbaijan and the first graduates were trained according to NATO standards in 2001.

Turkey has initiated two central strategies in the Caucasus region: Turkey wants to modernise the Azerbaijani armed forces in terms of military policy, defence technology and health technology on an equal footing with NATO, and Turkey wants to strengthen the economies of Caucasus countries by organising economic cooperation in the Black Sea region. This organisation was founded by Turkey in 1992.

In fact, Azerbaijan is part of the West-East axis (USA, Turkey, Georgia, Azerbaijan) which competes with the North-South axis of Russia, Armenia and Iran. In particular, strengthening Russia's position in the Caucasian region could weaken Turkey's ties with Central Asia. Therefore, Azerbaijan and Turkey should work constructively together while maintaining good relations with Russia and Iran.

## Conclusion

"Knowledge is power – geographical knowledge is world power" was often said in German geography at the end of the 19th century. These sentences are of enormous significance for the Silk Road Strategy Act of 1999. Although this law was passed by the US House of Representatives but not ratified by the US Senate, some states partially implemented it. In terms of overall development, Azerbaijan is an anchor of stability in the Eurasian Balkans and a geostrategic hub in the Caspian region. Because of its proximity to Central Asia, Azerbaijan is responsible for global energy security and world peace. ■



## France is Re-Evaluating its Defence Posture

**Denys Kolesnyk**

A few months after Emmanuel Macron won the presidential elections in France he appointed a commission to draft a new White Paper on defence. This rapidity is due to the massive engagement of French troops in current missions both abroad and at home. Some 30,000 French soldiers are permanently deployed on missions ranging from Operation “Barkhane” in Mali and the NATO-led reassurance mission on the Alliance’s eastern flank to Operation “Sentinelle”, carried out on France’s national territory and aimed at protecting vital state institutions from terrorism.

Such an extensive use of France’s armed forces in current operations has brought into question their ability to respond to additional crises or emerging threats. For instance, in September France’s Chief of the General Staff, General François Lecointre, underlined that the ability of the French army to carry out an operation on a short notice, similar to one already in place in Mali, is under question. This is why the authorities have to re-evaluate the country’s defence policy.

The new White Paper on defence, titled “Strategic Review” (Revue Stratégique) and published on 13 October, re-evaluated the threats that France is facing and proposes new approaches to navigate the French Republic’s defence policy and forces in the unstable and unpredictable multipolar environment which has replaced the Post-Cold War order.

The Strategic Review will also serve as the basis for a new law on military programmes for 2019-2025, which would increase the military budget by €1,7Bn annually. This increase would bring France closer to the NATO defence spending criteria of 2% of GDP, but to fully meet that standard, France would have to spend €50Bn per year instead of the current €32Bn. This figure is a distant goal even with the additional €1.7Bn per year.

In addressing security threats, the document recognises that the security climate has deteriorated much faster than foreseen in the previous version published in 2013 under François Hollande’s administration. The document defines terrorism as the main and immediate threat to the French state; this is not surprising given recent events, including the terrorist attacks (Bataclan and others) of

13 November 2015, which shook the French nation. The Strategic Review also recognises that a return of coercion by demonstration of force and even the potential for open war in Europe constitutes a major threat for Paris as well.

The Review mentions Russia only 13 times but the document clearly considers Russia a threat – maybe not directly to France but to the world order. Moscow has challenged the EU and NATO and actively blocks international institutions, including the UN and the OSCE, while promoting alternative regional projects such as the Eurasian Economic Union (EAEU). Regarding the Middle East, the Strategic Review sees Russia, Iran and Turkey as the dominant forces that are shaping the future of the region.

The Strategic Review outlines two main ambitions for France in its role as a UN Security Council permanent member and a nuclear power: first to preserve strategic autonomy, and second to build a stronger Europe.

Maintaining and upgrading its nuclear weapons is of paramount importance to Paris. Nuclear deterrence gives France strategic autonomy that is a key issue for Paris as it allows France to make independent decisions regarding the protection of its national interests. Speaking of the Euro-Atlantic space, the Strategic Review recognises the importance of NATO and seeks to strengthen the European security. The recently established Permanent Structured Cooperation in Defence (PESCO) by 23 EU members obviously agrees with France’s vision. Moreover, Paris confirms its commitment to all responsibilities within NATO, including the collective defence clause of the Washington Treaty as well as reassurance measures and the strengthening of NATO’s eastern flank. It is worth noting that earlier this year France sent a contingent of around 306 soldiers, LECLERC battle tanks and IVFs to Estonia.

We can assume that France will be more open to cooperation in defence matters with the EU and NATO partners. This cooperation covers, for example, strategic air transport and, more generally, cooperation in the logistics and defence industries and joint military operations. However, much of this cooperation is likely to focus on France’s neighbouring countries.

# The Iranian Shadow over the Middle East and Beyond

**Bill Roy**

**Iran is a dissatisfied power. It believes that the present international system does not suit its interests and indeed actively conspires to oppose its interests. It is a theocratic state that believes it is 'righteously guided' by a higher power.**

Iran sees itself as the champion of Shia Islam and believes that it has the right and the duty to stand up for the interests of Shia wherever they might be. Apart from this religiously inspired ideology, Iran also more traditional national security interests as well. In short, Iran has more change the facts on the ground in the Middle East and beyond.

There is no doubting the fact that Iran has been and is a state sponsor of terrorism, either directly using its own operatives or via surrogates such as Hezbollah in Lebanon. Iranian-directed terrorist incidents have taken place across the Middle East, but also in Europe, Africa, Asia and South

America. Iran has also supported a host of other terrorist groups, where it has suited its interests. It has also made its opposition to the continued existence of Israel quite obvious and, despite the fact that it is a signatory to the Non-Proliferation Treaty (NPT), has clearly been working to acquire nuclear weapons and appropriate delivery systems since the late 1980s. Even though it signed the Biological Weapons Convention (ratified 1973) and the Chemical Warfare Convention (ratified 1987), Iran also has the capability to produce and weaponise both biological and chemical agents. It should be noted that there is no convincing evidence of an active biological or chemi-

cal Weapons of Mass Destruction (WMD) programme in Iran at this point.

It is impossible to argue with the fact that Iran uses terrorism as a foreign policy tool or that it is a state sponsor of terrorism. It is also undeniable that Iran is engaged in a programme to obtain nuclear weapons in breach of international agreements. Yet, there is another aspect to Iran that is difficult to ignore. Iran is the seventh largest producer of crude oil in the world and the third largest producer of natural gas in the world. It has the fourth largest oil reserves and the second largest natural gas reserves. According to the US Central Intelligence Agency, the Iranian Gross Domestic Product (GDP), adjusted for Purchasing Power Parity (PPP), has Iran as the 19th largest economy in the world. The country has a population of some 82 million, making it the 17th largest country in population terms. Furthermore, the strategic location of Iran must be taken into account, in particular its ability to block the Strait of Hor-



*Iran acquired three Project 877EKM Kilo Class submarines from Russia between 1991 and 1996. Future submarine needs will be met by the indigenous FATEH Class SSC and the BESAT Class SSK. Iran will also introduce new missiles for its submarines and the HOOT supercavitating torpedo.*



muz, the number one oil chokepoint globally, and the potential it has to disrupt or destroy oil production facilities in the Arab states that are geographically adjacent.

## Nuclear Progress

This makes Iran a terrible conundrum for the international community to tackle. Iran's quest for nuclear weapons did result in international sanctions from the US, European Union (EU) and the UN Security Council. US sanctions came into force against Iran in the wake of the Iranian Revolution in 1979. The scope of the sanc-

creasingly gave them time to mount a credible international lobbying effort to weaken sanctions. It was the US that became keen on a diplomatic solution, especially after Barack Obama took office in January 2009. As a candidate, Obama had stated that he would seek engagement with Iran without pre-conditions. This effort to repair relations with Iran would eventually become intertwined with the desire of Obama to have a grand foreign policy legacy and in turn this would lead to the Joint Comprehensive Plan of Action (JCPOA) otherwise known as the Iran nuclear deal that was adopted on 18 October 2015 and came

the JCPOA. Despite this, there are many in the international community who believe that the JCPOA process must be continued, believing that talking and the diplomatic process are better than any alternative. Of course, the contrary position is that confusing discussions with progress achieves nothing, and in the end the process becomes an end in itself rather than a means of delivering an end product.

## The Trump Era

Prior to his election, President Trump was extremely critical of the JCPOA but had refrained from doing anything about it once he was in office. Then, on 13 October 2017, Trump outlined a new policy as regards Iran. Firstly he discussed the ongoing difficulties with Iran: "The Iranian dictatorship's aggression continues to this day. The regime remains the world's leading state sponsor of terrorism, and provides assistance to al Qaeda, the Taliban, Hezbollah, Hamas, and other terrorist networks. It develops, deploys, and proliferates missiles that threaten American troops and our allies. It harasses American ships and threatens freedom of navigation in the Arabian Gulf and in the Red Sea. It imprisons Americans on false charges. And it launches cyberattacks against our critical infrastructure, financial system, and military.

The United States is far from the only target of the Iranian dictatorship's long campaign of bloodshed. The regime violently suppresses its own citizens; it shot unarmed student protestors in the street during the Green Revolution. This regime has fuelled sectarian violence in Iraq, and vicious civil wars in Yemen and Syria. In Syria, the Iranian regime has supported the atrocities of Bashar al-Assad's regime and condoned Assad's use of chemical weapons against helpless civilians, including many, many children."

Incidentally, in Britain it was revealed that there had been a 'brute force' Iranian cyber attack against the British Houses of Parliament and the e-mail accounts of British MPs in June this year. The accounts attacked included those of the Prime Minister and other senior government ministers. Britain is a signatory of the JCPOA.

The Iranian government really does not seem to care that much about how other countries might react to its actions. For example, when sanctions were still in force, Iranian aid to Hezbollah in Lebanon amounted to US\$200M annually. With sanctions lifted Iran is now reportedly sending US\$800M annually to Hezbollah. At Iranian direction, some 7,000 Hezbollah fighters are currently in Syria supporting



**JAMARAN is the lead ship of a class of two frigates with at least two more in build. Based on the old British ALVAND design, this frigate entered service in 2010. Equipment fit is a mixture of reverse-engineered Western systems, systems acquired from other suppliers, such as China, and locally developed technology.**

tions was gradually increased and then, post-1995, were imposed on companies and individuals dealing with Iran. UN sanctions came into force from 2006 onwards, with separate EU sanctions coming into effect from 2007 on. This sanctions regime did cause Iran major problems; asset seizures and being increasingly blocked from the international financial system were particularly troublesome. But Iran persisted with its nuclear programme in spite of the sanctions.

Resolving the problem of the Iranian nuclear programme came down to two solution sets: taking active measures or looking for a diplomatic solution. Very few had the stomach for active measures and so the diplomatic path was chosen. Coincidentally, many proponents of a diplomatic solution were also focused on the economic opportunities to be gained in Iran if the sanctions regime were removed.

From the Iranian perspective, diplomatic efforts were ideal. It gave them time to continue with their nuclear programme and in-

into force on 15 January 2016. Signatories to the JCPOA included the five permanent members of the UN Security Council (China, France, Russia, the UK and the US) plus Germany (referred to as the P5+1) and Iran. Any notion that the JCPOA somehow removes the threat of Iranian nuclear proliferation is misguided; at best, the agreement simply kicks the can of Iranian nuclear capability down the road. As far as Iran was concerned, the JCPOA was a true 'win-win situation'; they got relief from sanctions, had confiscated assets returned that amounted to some US\$100Bn (including the Obama administration delivering US\$1.7Bn in cash) and had to agree to an inspection regime on their nuclear facilities that was hardly very stressful.

In the Preamble and General Conditions to the JCPOA it states that: "Iran reaffirms that under no circumstances will Iran ever seek, develop or acquire any nuclear weapons." There is very little doubt that Iran has continued with its efforts to develop and field nuclear weapons since signing

the Assad regime, with Hezbollah having fought in that country since 2011. Hezbollah is said to have had 2,000 fighters killed in Syria since 2011. Iran also spends over US\$60M in funding the military operations of Hamas in Gaza and hundreds of millions more supporting operations in Syria, Yemen and elsewhere.

The new Trump policy as regards Iran was summarised as follows: "First, we will work with our allies to counter the regime's destabilising activity and support for terrorist proxies in the region. Second, we will place additional sanctions on the regime to block their financing of terror. Third, we will address the regime's proliferation of missiles and weapons that threaten its neighbours, global trade, and freedom of navigation. And finally, we will deny the regime all paths to a nuclear weapon."

A critical element of the new policy is the imposition of sanctions on the Islamic Revolutionary Guard Corps (IRGC) of Iran. According to Trump: "The Revolutionary Guard is the Iranian Supreme Leader's corrupt personal terror force and militia. It has hijacked large portions of Iran's economy and seized massive religious endowments to fund war and terror abroad. This includes arming the Syrian dictator, supplying proxies and partners with missiles and weapons to attack civilians in the region, and even plotting to bomb a popular restaurant right here in Washington DC. I am authorising the Treasury Department to further sanction the entire Islamic Revolutionary Guard Corps for its support for terrorism and to apply sanctions to its officials, agents, and affiliates."

As regards Iranian nuclear activities Trump noted that: "Since the signing of the nuclear agreement, the regime's dangerous aggression has only escalated. At the same time, it has received massive sanctions relief while continuing to develop its missiles programme. Iran has also entered into lucrative business contracts with other parties to the agreement." Trump then went on to announce that he would not be certifying Iranian compliance with the JCPOA at this point. This does not mean that the US is abandoning the JCPOA, although it puts Iran and the other parties to the agreement on notice that the US is prepared to end its participation in the deal.

Trump concluded his remarks by noting that: "As we have seen in North Korea, the longer we ignore a threat, the worse that threat becomes. It is why we are determined that the world's leading sponsor of terrorism will never obtain nuclear weapons." Bearing in mind the fact that Iran has strong links with North Korea, it is almost inevitable that North Korean advances in

bomb and delivery system design will be passed on to Iran in exchange for cash at some point.

## Facts on the Ground

In Tehran the new aggressive attitude of the US government towards the JCPOA is not unexpected. After all, Trump was talking about walking away from the JCPOA and taking a robust stance towards Iran prior to his election. On the other hand, the other members of the UN Security Council, along with Germany and the EU, are still committed to the JCPOA and its accompanying diplomatic process. This separation between Washington DC and the other signatories to the JCPOA offers Iran plenty of room to manoeuvre. It gives Iran critical time to weaponise its nuclear capability without sanctions. In the final analysis, Iran believes that it needs a nuclear deterrent for self-preservation at the basic level and because possession of such a deterrent will allow it to maintain an activist foreign policy. As regards the Middle East, Iran can look upon a situation where it has made immense strategic gains in recent years. Iranian sponsored Shia militias have been critical in assisting in the defeat of ISIS in Iraq; looking at the situation from the Iranian point of view, it is they who have unparalleled influence in Iraq not the US. Iranian participation in preserving the Assad regime

rogate in Lebanon, via Iraq and Syria has been discussed. Now it is a reality.

Also notable is how Iran has successfully sought to limit any progress towards Kurdish independence in Iraq, using diplomacy with Kurdish factions but also using its surrogates in the Iraq Shia militias to put pressure on the Iraqi Kurds. The last thing that Iran wants is an independent Kurdistan, knowing that its own Kurdish population would seek self-determination if they had the opportunity.

Elsewhere, in the Yemen Iranian-backed Houthi rebels continue to bleed Saudi Arabia and the other Sunni Gulf States. Should it wish to increase the pressure, Iran has more cards to play. In Bahrain, the Shia majority population remains restive under Sunni rule; it would not take much imagination for Iran to exploit that situation. The Eastern Province of Saudi Arabia with its large Shia population also offers plenty of scope for Iran to fan the flames of a possible insurgency. Saudi Shia face systematic discrimination and this year there have been reports of major Saudi military operations against the Shia town of Al-Awamiyah in the Eastern Province in response to anti-government protests.

The religious ideology of the Iranian regime also drives its opposition to the continued existence of Israel. Actively participating in actions against Israel allows Iran to appeal to the 'Arab Street' and contrast its actions



***Iran has fielded a large number of coastal defence missile systems using the Chinese C802 missile and its Iranian manufactured NOOR derivative. These coastal defence systems have been exported to Hezbollah in Lebanon and also to the Houthi forces that Iran is supporting in Yemen, who used them to engage a US Navy destroyer in 2016.***

in Syria has been another success story. It is now reported that Iran will be able to establish a permanent military base in the Damascus area. For years the idea of a 'Shia Crescent' linking Iran to its Hezbollah sur-

rogates with the lack of action of Sunni governments. Hezbollah and Hamas are two parts of this Iranian strategy, it is now looking to add to its tools by raising and supporting a new group in the West Bank to take active

measures against Israel. Such a group could easily be based on existing Hamas cells in the West Bank.

## The Ticking Clock

Strategically speaking, Iran can look at the current state of the Middle East with considerable satisfaction, and more possibilities exist for further improvement of the strategic situation. The problem for the Iranian regime is time; the long-term prospects for Iran are actually rather grim. In the 1980s, during the Iran-Iraq War (1980-1988), Iran had resorted to human wave attacks to break through Iraqi positions; they had no problems in taking mass casualties. Now the situation is very different; Iran is very casualty-sensitive, hence the use of Hezbollah and also the raising of mercenary units from Afghan and Pakistani Shia to fight in Syria. This casualty-sensitivity reflects a greater concern – demographic decline in Iran. The Iranian government wants to increase the population to 150 million by mid-century; this is not achievable with the current falling birth rate. It is said that between 23 and 25% of Iranian couples are infertile. Iran is also said to have one of the highest rates of sexually transmitted infection in the world. Iran admits that



***In March 2017, Iran unveiled the indigenous KARRAR tank. In effect, this vehicle is an attempt to obtain a T-90 equivalent based on T-72 technology. Iran's conventional forces are not its true strength, that comes in asymmetric warfare and the use of surrogates such as Hezbollah, the Houthi and the Shia militias in Iraq.***

it has 2.8 million regular drug users, up from 1.3 million six years ago, with opium responsible for some 63% of drug consumption. This probably undercounts the number of regular drug users in Iran. The UN has stated that Iran has one of the worst addiction crises in the world. The Supreme Leader of Iran, the Ayatollah Ali Khamenei, has stated that Iran looks to discredit and replace Western hegemony in the Middle East with that of Iran. With Iran ageing and rotting from within, the time for Khamenei to achieve Iranian he-

gemony grows shorter year-by-year. Since the formation of the Islamic Republic of Iran in 1979, predicting how they might react has always proven difficult. If they believe that their window of opportunity to change the facts on the ground in the Middle East is gradually closing, how likely is Iran to act rationally and adhere to international diplomatic norms? It would appear that the security situation in the Middle East and the surrounding area could be on the verge of a new, and even more troubled, era. ■

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# Securing Sovereignty and Integrity

## Hungarian Security Policy within the Framework of NATO and EU

**Thomas Bauer**

**Like most of the states of Eastern and Central Europe, Hungary adopted a clear course towards integration with the West after the end of the Cold War. In the first few years after joining NATO, the efforts made by the country were exemplary, but with time disenchantment has crept in.**

The differences in opinion between Brussels, Berlin, and Budapest with regard to refugee policy and migration have also caused difficulties with discussions about necessary reforms at the European level. “Difficult” may well be a euphemism for characterising the current relationships between the Western EU and NATO members and Hungary, and the Government under Prime Minister Viktor Orbán. At the parliamentary elections in September 2014, the coalition between the Christian-Conservative Fidesz Party and the Christian-Democratic People’s Party (KDNP) again achieved the two-thirds majority needed for pushing through possible constitutional

national conservative to nationalist in many of the countries of Eastern and Central Europe as a consequence of the major round of EU expansion eastwards in 2004. After an initial wave of enthusiasm, the euphoria gave way to a sense of disillusionment. Many sections of the population, in particular older people, were unable to benefit from the accession to the EU. Added to this were the protests in Hungary against the Europe-friendly government under Prime Minister Ferenc Gyurcsány. The disclosure of internal documents exposed Gyurcsány to accusations of widespread duping of the people by specifically falsified information. The protests among the people which fol-

lowed, to a number of discords and accusations within the European Union at the beginning of the refugee crisis in 2015, which are specifically viewed in the Western EU states and in Brussels as being contrary to the official refugee policy of the European Union.

Behind the criticism voiced in Hungary against the opening of the borders for refugees lies also the ongoing commitment by Budapest in support of the rights and welfare of the Hungarian and Magyar minorities in neighbouring countries. The origin of this lies in the collapse of the Habsburg monarchy at the end of the First World War and the diverse national struggles to salvage something from the bankrupt residue of this multinational state. With the Austro-Hungarian settlement of 1897, the multinational Kingdom of Hungary became a partner with equal rights in the Austro-Hungarian Double Monarchy, but nevertheless internally pursued a strict policy of Magyarisation at the expense of the Romanian and Slav sections of the population. Under the Treaty of Trianon in 1920, Hungary was forced to accept extensive losses of territory, and two-thirds of the area of the country were surrendered to Czechoslovakia, Romania, the southern Slav countries, and Austria. Since then, several million Magyars have lived as minorities in the states bordering Hungary. Nor did the situation change after 1945, although since 1933 Hungary had hoped for the recovery of the lost territories by acceding to the revisionist territorial policy of the National Socialist German Reich. With the end of the Second World War and incorporation into the Soviet sphere of influence, the issues of the Hungarian minorities was not even any longer on the back burner. It was only with the recasting of the Hungarian Constitution in 1989 following the collapse of the Warsaw Pact and the end of the East-West conflict that Budapest again openly undertook to concern itself with the aspirations and interests of the Magyar minorities in the neighbouring states. The improvement in

Photo: Miniszterelnök



**At a joint press conference with his Polish counterpart Beata Szydło in Warsaw in September 2017, Prime Minister Viktor Orbán said that “We accept the decision of immigrant countries to become immigrant countries. We ask them to accept that we do not want to become one.”**

changes. Minister-President Orbán has been in power with this party constellation since 2010, and is pursuing his course towards a comprehensive overhaul of the Hungarian system of government, which is not going down well in Brussels. It is true that the present disagreements are based primarily on Orbán’s attitude of rejection towards the liberal refugee policy being adopted by the European Union and the Federal German Government under Federal Chancellor Angela Merkel. The origin of the alienation, however, is also due in particular to the rise of movements ranging from

lowed, and the general dissatisfaction with the country’s financial situation as a result of the global financial crisis, ultimately led to a change of government in 2010. Only one year later the Parliament in Budapest approved a new constitution, which came into effect on 1 January 2012. Prime Minister Orbán is consistently directing his internal and external policy measures and initiatives towards the safeguarding and securing the sovereignty and integrity of the Hungarian state and its people. The protection of the country formulated in this way against foreign influences and the un-



Photo: Miniszterelnök

**Membership in NATO was one of Hungary's most ambitious goals, a goal pursued determinedly already by Hungary's first post-communist Prime Minister József Antall. Pictured is a visit of NATO General Secretary Anders Fogh Rasmussen to Hungary in 2013 where he met with Viktor Orbán.**

the relationships between Hungary and the Hungarian diaspora is part of this too, and the cultural and economic exchange. With the parliamentary elections of 2010 and the formation of the government under Viktor Orbán, this obligation has become a specific component of Hungarian foreign policy, security policy, and defence policy as well. The topic is still shaping events at the present time. During the Summit Conference of the Eastern Partnership of the European

Union in November 2017, the Hungarian Foreign and Trade Minister Péter Szijjártó voiced his criticism of the new education and training law in the Ukraine, by which the ethnic minorities in the Ukraine would be discriminated against, and therefore also the some 150,000 Hungarians in the region of what is referred to as the Carpathian Ukraine, who represent about 25% of the total population. Budapest will not be supporting EU and NATO efforts until this law

has been repealed. Romania accorded with this criticism at the Summit Conference, clear proof of how seriously the foreign policy and security policy of the European Union and of NATO can be impaired by the stresses and conflicts of interests surrounding the ethnic minorities in the states of Eastern and Central Europe.

## Security Policy and the Refugee Question

A determinant factor in an assessment of Hungarian security policy is the National Security Strategy from the year 2012. "The fundamental security interests of Hungary include the protection of its sovereignty, territorial integrity and constitutional order, the stability of the country, its economic, social and cultural development and the upholding of human rights and fundamental freedoms. The maintenance of international peace, security and cooperation, the spreading of democracy, the stability of the Euro-Atlantic region, in particular the stability of regions in close geographical proximity to Hungary and of neighbouring countries, as well as the further deepening of Euro-Atlantic integration also constitute a national interest of Hungary."

Membership of NATO and the EU provide the foundation for the safeguarding of in-

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**Viktor Orban's meetings with Russian President Vladimir Putin have displeased Brussels. The latest meeting between Orban and Putin took place in late August 2017 when Putin accepted Orban's invitation to formally open the 2017 World Judo Championships.**

terests. Of particular significance in this are stability and security in the states bordering the country to the east and south. Hungary has an EU external border of some 100 kilometres in length with the Ukraine, and a further 150 kilometre EU external border with

whether this might be possible Russian expansion in the east or the result of crises and conflicts in the Balkans. This is also manifest from the commitment of the country to foreign engagements. The largest component of the forces provided hitherto for international stabilisation and crisis actions has been committed to Kosovo and in Bosnia-Herzegovina. At the present time there are 700 Hungarian soldiers serving abroad, 100 of them in Afghanistan.

Photo: Honvedelem



**In recent years, Hungary's Armed Forces have been subjected to several ambitious reform projects but Hungary's military budget is far away from meeting NATO's 2 percent goal. Weaponry and equipment are predominantly still comprised of old Soviet stocks**

Serbia-Montenegro. In the strategy from 2012, in other words before the start of the Ukraine conflict, it appeared to Hungary, as it did to many European states that the likelihood of a renewed threat to Europe in the form of an attack with conventional military means was extremely remote. This resulted in extensive standing down of mechanised units and formations in Hungary, so as to release money for corresponding transformation and modernisation programmes for the armed forces. Since 2014 the situation has changed radically. The central focus for security policy for Budapest is the protection of territorial integrity against any threat,

It is particularly with regard to the neighbouring territory to the south and Balkans that the mixing of Hungarian security policy interests with the issues and challenges surrounding the floods of refugees via the Balkan route which has developed into a complex melee, in which the delimitations are becoming blurred between security policy argumentation in the sense of proactive prevention of terrorism, and the concerns of a perceived or putative Islamicisation of the whole of the Balkans. Budapest has spoken out against the official quota resolution in the distribution of the refugees already present in the EU. At the same time, the construction of a comprehensive border installation in relation to Serbia has made a considerable contribution to the protection of the EU external borders against uncontrolled immigration. It is this air of tension which defines the present difficult relationships and is also having its effect on other parties involved. By way of example, Prime Minister Orban has also sought support for his policy among other states of Central and Eastern Europe, and in this context has likewise made recourse to the Visegrád Group, established in 1991. Even though this does not have any formal character or institutional structure, this unofficial alliance of Poland, Hungary, the Czech Republic, and the Slovak Republic has become an important multiplier in the first five years for the interests of Hungary in

terms of security policy. Originally founded as a free trade association, in order better to compensate jointly for the economic and financial consequences of the break-up of the Warsaw Pact, the Group has also become the mouthpiece for the interests of the four states in the context of security policy in respect of Russia, but likewise against perceived disadvantageous decisions emanating from Brussels. Europe watchers see in this a certain danger to the development of a uniform external dimension of the Union, and indeed, with the Visegrád Group as an internal organisation, it may be characterised as a degree of detachment in the form of an internal opposition to Brussels. This element will to an increasing extent also be exploited by outside parties in the formulation and implementation of their own interests in relation to the EU. Israel's Prime Minister Benjamin Netanyahu was a guest in July 2017 at the meeting of the Visegrád Group in Budapest. The result was a closing declaration in which the countries of the Visegrád Group indicated their readiness to co-operate with Israel in different areas, among them the combating of terrorism. At the same time, Netanyahu took advantage of the Summit Conference to voice some sharp criticism of the stance adopted by the European Union towards Israel and towards migration. In this context he expressly praised the policy of Hungary and the other Visegrád states for implementing a more restrictive attitude with regard to the refugee issue.

## Hungarian Armed Forces

The Hungarian armed forces at present number some 31,000 soldiers. The largest proportion, with 24,000 soldiers, is assigned to the ground forces. Since the ending of national service in 2005, the Hungarian armed forces have been a purely professional body. At US\$1.2Bn, the defence budget in 2017 amounted to just on 0.94% of GNP. Weaponry and equipment are predominantly still comprised of old Soviet stocks, whether these be T-72 main battle tanks or the BTR-80 APC. With regard to standard weaponry, Budapest continues to rely on assault weapons produced in Hungary of the AK-63D/E/MF type. Only the Special Forces have been equipped with US vehicles and weapons for their commitments in Afghanistan and in Iraq, among others with the Oshkosh M-ATV as a Mine Resistant Ambush Protected (MRAP) vehicle, the M249 SAW light machine gun, or the M4A1 SOPMOD assault rifle.

The air forces are comprised of 14 Saab JAS-39 GRIPEN leased from Sweden, which are used as fighter-bombers, fighters, and trainers, and since 2009 have actively par-





ticipated in NATO exercises. Annual costs are incurred in the amount of US\$140M, which Hungary must remit to Sweden. The leasing agreement has been extended by a further ten years until 2026. With regard to combat helicopters, Hungary urgently needs to find a successor to the Mil Mi-24 HIND, which has now been taken out of service, and which the country acquired in 1994 from Berlin, from old stocks of the East German National People's Army. One successor under discussion, among others, is the AH-2 ROOIVALK from Denel in South Africa. Since both countries are having to battle with weakening currencies, the option of a stronger co-operation has also been discussed, in order to be able to carry out procurement projects despite financial bottlenecks. For South Africa, for example, Hungarian knowhow in the maintenance, overhaul, and modernisation of Soviet weapons, vehicles, and equipment could be of interest.

### Outcome – Between Euro-Sceptic and European Army

Hungary and the European Union find themselves in a difficult position. Prime Minister Orban is only one example of the rising EU scepticism in the EU Member States with regard to Brussels bureaucracy. The European Union and its institutions and authorities are being challenged with regard to the ability to safeguard own national interests. This is all the more surprising in the case of Hungary, given that Budapest was the first EU member to ratify the Lisbon Treaty after years of negotiations over a constitution for Europe. Nevertheless, apart from the somewhat public dispute with regard to refugee and migration policy, there are still some positive indicators, which only a few are appreciating. This is manifested, for example, in the matter of a European army. For Hungary, the bolstering of the security and defence policy dimension within the EU is of great importance, if one does not wish to be

dependent on the USA alone. As early as at the meeting between Prime Minister Orban and his Czech counterpart at the time, Bohuslav Sobotka, in August 2016 in Warsaw, both statesmen were outspoken in their support for a European army. Hungary is also one of the signatories to the Permanent Structured Cooperation (PESCO) of 17 November 2017, which formed the cornerstone for the establishment of a genuine European defence union. The question remains as to how far a commitment to Europe à la carte will hold up, which relies on a selective solidarity which is at

all times open to renegotiation. In this case, however, a good number of current EU Member States would have to review and scrutinise their commitment to the aims and values of the European Union. The issue here, however, is less the question of how extensive the military capabilities of a country are, or how much money it is prepared to invest in the modernisation of its armed forces. Rather, it is a matter of a mutual understanding with regard to security and stability in the context of globalisation, and undivided responsibility in dealing with the consequences. ■



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# Security and Defence Policy of Hungary

**General Tibor Benkő**

**The security and defence policy of Hungary is defined by the National Security Strategy and the National Military Strategy.**

One of the basic needs of every society is to live in safety. In accordance with the country's Fundamental Law, it is the duty of the Government of Hungary to guarantee the country's territorial and societal security, in line with securing the environment for their freedom and welfare. Allied solidarity, which also includes the collective

ernisation. The National Military Strategy is a significant milestone along this road. The experiences of today are insufficient in themselves to prepare us for the conflicts of tomorrow.

The strategy, which is firmly grounded in reality, allows us to avoid the pitfalls of this road. The purpose of the National Military

of trouble. It is the strength and capabilities of its member states' military forces that determine the strength and capabilities of the alliance. Therefore, the Hungarian Defence Forces (HDF) must continuously improve their capabilities, and they must be an integral part of allied operations. The security environment has changed in recent years, the number of unstable countries is on the rise, and the threat of terrorism has significantly increased. The activity of international terrorist groups with global ambitions has become a significant global threat of our time, since the causes, primarily social in nature, conducing to its appearance and evolution have not been successfully eliminated. Thus, terrorism still constitutes a danger to the security and values of the Transatlantic Community and, indirectly, to Hungary. Unfortunately, today it has become apparent that those states and regions that had difficulties in adapting to the challenges of globalisation are fragile; developments there are unpredictable. Rogue states strengthened the base of international terrorism and became a source of risks arising from mass migration. States that fall into anarchy can constitute a threat to a region's stability and may become a safe haven and training ground for terrorist groups with global ambitions. The role of non-state actors in shaping the security environment is growing. Our security, therefore, is increasingly influenced by actors outside international security structures, meaning that they are not directly controlled by politics. The renewed National Security and Defence Strategy has been completed, and it is now awaiting endorsement by the Government!

## Mission Roles and Perspectives of the HDF

The main mission/primary goal of the Hungarian Defence Forces (HDF) is to secure the homeland, ensure the sovereignty of the airspace of Hungary and integrity of its territory, and participate in restoration after natural disasters and emergencies. The force development, in accordance with the interest of the alli-

Photos: Honvedelen



defence of NATO member states, as well as transatlantic ties, are the cornerstone of Hungary's independence, sovereignty, territorial integrity and security. Hungary's protection is further strengthened by the cooperation and political solidarity within the European Union. Hungary's membership in these two organisations provides a unique opportunity to manage the current security threats and challenges together with our Allies and EU partners in a more effective manner. Hungary's external and internal security are perceived to be inseparable and unified. The Hungarian Defence Forces are on the road to mod-

Strategy is to determine the strategic objectives, directions, tools and resources needed for the Hungarian Defence Forces to fulfil their mission in line with the Fundamental Law of Hungary, the legal regulations determining the activities of the defence sector, the North Atlantic Treaty Organisation's Strategic Concept and the European Security Strategy, and based upon the principles stipulated in the National Security Strategy. Hungary's National Military Strategy rests on the two mutually supporting pillars: the nation's defence capabilities and the NATO alliance. But these pillars cannot stand on their own. Without the assistance of its allies, Hungary's military strength would not be sufficient to defeat a determined external aggression on the country's borders. At the same time, we must realise that NATO has no forces of its own: There is no NATO army or air force that can be deployed to help out a member state in case

## Author

**General Tibor Benkő**, PhD, has been the Chief of General Staff of the Hungarian Defence Forces since 6 June 2010.





***"The Hungarian Defence Forces' main mission goal is to secure the homeland."***

ance, is also among the priorities. In addition to that, we are ready and have the means to efficiently and productively participate in international peacekeeping and humanitarian operations. Day by day our soldiers successfully protect Hungary's borders and citizens against various threats. So far 17,000 soldiers have taken part in the protection of the country's borders (among others providing reinforcement for the police) with full parliamentary mandate. With the amendment of the Fundamental Law,

the Hungarian Defence Forces hereinafter can also be deployed on home ground if necessary. Everyone is aware of the fact that mass migration (mainly economic migration) can only be stopped with stable borders and with armed organisations. HDF has undergone significant changes over the last two and a half decades. Simultaneously with the transformation of the task system, the mass army was replaced by a smaller, flexibly deployable armed force comprised of highly trained soldiers.

## The Roles of the HDF

The use of the Hungarian Defence Forces generally occurs in crisis management operations, in many cases significantly far from Hungary, under extreme natural and climatic conditions, on a field, which is difficult to access without the support of the host nation (Iraq, Afghanistan, Kosovo, and so on). The HDF fully comply with tasks arising from NATO membership and contribute to the collective defence. NATO and EU membership enable Hungary to build capabilities in cooperation with its allies and partners in harmony with its own domestic capacity-building priorities that the country could not procure or maintain individually and that are also absent in the international domain. The cooperation between the Visegrád Four and other Central European partners is of great significance.

Service abroad is of high importance for the HDF. We are tending toward solving the problems in crisis regions and provide a prosperous future for the inhabitants rather than bring crisis here. We're ready to and capable of stationing one thousand troops in international operations at any given moment. From Hungary's perspective, the Western Balkan theatre of operations is very important for the region's security. Currently Hungary participates in the EU- and NATO-led missions with 370 personnel there. In 2016, the Hungarian military has about 700 troops stationed in foreign countries (on three continents in 15 countries), as part of international peacekeeping forces, including



***About 700 Hungarian soldiers are serving as part of international peacekeeping forces in foreign countries including 100 troops in the NATO-led mission in Afghanistan.***





100 HDF troops in the NATO-led ISAF force in Afghanistan, 210 Hungarian soldiers in Kosovo under command of KFOR, and 160 troops in Bosnia and Herzegovina. Hungary sent a 150-strong coalition unit to Iraq in 2015, which is expected to be 200 at the end of 2017. The stability of the Balkans continues to be in our national interest. Despite the fact that the number of international forces has decreased, the Hungarian commitment has not changed; Hungary continues to participate in UN, OSCE, EU, and regional missions.

## Perspectives

As defined in NATO 'Article 3' ("In order more effectively to achieve the objectives of this Treaty, the Parties, separately and jointly, by means of continuous and effective self-help and mutual aid, will maintain and develop their individual and collective capacity to resist armed attack") we are progressively fulfilling the provisions contained therein. We are able to fully comply with the requirements of 'Article 5' – ("Its commitment clause defines the *casus foederis*: It commits each member state to consider an armed attack against one member state, in Europe or North America, to be an armed attack against them all"). The national law determines the conditions under which a Hungarian unit can be deployed abroad. If Hungary receives a NATO (Article 5) or UN request, the government can send troops anywhere for six months without approval of the parliament. After six months, the government has to ask the parliament to extend the time in accordance with the re-

quest of the international organisation. The second possible way is to send troops at the request of an allied country, but in this case only with the approval of the entire parliament. Military executives who are planning and leading military operations must be prepared for unforeseen situations, including operations with large geographic scope and heavy forces, operations with special forces, and also wars involving only a few "soldiers", hackers, drones, and so on. For commanders who conduct military operations, it is essential to know the potential of modern technology and to possess the vital abilities to apply them. A commander must be a person who can perform various tasks efficiently and dynamically by combining and coordinating the resources available.

## Defence Industry, Development, and Procurement Issues

The main goal is to ensure that the Hungarian Defence Forces become a well-prepared and effective military force in the region by 2026. A comprehensive political decision puts the Hungarian Defence Forces on an upward course by virtue of the availability of additional funds and the implementation of development. To achieve this, we initiated the implementation of the so-called Zrínyi 2026 Programme which is based on the idea that "defence of the homeland is a national cause". The programme has a dual purpose. The primary goal, of course, is to shift our focus from expeditionary operations to high-intensity operations, restore combat capabilities that had withered away,

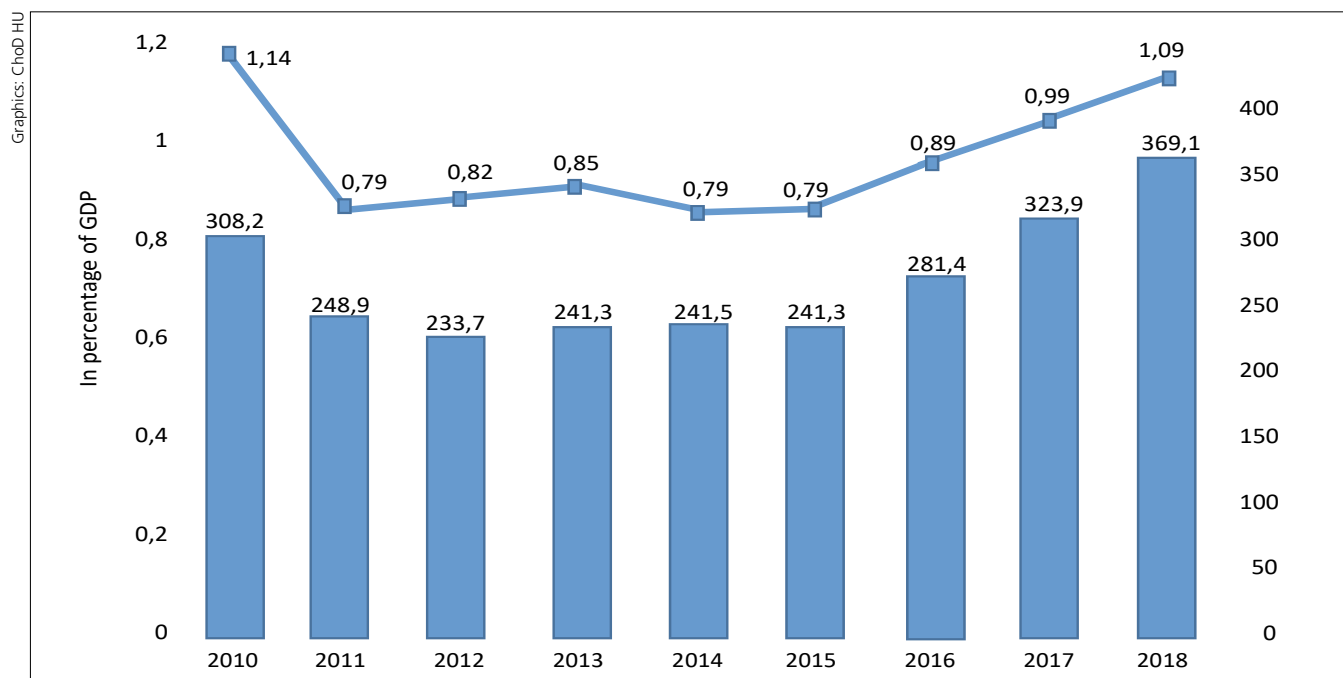
and develop the HDF into a well-balanced armed force. The secondary goal is to restore the nation's military industrial capacity and achieve a measure of self-sufficiency through the acquisition of most of our new equipment from domestic suppliers.

## Future Plans and Visions: Volunteer Territorial Defence Reserve

The defence forces' development plans of the Zrínyi 2026 Programme feature the reorganisation of the system of the voluntary reservists (planned number of reserve forces: 20,000), and the implementation of recruitment campaigns in this context, as well as the launch of the Defence Sports Association and the enhancement of defence education as a priority goal, as part of which it is planned to develop a kind of cadet system. Among the plans regarding the development of Hungary's defence capability, we would like, inter alia, to reinforce the air force and the procurement of transport aircraft and helicopters. Certainly amongst the priorities are the modernisation of the soldiers' individual equipment, including their clothing and weapons.

## Modernised Equipment and Weapons

Modernisation of the full range of our artillery systems is another part of our agenda. Besides, work has already been started for the revival of the Hungarian defence industry and the plans also contain the develop-



**Hungary's military budget between 2010 and 2018.**



ment of communication and information systems (CIS). The Hungarian defence and security industry's main aim is to create new opportunities to sell existing products or those still under development, and to bring new possibilities for cooperation. The demands of the Hungarian Defence Forces cannot be fulfilled solely by domestic sources, but foreign partners may see real success by offering products that represent as much added value to Hungary as possible. It is certainly important to mention our deficiencies in some development areas, but the directions should be rethought and the delays we have seen so far may be turned into advantages. Using the experiences of other countries, we can start the construction according to new strategic directions while avoiding unnecessary impasses. We will embark on the largest defence forces development enterprise of the past twenty-five years. Plans include a pay settlement programme, as well. Long-term differentiated wage-setting is of the utmost importance; because of this – amongst other factors – the career path becomes more predictable and provides stability for the individual and his family while reducing the differences between the armed organisations and civilian professionals. By the progressive general pay rises – which have been started recently – we could guarantee the retention of the capacity that has so far been a positive development.

### Development Directions and Changes of Training, Education and Support Systems

The system of health damage support was introduced in January this year. The HDF scholarship system has also been expanded, so the MOD now offers to the young applicants as many as 18 different scholarship programmes. The defence scholarship programmes can also be a retaining force and make the military career more attractive in the long run. We established a presence on social media, we have gone into the schools, where we offer national defence courses. We provide adventure opportunities in summer camps for interested youngsters. For their parents and older brothers we offer the opportunity to contribute to the security of the nation by joining the recently raised (brand new) reserve force, the companies of the Volunteer Territorial Defence Reserve (VTDR). According to the initial plans, the territorial reserve defence force will have a company in all 197 administrative districts. This ambitious plan will need thousands of new volunteers nationwide. The VTDR programme is encouraging the notion of patriotic commitment and willingness to make

sacrifices. The reserve system is capable of attracting the skilled, committed, motivated compatriots from the labour market, who are ready to serve our country and retaining them in the voluntary reserve force of the Hungarian Defence Forces.

think at least one step ahead of the next threat. Given the current crises and emerging security challenges, all NATO members, including Hungary, committed themselves to developing their military strength. In order to materialise this commitment, in



***"The Volunteer Territorial Defence Reserve programme is encouraging the notion of patriotic commitment and willingness to make sacrifices."***

Nevertheless the formerly established reserve system also works: this voluntary reservist system is an integral part of a modern armed force based upon professional and contracted personnel. It provides a framework for the training of our fellow citizens wishing to take an active role in the defence of the homeland and their employment in peacetime and under special legal order. The volunteer reservist system (VRS) consists of three parts. The first contingent is the volunteer operational reservists (VOR), who can be called up for service in peacetime as well. The second contingent is the volunteer defence reservists (VDR), who can be called up only when a state of preventive defence or a state of national emergency exists and serves as the lawful authority to call up, organise and train those who are potentially liable for military service. The third contingent is the previously mentioned VTDR. According to 2016 data, some 3,791 people served in the voluntary army reserve of which 82 percent, some 3,109, were former service pensioners (an abolished form of pension that used to provide pension to military, police and fire department personnel based on their years of service). More than 2,000 of the reserve personnel were over 50 years old.

### Summary

The Hungarian Defence Forces require extensive modernisation. In our rapidly changing world, an organisation which protects a country's sovereignty and security must

January this year, the defence and military forces development programme – the frequently mentioned – Zrínyi 2026 has been launched. The programme itself is the most significant defence and military development programme of the last three decades, which aims to modernise nearly all segments of the Hungarian armed forces. The programme covers the development of the force structure and military capabilities, the reform of the personnel's training, at the same time as realising versatile investments. The Government and the Hungarian Defence Forces are therefore committed to the success in implementing the Zrínyi 2026 programme, aiming at the full execution of its specific directives, through which a Defence Force that is combat-worthy in all respects should be created. The HDF task system has been substantially supplemented. In addition to international engagement, the focus shifted towards the implementation of national defence tasks. In order to overcome the emerging threats, the country's plan on armed defence is being revised and supplemented, in a way that it strengthens the armed forces' response capability to the challenges of 21st century warfare. The development of new capabilities will enable the Hungarian Armed Forces to act against terrorism, mass migration and hybrid warfare, to guarantee the territorial integrity of the country and the life and property security of the population, simultaneously with maintaining conventional tasks. ■



# Hungary Begins Long-Awaited Modernisation

**Zord Gábor László**

With the goal of reaching 2% of GDP for defence by 2024 set in a formal government declaration, Hungary has begun to draw up plans for the rehabilitation and modernisation of its national defence capabilities. Although transparency is not up to the standards of the European Union or NATO by any measure, information is slowly starting to emerge about the ZRÍNYI 2026 programme.

**Z**RÍNYI 2026 (named after a famous Hungarian-Croatian military commander of the 17th century Turkish wars), was first mentioned in official Hungarian Ministry of Defence (MoD) communications in December 2016. It is called a "Home Defence and Military Forces Development Programme", underlining the fact that it focusses not just on re-equipment, but also the rehabilitation of the status of the armed forces as a state institution, embedded in the society; a link which was broken due to more than 20 years of post-Cold War downsizing and the cessation of the conscription system in 2004.

## Addressing Personnel Woes

As recruitment and retention are the two biggest challenges facing the Hungarian Defence Forces (HDF), it is no coincidence that the "Home Defence" part is emphasised: since 2015 a phased, differentiated 50% personnel expenditure hike has been ongoing, focussing on the lower ranks and the "high value" specialties, while at the same time a career model is being developed and implemented. This effort is also underlined by the fact that, beginning in 2010, higher education of military and police personnel and civil servants was consolidated under the aegis of the National Public Service University (NKE), which aims to establish smoother career transition and transfer between different arms of the public services, also providing a "safety net" for those who have to leave uniformed service early. At the same time a big effort is devoted to re-establishing the reserve forces (in 2010 there were exactly 17 reservists in the



*In Hungarian service NEŠTIN class minesweepers, originally from Yugoslavia, are designated MS-25: three - ÓBUDA (shown here), DUNAÚJVÁROS, and DUNAFÖLDVÁR - are operated by HDF 1st EOD & River Flotilla Battalion for river mine clearance.*

HDF!) organised under the territorial principle: currently numbering around 6,000, the goal is to reach 20,000 by the end of the ten-year planning period. To put that in perspective, 29,700 personnel has been the authorised strength of the HDF since 2013, about 5,500 of which it is currently unable to fill.

A non-traditional military mission, called Collective Will, to build, then guard a fence on the southern border to prevent illegal entry of migrants is the biggest ongoing operation of the HDF, with a few thousand troops deployed on a rotational basis since 2014. Most of the time HDF meets a government-mandated 1,000 personnel limit on NATO/EU/anti-ISIS foreign missions, the most important being Iraqi Kurdistan, Kosovo, Bosnia and Afghanistan.

## Ambiguity in Acquisition Programmes

Regarding the "Military Forces Development" component of ZRÍNYI 2026, some ambiguity still exists a year after the launch of the programme. To understand this one has to remember that in 2011 the law regarding Defence was altered so that any information regarding the HDF is classified for 30 years. In practice, however, the government and military leaders infrequently release bits of information and general orientation, including those related to ZRÍNYI 2026, out of political and PR expediency. Based on these and the fact that capability modernisation in the HDF has been very limited since the Cold War, much equipment is simply old

## Author

**Zord Gábor László** is a regulator contributor to the Hungarian daily "Magyar Nemzet" and runs the Air Power Blog "legiero.blog.hu" (in Hungarian language).





Photos: via Miroslav Gyürösi

***The Hungarian Army fields only wheeled IFVs, but the intention to acquire tracked vehicles has been stated. BTR-80 upgrades are considered to be a stopgap measure.***

or worn out, one can draw a very illuminating picture on what is going on. Concerning only significant Western acquisitions, there were just three cases in the past 20 years: those of MISTRAL VSHORAD systems, Kongsberg MRR radio systems and - the biggest of all - the lease-to-buy of a squadron of Saab GRIPEN fighters. Land forces were generally neglected, the last significant acquisition being the delivery (in exchange for Soviet state debt) of several hundred BTR-80 and 80A Armoured Personnel Carriers (APC) in the early 90s which to this day form the backbone of Hungary's land capability. Also to be considered is the fact that these limited acquisitions ran parallel to downsizing - and the deletion of certain capabilities altogether, or down to purely symbolic levels. At their lowest, Hungary's tank forces consisted of one single Company equipped with T-72 - now back to a battalion, at least on paper): self-propelled artillery assets (2S1 GVOZDIKA and 2S3 AKACIA) were withdrawn altogether, with one single unit of D-20 towed howitzers remaining: tracked Infantry Fighting Vehicles (IFV) also disappeared with the withdrawal of the BMP-1. Even the 120mm mortars were withdrawn. The "light infantry concept" behind these force reductions was mandated by audits by the US company Cubic, which emphasised contribution to US-led multinational expeditionary missions versus heavy forces with

a high level of protection and firepower. In terms of force structure this means two brigades, one of which (25th Klapka at Tata) has certain heavy segments remaining - artillery, tanks, 9P148 tank destroyers - while the other (5th Bocskai in Debrecen) has no heavy assets but instead has the only reconnaissance battalion - UAVs and EW included - in the HDF).

Bearing in mind these preconditions, so far, the following segments of ZRÍNYI 2026 became public:

### Air Force

In 2014, the MoD signed a contract with MBDA for the regeneration of missile stocks of the MISTRAL VSHORAD systems, which was depleted through practice firings as well as shelf life expiry. This included the acquisition of new, longer range MISTRAL-3 missiles (delivered at the end of 2016, the contract became part of ZRÍNYI 2026); new multi-functional sights, as well as local refurbishment and life-extension of a certain number of old MISTRAL-2 missiles. At the end of 2017 a contract for another batch of MISTRAL-3 is in hand, along with the modernisation of MISTRAL Command



***A plan has been drawn up for the replacement of the KUB SHORAD systems, which were last modernised in 2002.***

Posts (MCP). Prices were not made public. A concept was also drawn up for the replacement of the KUB SHORAD systems, which were last modernised in 2002. This effort is regularly mentioned as Medium Range Air Defence (MRAD) of a Medium Surface to Air Missile (MSAM) capability, which would mean – by NATO terminology – a system with more than 25 km range – but no further details are known. Hungary had installed three NATO-financed RAT-31DL backbone radars by 2014, but due to less than optimal locations – due to environmental concerns – has had to keep two gap-filler radar companies equipped with old Soviet P-37/PRV-17 radars to provide the necessary NATINADS coverage. These radars, as well as mobile groups equipped with ST-68M and P-18 radars,

used MD902s, the HDF acquired two former EMS Ecureuils and three used Mi-8s; and the EMS continued to lease H135s. By 2016 the government had selected a totally different, and – considering mainstream Euroatlantic political developments – very strange approach: instead of replacing its 30-35 year-old fleet of mostly unserviceable Soviet-Russian Mi-17 and Mi-24 helicopters, it was decided to overhaul them to give them eight more years and 2,000 more flying hours of service. Also counted under ZRINYI 2026, these five transport and twelve attack helicopters were sent to the Russian Helicopters facilities in Novosibirsk and Saint Petersburg. While the former have not received any modernisation under a €15M overhaul contract, the latter may receive some upgrades under

hed in the official gazette in November also definitely signalled the beginning of conversion training for the air transport crews. Despite the communication blackout, leaks to the press suggested that eventually the HDF – most likely through a Public-Private-Partnership (PPP) scheme – will acquire three Airbus A320/Boeing 737 class transport aircraft, two smaller VIP-transport aircraft, and three medium military transports, maybe with an aerial refuelling capability.

Regarding its combat air capability, Hungary is committed through a lease-to-buy deal with Sweden to maintaining a single squadron (14) of GRIPEN fighters until at least 2026. Leasing costs per year are thought to be around €60 to €100M. Most recently, steps were taken to increase



**Hungary currently has leased 14 JAS 39 GRIPEN fighter aircraft. The contract includes 12 single-seaters and two dual-seat aircraft, as well as training for pilots and ground crew, ground maintenance facilities and a simulator. Leasing costs are thought to be €60 - €100M per year, and under the MS 20 contract the Hungarian MoD will upgrade the squadron to the latest Swedish Air Force standard.**

have to be replaced, but as a programme for Visegrad Four cooperation fell through, it is thought Hungary is alone in seeking a solution. In addition to a modern S-band radar it is thought that a requirement exists to retain a radar capability in the VHF band as well, for which the MoD company Arzenal Zrt. has a prototype solution. Just as in the case of the ST-68M and P-18 today, future mobile systems are expected to have to be interoperable with the target acquisition radars of the SAM Wing. In 2013, a programme for a "National Helicopter Capability" was drawn up, which aimed at a single or coordinated package acquisition of Western helicopters for military, police and Emergency Medical Services (EMS) use. From 2014, however, it was slowly abandoned; the police bought

their €69M price tag. According to MoD communications this action does not mean a total abandonment of the new helicopter ambitions, but it definitely means a shift to the latter years of ZRINYI 2026.

For several years the MoD attempted to replace the very limited air mobility capability provided by a small fleet of An-26 light transport aircraft, but never succeeded in getting beyond the initial phase, despite this effort being considered a priority by political leaders. Finally, based on defence leadership statements, things seemed to start to move in 2017, although requirements were never released officially, and a waiver given by the Parliament's Defence Committee means that no open tendering is necessary for the acquisitions. An order from the Chief of Staff of the HDF publis-

their multifunctionality, especially the Close Air Support (CAS) capability, with existing LITENING IIIG targeting pods and GBU-12 laser guided bombs (LGBs) acquired from US stocks in 2015. Also, in November 2017 Hungary joined NATO's Precision Guided Munitions MoU, a joint acquisition programme through which it will be cheaper to buy further bombs for GRIPEN, as well as pooling munitions. The acquisition of RecceLite reconnaissance pods is also ongoing. Also, earlier this year the MoD signed a contract with Sweden to enter the MS 20 upgrade with the aircraft, which will convert it to the most modern Swedish Air Force standard, including a METEOR Beyond Visual Range (BVR) air-to-air missile capability to replace the current AIM-120C-5 AMRAAMs.





**A contract for a further batch of MBDA MISTRAL-3 is in hand, along with the modernisation of MISTRAL Command Posts (MCP).**

However, no contract for the missiles has been signed yet. MS 20 will be implemented at least partially by 2019, as new identification capabilities will be needed when Hungarian GRIPENS will again take part in the Baltic Air Policing mission. Old SIDEWINDER missiles which have reached the end of their life cycle can only be replaced by IRIS-T, as this is the standard advanced short range AAM for GRIPEN, with no alternative weapon having been integrated. Hungary joined the NATO Flight Training Canada (NFTC) school in 2002, but the long term contract is coming to an end

soon, and it is thought that the MoD is looking for alternatives. In this respect, its screening/basic training aircraft, Yak-52s, were replaced this year by two Zlin Z-242L light trainers from the Czech Republic, with two Z-143LSi to follow soon (altogether a little more than €1M). Eventually the HDF will acquire eight of these aircraft. As a secondary role, some of the aircraft are to be equipped with a light electro-optical sensor payload for border patrol/disaster relief support missions. An advanced trainer is also being sought, but it is not known at this

time whether on a national or regional (Visegrad Four for example) basis. It is known that Hungarian officials took part in demonstrations of the upcoming Aero L-39NG jet trainer.

## Land Forces

Recently some basic information regarding armour modernisation has started to appear, based on the fact that NATO has set Hungary a force goal to have an operational heavy brigade by the end of the planning cycle. Currently based solely on wheeled APC vehicles, having lost its IFV capability many years ago, it has been stated that the HDF wants to field tracked combat vehicles again. Also, the renewal of a Main Battle Tank (MBT) capability is envisioned. As Hungary's economy is very much engaged in vehicle/car manufacturing, it is thought to be the programme where the political requirement for industrial participation and "localisation" is the strongest. Just like the helicopters, this big-ticket item is expected to move into high gear in the latter half of ZRÍNYI 2026, with further - or until now not financed - BTR-80 upgrades coming as a stopgap.

At the end of 2017, the Hungarian Government issued a decree on providing financial guarantees of about €30M to improve HDF fire support capabilities (acquisition of artillery systems and munitions) "in 2017-19". Public studies and lectures in recent years have suggested a programme for the "renewal of field- and anti-tank artillery", which is now widely regarded as either an acquisition of used self-propelled howitzers, or of anti tank guided missiles (ATGM) – at least as a stopgap solution. One also has to bear in mind that the existing towed D-20 howitzers are totally obsolete, and stocks of 9M111 FAGOT and 9M113 KONKURS (AT-4/5) ATGMs and their 9P148 platforms are reaching the end of their life cycles. Newer 9M131 METIS-M missiles are in service, but their range is limited to only 2,000 metres.

One of the companies of the MoD, Ei Zrt., has been engaged in developing and manufacturing light drones for many years, both for an air defence training target role and a tactical reconnaissance role. Based on METEOR, which was used for live firing exercises, NEMERE and ORKAN were developed for the latter purpose, with very different aerodynamic layouts. The single recon battalion of the HDF uses Israeli SKYLARK-LE UAVs, but it is thought that the Hungarian products entered field trials in recent years. Special Operations Forces use RQ-11 RAVEN UAVs. ■



**At their lowest Hungary's tank forces consisted of one single Company equipped with T-72 - now back to a battalion, at least on paper.**



# Georgian Military Modernisation: Two Steps Forward, One Step Back

Eugene Kogan

The article focuses on the current modernisation of the Georgian military. Whatever happened before the appointment of Levan Izoria, the current Minister of Defence, is history. Izoria was appointed Minister of Defence on 1 August 2016.

At a press conference on 7 November 2016, Izoria announced plans to reform the country's armed forces, air force and air defence, but concluded that the construction of a new naval capacity was too costly. The Navy was disbanded in 2009 and merged with the Coast Guard, which is part of the Border Guard Division and reports to the Ministry of the Interior (MIA). It should also be emphasised that Izoria's reform plans were not the first and probably will not be the last ones. His predecessors tried to pursue the same reform and, idiomatically speaking, "they keep treading on the same rake."

During the reign of the Georgian Dream Coalition between 2012 and 2016, two ministers resigned, the third was removed from office and the fourth, the current minister Izoria, retained his previous position as minister. It remains to be seen how long. The frequent change of ministers has hampered efforts to build robust and effective armed forces, as each minister has his or her own vision of the armed forces he or she tried to implement without learning from the mistakes of his or her predecessors. As a result, the reforms have not yielded tangible results and the country's military capabilities give little hope, even though Georgian Dream's officials claim otherwise. It is not yet clear whether the current reform will be more successful than the previous ones.

## The Contours of Reform

During the press conference, Izoria added that the basic training of conscripts will in future be similar to that of professional soldiers, in order to create a larger pool of

Photo: US Army



**A mine-clearing line charge (MICLIC) explodes in a Georgian obstacle during a rehearsal for the combined arms live fire at Vaziani Training Area, Georgia. The live fire was the last training event before the closing of Exercise Noble Partner in August 2017. Noble Partner is a multinational, US Army-led exercise conducting training for the Georgian military designated for the NATO Response Force.**

qualified personnel, which can be used either as contracted servicemen or in the reserves. In the past, army conscripts only exercised logistic and support functions; they were not trained for combat and did not participate in combat. At the same time, Izoria stressed that the army will continue to consist primarily of professional soldiers. Professionals currently account for 90 percent or around 13,000, all of them deployed in Afghanistan as part of combat operations. However, conscripts currently account for only 10 percent or around 2,000. For example, the current army has about 15,000 soldiers without the Ministry of Defence and the General Staff personnel as well as civilian staff of the Ministry of Defence, which according to various open sources consists of 36,000 to 37,000. Izoria also announced plans to optimise the General Staff, the army, the air force, the

air-defence forces, and the military police. The plans envisage abolishing an unspecified number of departments within the General Staff and emphasises the use of combat helicopters and UAVs as there is no Georgian air fleet. Because of this optimisation, 1,750 civilian personnel from the MoD and 340 military personnel from the Georgian Armed Forces (GAF) were dismissed in December 2016. Who will supply combat helicopters and UAVs to Georgia is currently unknown, as the West is not yet ready for such deliveries. And Israeli companies might not step in as they do not want to provoke Russia's ire. After the August 2008 war, Israeli companies halted the supply of weapon systems to Georgia, while neighbouring Turkey did not provide any arms at all. In the meantime, the number of infantry brigades was cut from five to four and

## Author

Eugene Kogan is a defence and security expert based in Tbilisi, Georgia.



Photo: NATO

## Defence Budget and Acquisition

In May 2014 a bill proposed to spend 2 per cent of the country's GDP on MoD's annual budget. However, the bill was never adopted; there is no such obligation in Georgia's legislation. Nonetheless, in 2014 the MoD received 2.24 per cent of the GDP (GEL660M). In 2015 and 2016 the MoD received GEL670M. In 2016, 67 per cent of the budget was spent on salaries and social benefits while 33 per cent was spent on military equipment, ammunition and other unspecified needs. This was a big mistake indeed and an improper allocation of funds.

According to NATO standards, salaries and administrative expenses should range somewhere between 50 to 53 per cent, and Georgia tries to live up to these standards. In April 2017, Izoria said that Georgia's spending ratio would change, with a larger percentage of the budget allocated for procurement needs and combat readiness. It remains to be seen whether or not Izoria's intention will be realised. According to a government-revised draft published in December 2016 the MoD is to receive GEL750M (or about US\$312M) in 2017. It is still unclear how this sum will be spent. It is obvious, however, that the revised defence budget does not allow for substantial acquisition of new equipment and advanced weapon systems. It is also uncertain that NATO member states – together or individually – would be ready to offer Georgia arms at a discounted price.

changes were made as to where they would be based. Georgia needs a small but well-equipped army that is highly mobile, robust, effective and cost-efficient and interoperable with NATO standards. A new West Command of Land Forces of the GAF with its headquarters in Kutaisi was established in November 2016. Simultaneously, an East Command of Land Forces of GAF was also established.

But the lack of a naval capacity leaves Georgia out of NATO maritime operations in the Black Sea. Prime Minister Giorgi Kvirikashvili stated on 7 November 2016, "We shall be part of Black Sea security together with the North Atlantic family, and Georgia will be included in patrolling and other similar operations." But this statement should not be taken seriously, as it is not the competence of a prime minister to deal with military issues. This would be a task of MoD officials or the minister himself. Moreover, Georgia has no naval capabilities aside from a few Coast Guard ships donated by the US.

In addition to the initiatives mentioned above, the annual NATO-Georgia military exercise Noble Partner which began in 2014 aims to improve the interoperability and performance of the Georgian military. In May 2016 the Georgian Army commanded for the first time a joint Georgia-US-UK air and land forces exercise. However, deterrence with defensive weapons and training of troops for homeland defence remains an unresolved issue for Georgia which has not yet been addressed by its allies. In July 2016 it was reported that the US intends to step up training combat skills of the GAF and help Georgia building a local training centre for self-defence rather than

only deploying troops to Afghanistan. The US does some combined arms training of Georgian troops, but it does so at Hohenfels Training Area in Germany. Izoria said that the proposed training centre will probably be located at Vaziani Air Base, with Georgia investing GEL10M. Izoria added that nine Georgian battalions would start training there on 1 March 2018.

As for the overall cost of the aforementioned endeavour, the MoD budget largely covers personnel wages and to a lesser degree training and acquisition despite standing at 2 per cent of the GDP.



Photo: US Army

**A US Army Soldier assigned to 2nd Cavalry Regiment poses with one of the local children during their stop in Khashuri, Georgia, on 31 July 2017 as they begin Exercise Noble Partner. Noble Partner 17 is a European Rotational Force exercise of Georgia's light infantry company contribution to the NATO Response Force. The exercise provides participating nations with the opportunity to train in a multinational environment while enhancing interoperability during realistic training events.**



Photo: US Army



**Georgian Army soldiers from the 22nd Light Infantry Battalion listen to their captain during a Georgian Independence Day celebration on 26 May 2006 in Baghdad, Iraq.**

But it is a fact that even nine years after the August 2008 war the West remains reluctant to sell arms to Georgia due to concerns about provoking Russian ire. Thus far, Western reluctance has resulted in serious impairment of the country's air-defence and anti-tank capabilities. As long as the West is unwilling to sell these weapon systems to Georgia, the Georgian military inventory will consist of obsolete Soviet equipment, some Georgian-made equipment and some Western arms like US-donated helicopters. As a result, the Georgian military remains vulnerable vis-à-vis the heavily armed Russian military stationed in Abkhazia and South Ossetia which has been increased in strength since the August 2008 war. More than 8,000 Russian soldiers are stationed in Abkhazia and South Ossetia – the occupied regions of Georgia. The integration of the Abkhazian and South Ossetian troops under Russian command further increased the numbers and agility of the deployed forces.

Despite Western reluctance to sell arms it was reported in February 2016 that American military assistance to Georgia known as Foreign Military Financing (FMF) would decrease under a budget proposal from US\$30M in 2016 down to US\$20M in 2017. The 2017 funding is intended “to advance Georgia's development of forces capable of enhancing security, countering Russian aggression, and contributing to coalition operations. This will include support in areas such as upgrades to Georgia's rotary wing air transport capabilities, advisory and defence reform, and modernisation of Georgia's military institutions.” Yet, as late

as July 2016, it was not entirely clear what type of weapon systems Georgia would be allowed to acquire as a result of the aforementioned funding. American officials were tight-lipped regarding the provision of weapon systems. Even in September 2017 uncertainty about acquisitions persisted. It appears, however, that JAVELIN ATGMs and F-92 STINGER MANPADS are unlikely to be sold to Georgia. Despite a wealth of information in open sources about Georgia's likely acquisition of French

air-defence systems nothing has materialised thus far. In April 2017 it was reported that Izoria plans to visit France to negotiate with his French counterpart about purchasing air-defence systems. All of this makes Georgia's military unprepared against potential Russian military attacks.

The final piece of the current reform announces the establishment of reserve forces. Previous ministers of defence have tackled this issue with little success. Another initiative should be taken with a grain of salt.

## Reserve Forces

The Georgian military expert Vakhtang Maisaya said, “Forming robust military reserve forces remains the most important and challenging step in army reform. Currently, the main objective should be to make use of the reserves and work out mobilisation plans that signal the defensive strength of the country. The government has worked out the concept, and it fully corresponds with NATO standards.”

Indeed, in March 2016 Georgia's top military commanders discussed the mobilisation and reserve forces draft concept. According to the concept, the main mission of the GAF reserves is to support the armed forces in wartime, during crisis and in peacetime. The draft includes three categories of the reserve system – army, territorial and specialists' reserve.

In May 2017, the aforementioned categories were elaborated. The first category is

Photo: US Marine Corps



**Georgian Army soldiers wait for air transportation prior to conducting operation Northern Lion II at Camp Bastion, Helmand Province, Afghanistan, July 2013. Northern Lion II was a Georgian-led operation conducted to deter insurgents, establish a presence and gather intelligence.**



to be composed of demobilised servicemen or servicemen who completed a five-year military contract and are willing to serve for another five years in a reserve unit.

The second category is to be the territorial reserve established on the basis of the existing Georgian National Guard with its current 1,600 active reservists that is used as reserve for the GAF. In the event of hostilities, its members will be deployed only in their home district and serve for five years.

The third category is to consist of civilian experts whose knowledge and experience can be useful to the army in peacetime or wartime. The active army reserve is to number 1,500 people, and the territorial reserve will be 10,000 strong. The specialised reserve units will not be limited in size, and will be dynamically formed based on GAF's developing needs. Unlike the current reserve system, the new concept envisions manning a reserve on a voluntary basis only. Women up to 55 years of age will also be allowed to serve. Under this proposed system, members of the reserve who sign a five-year contract will undergo an annual 45-day retraining course; they will receive financial compensation equalling 20 per cent of the salary of a military service member of similar rank and grade. As for the others' refreshing course it remains unknown and, as a result, there are questions around whether or not the proposed idea is feasible. Izoria said that if the legislature adopted this reserve concept, a 'pilot' programme for selecting participants and concluding service contracts would start in 2018. It is a good idea to carefully evaluate the pilot programme before continuing with the rest of the aforementioned reserve components.

Back in 2012 a similar 'pilot' project was launched and 13,000 volunteer reservists (out of an envisaged 100,000) were recruited. At the time, the new recruits accounted for less than 1 per cent of Georgia's defence budget (US\$3.5M). The author does not know whether Izoria took recent experience into account and it is unclear whether resources allocated to the reservists is money well spent. There is one very important point on which the author and Maisaya agree, with the latter stating: "Georgia still does not have an overarching comprehensive military strategy to replace the now outdated one adopted after the August 2008 war and that would define the role of the reservist force vis-à-vis the regular army." And as long as such a strategy has not been prepared, reforms of the reserve forces are likely to fail.

To conclude, there are currently more questions than answers. What is clear is that even the good intentions in the West translating into training of the GAF for missions in Afghanistan is not sufficient help for Georgia at this crucial juncture for training in homeland defence. The meagre defence budget and its improper allocation, namely 67 per cent for salaries and social benefits, while the rest goes towards military equipment and so on, impair the country's abilities to purchase urgently needed modern arms. Western reluctance to sell modern arms lessens the ability of GAF to defend Georgia. Whether or not Izoria's negotiations would ultimately lead to the signing of a contract for the purchase of French-made air-defence systems is not a foregone conclusion. Thus far Emmanuel Macron, President of France, has not given any hints about the signing of a contract. Therefore, the issue of Georgian air-defence capability remains unresolved and the country remains unprotected. In addition, even if the aforementioned reform with the reserve forces looks great on paper there is no guarantee for its success. It should be remembered that past experience showed that reform of the reserve forces ended in failure and no conclusions were drawn from the past failed experience. And finally, it remains unknown whether or not the current minister of defence will retain his position, or be dismissed as his predecessors and subsequently a new wave of reforms will be initiated. ■

## Masthead

### European Security & Defence

Issue 8/2017 · December 2017  
ISSN 1617-7983 · [www.euro-sd.com](http://www.euro-sd.com)

Published by

**MITTLER  
REPORT**

Mittler Report Verlag GmbH  
A company of the Tamm  
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### Layout:

davis creativ media GmbH, Germany

### Production:

Lehmann Offsetdruck GmbH  
22848 Norderstedt, Germany

### Office address:

Mittler Report Verlag GmbH  
Baunscheidtstraße 11, 53113 Bonn, Germany  
Phone.: +49 228 3500870, Fax: +49 228 3500871  
Email: [info@mittler-report.de](mailto:info@mittler-report.de), [www.mittler-report.de](http://www.mittler-report.de)

### Director of Marketing

Jürgen Hensel (jh)  
Baunscheidtstraße 11, 53113 Bonn, Germany  
Phone: +49 228 3500876, Fax: +49 228 3500871  
Email: [juergen.hensel@mittler-report.de](mailto:juergen.hensel@mittler-report.de)

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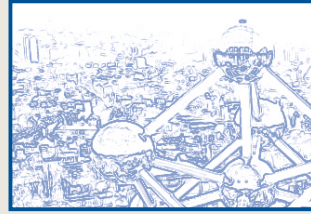
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Cover Photos: Photonis Netherlands, EUTM Mali, USNI

Annual subscription rate (8 issues):  
€49.80 incl. postage

# The Brussels Backdrop



## The EU in Action: European Military and Civilian Missions and Operations

Joris Verbeurgt

### Common Security and Defence Policy

The idea of a common European defence policy dates back to 1948 when the Treaty of Brussels was signed by Great Britain, France and the Benelux countries. The mutual defence clause paved the way for the Western European Union (WEU), founded in 1954. The Treaty of Lisbon (signed in 2007 and that entered into force in 2009 after all member states ratified the Treaty) extended mutual assistance to all EU members, making the WEU superfluous. Since then, European security policy has pursued a number of paths, developing simultaneously within the EU and NATO.

The EU pursues foreign and security policy within the framework of its Common Foreign and Security Policy (CFSP) which covers all areas of foreign policy and all questions relating to the EU's security. Among others, the CFSP includes a Common Security and Defence Policy (CSDP), dealing with defence issues and with the military and civilian aspects of crisis management. Within the EU's foreign and defence policy, the EU External Action Service (EUEAS) and the High Representative for Foreign Affairs and Security Policy play a prominent role.

### Missions and Operations

Since the implementation of the CSDP almost 15 years ago, the EU has carried out more than 30 civilian missions and military operations. The EU currently manages six military and ten civilian overseas missions and operations in fourteen countries spread across three continents (Europe, Africa and Asia). More than 4,000 people are committed to maintaining peace, preventing conflict, strengthening international security, supporting the rule of law and preventing human trafficking and piracy. The latest mission is dated 17 October 2017:

a consultative mission in Iraq (EUAM Iraq) to assist the Iraqi authorities in implementing the civilian aspects of the Iraqi national security strategy. With a budget of €14M per year, the 35 experts advise and support the Iraqi government in building state institutions capable of consolidating security, peace and conflict prevention while respecting the rule of law and human rights standards. Another advisory mission was sent to Ukraine end 2014 after the Maidan revolution: EUAM Ukraine (200 strong) assists the Ukrainian authorities through strategic advice and hands-on support towards a sustainable reform of the civilian security sector based on EU standards and international principles of good governance and human rights. At the 1,222-kilometre-long border between Ukraine and Moldova, the EU Border Assistance Mission to Moldova and Ukraine (EUBAM) was launched in 2005. It promotes border control, customs and trade norms and practices that meet EU standards and serve the needs of its two partner countries. It is an advisory, technical body based in Odessa (Ukraine) staffed by 200 people. Its mission ended on 30 November 2017. EUBAM Rafah (since 2005) and EUBAM Libya (since 2013) have

a similar goal. At the Rafah Crossing Point between the Gaza Strip and Egypt, the EU assumes the third-party role, ensuring the freedom of movement of the 1.5 million Palestinians living in Gaza while taking into account Israel's security concerns. EUBAM Libya supports the Libyan authorities at strategic and operational level in developing border management and security at the country's land, sea and air borders. Through advising, training and mentoring Libyan counterparts, the civilian crisis management mission with a capacity-building mandate strengthens the border services in accordance with international standards and best practices. Southwest of Libya, the CSDP is involved in two capacity-building missions in the Sahel; since 2012, EUCAP Sahel Niger has supported Niger in its fight against terrorism and organised crime.

The 180-people-strong team provides advice and training to the Nigerien security institutions in strengthening their capacities to ensure constitutional and democratic order, maintain State authority and shape the conditions for lasting peace. In neighbouring country Mali, EUCAP Sahel Mali does exactly the same as from January 2015. The mandate for the staff

Photo: EUNAVFOR



French frigate FS FLOREAL during the EUNAVFOR Operation "Atalanta" in 2016

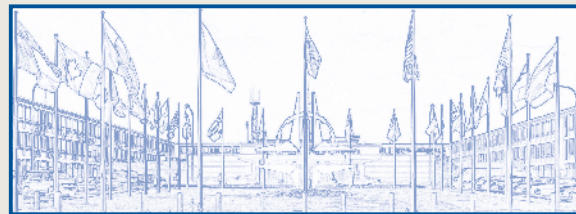


Photo: EULEX

**EULEX Head of Mission Alexandra Papadopoulou during the inauguration of the Educational-Correctional Centre for Juveniles in Lipjan, Kosovo, on 15 September 2017**

of 140 with a year's budget of €15M expires in January 2018. The EU also has an on-going military training mission in Mali: EUTM Mali. In line with UNSC Resolution 2085 (2012), the mission supports the rebuilding of the Malian armed forces by providing expertise and advice, in particular regarding command and control, logistics, human resources and international humanitarian law. Besides training combat units, EUTM Mali is also involved in the disarmament, demobilisation and reintegration of former rebel forces. The CSDP manages two other training missions in Africa. In the Central African Republic, EUTM RCA supports the CAR authorities in the preparation and implementation of the Security Sector Reform. It assists the CAR Armed Forces with building the capacity and quality needed to evolve towards modern, effective, ethnically balanced and democratically accountable armed forces by offering strategic advice, education and operational training. EUTM Somalia supports the Somali security forces by providing political and strategic advice, by mentoring the military training system and by advising the Headquarters of the Somali National Armed Forces. EUCAP Somalia (since 2015) emanated from EUCAP Nestor, a civilian mission aimed at assisting countries in the Horn of Africa and the Western Indian Ocean to develop self-sustaining capacities for the enhancement of maritime security. From the headquarters located in Mogadishu, its 170 men and women from 13 contributing nations manage a budget of €23M per year for the establishment of maritime civilian law

enforcement capabilities in Somalia, including Somaliland. EUNAVFOR Somalia, perhaps better known under the name "Operation Atalanta", is the EU's maritime operation against piracy and armed robbery at sea off the Horn of Africa and in the Western Indian Ocean. Several frigates and support vessels patrol the seas to protect vessels and vulnerable shipping, deter and disrupt piracy and armed robbery at sea, monitor fishing activities and support other EU missions working to strengthen maritime security and capacity building in the region. The other maritime operation under the CSDP flag is EUNAVFOR MED (from Mediterranean) or Operation Sophia, launched on 22 June 2015 as part of the EU's comprehensive approach to manage irregular migration and disrupt traffickers' and smugglers' networks in the Southern Central Mediterranean.

The mission trains the Libyan Coastguard and Navy and contributes to the implementation of the UN arms embargo of the coast of Libya. It conducts surveillance activities and gathers and shares information on human trafficking and on illegal trafficking of oil exports from Libya, among others with FRONTEX and EUROPOL. All EU member states are involved in this operation. In Georgia, the EU deployed an unarmed civilian monitoring mission in 2008, the EUMM Georgia. The 200 monitors with headquarters in Tbilisi patrol the areas adjacent to Abkhazia and South Ossetia to prevent a return to hostilities, to support a normalisation of the situation, to build confidence among the opposing parties and

to promote EU policies in the wider region. EUPOL COPPS/Palestinian Territories is the EU's Office for Palestinian Police Support. Since 2006, the mission contributes to the establishment of sustainable and effective policing arrangements by advising Palestinian authorities on criminal justice, the rule of law and on issues within the wider context of the security sector. In the Balkans, the EU is present in Bosnia and Herzegovina and in Kosovo: EUFOR (Operation Althea) provides capacity building and training to the Bosnian Armed Forces following NATO standards. It also contributes to stabilisation, deterrence and continued compliance with the Dayton and Paris agreements that brought peace in Bosnia and Herzegovina in 1995. The mandate, backed by several UN Security Council resolutions, also includes assuring a safe and secure environment. The EU military operation (still 7,000 strong) succeeded the NATO operation SFOR in 2004 but still relies on NATO assets and capa-

Photo: Irish Defence Forces



**An Irish sergeant serving with EUTM Mali teaches a class on counter-IED to Malian officer cadets at the Military Academy in Koulikoro, Mali, in March 2015.**

bilities. EULEX Kosovo has two objectives: supporting Kosovo's rule of law institutions to strengthen the chain of criminal justice by monitoring, mentoring and advising (MMA). The emphasis is on fighting political interference and 'sensitive' cases. At the executive level, EULEX delivers rule of law services until Kosovo authorities are capable of ensuring those services themselves through continuous assessments and the building of capacities in these areas.



# XIth Regional Seapower Symposium

**Guy Toremans**

**From 18 to 20 October 2017, Admiral Valter Girardelli, Chief of the Italian Navy, hosted the eleventh iteration of the biennial Regional Seapower Symposium (XIth RSS) in the Sala Squadratori of the Arsenale in Venice.**

This year's edition saw the attendance of 31 chiefs of navy and 21 top-ranking naval representatives from 35 navies of Europe, the Mediterranean, the Black Sea, the Red Sea and the Persian Gulf – the

theory of the Blue Century, e.g. an increasing dependence on marine resources and the development of policies for a sustainable and inclusive exploitation of this huge amount of resources.

Photos: Guy Toremans



**The first informal meeting of the navy chiefs from the G7 countries (Canada, France, Germany, Italy, Japan, the UK and the USA) onboard ITS AMERIGO VESPUCCI.**

so-called Wider Mediterranean – and 17 navies from beyond the Wider Mediterranean, as well as prominent representatives from 11 international organisations and the naval industry. In his opening speech Adm Girardelli extended a warm welcome to the delegates from Australia, Canada, Indonesia, Iran, Kuwait, Pakistan and Saudi Arabia who attended the RSS for the first time. He underlined that no maritime aspect is attracting so much attention as Maritime Situational Awareness (MSA), Maritime Security (MS) and Maritime Capacity Building. "I would like to promote the idea of sea-centricity, a concept that is tied to the

This requires the development of operational models which must be "expeditionary" in nature, while meeting jointness requirements. In this light, Navies are best placed to leverage on the inherent cross-domain capability. They have the agility and implicit ability to rapidly deliver joint and strategic effect from the sea, while retaining political manoeuvring space, to carry out enhanced Maritime Security Operations. Consequently we need to engage in common efforts by fostering cooperation and develop mutual trust and interoperability. This can be achieved through Capacity Building, an area where maritime forces can provide a major contribution, thanks to their inherent strategic versatility and operational flexibility, further enhanced by full exploitation of sea-basing." Hereupon the XIth RSS, under the general theme of "Navies beyond traditional roles:

crewing effort to project stability and security from the sea", structured around three sessions, kicked off.

Session 1, chaired by RADM Henry Babalola, Chief of Policy and Plans Nigerian Navy, was themed Maritime Security Operations present and future: how to face trans-regional challenges through traditional capabilities. The panel included RADM Stuart Mayer – Commander Australian Fleet; RADM Mitko Petev – Commander Bulgarian Navy; ADM Christophe Prazuck – Chief of the French Navy; CDRE Mohammed Taoudi – Chief Maritime Affairs Department Royal Moroccan Navy; VADM Ihor Voronchenko – Commander of the Ukraine Navy; RADM Habibollah Sayyari – Commander-in-Chief Iranian Navy; RADM Enrico Credendino – Commander EURONA-VFOR; Mr Chris Trelawny – Special Advisor to the Secretary-General of the International Maritime Organisation (IMO).

Session 2, chaired by RADM Chuen Hong Lew, the Chief of the Republic of Singapore Navy, covered Maritime Situational Awareness towards a federative approach: how to include trans-regional actors and pursue effective interoperability. The panel members of this session were VADM Mosuwa Samuel Hlongwane – Chief of the South African Navy; ADM Manuel Garat Caramé – Deputy Chief Spanish Naval Staff; Lt Gen Esa Pulkkinen – Director General EU Military Staff; Mr Alberto Tuozi – Head Telecommunications & Navigation Division ASI; and Mr Bernhard Friess – Director Maritime Affairs & Fisheries European Commission DG Mare.

The final session, headed by VADM Andreas Krause – Chief of the German Navy, focused on "Maritime Capacity Building as a fundamental pillar of International Cooperation: how to identify, develop and deliver comprehensive portfolios of activities to support worldwide partners". Speakers included Major General Haouli Mohammed Larbi – Commander Algerian Naval Forces; RADM Ahmed Abdelmoaty Mohammed Hawash – Defence Attaché Egyptian Navy; VADM Nicolas Tsounis – Chief of the Hellenic Navy General Staff; ADM Yutaka Murakawa – Chief of Staff Japanese Maritime Defence Force; ADM Sir Philip Jones – First Sea Lord and Chief of Naval Staff UK, ADM John Richardson – Chief of Naval Operations US Navy and VADM Vincenzo Melone – Commander Italian Coast Guard.

## Author

**Guy Toremans** is a freelance naval journalist based in Belgium.

### Participating Navies

**Albania, Algeria, Angola, Argentina, Australia, Belgium, Brazil, Bulgaria, Canada, Chile, China, Cyprus, Croatia, Djibouti, Ecuador, Egypt, France, Georgia, Germany, Greece, Japan, India, Indonesia, Iran, Israel, Kuwait, Libya, Malta, Morocco, Mauritania, Mexico, Montenegro, The Netherlands, Nigeria, Pakistan, Peru, Portugal, Qatar, Romania, Russia, Saudi Arabia, Singapore, Slovenia, South Africa, Spain, Sri Lanka, Tunisia, Turkey, the United Arab Emirates, the UK, Ukraine and the USA.**



***For the 11th time, the Italian Navy succeeded in making the RSS an outstanding event with an all-time record of 52 participating navies.***

Some of the more noteworthy speakers included VADM Ihor Voronchenko – Commander of the Ukrainian Navy and RADM Habibollah Sayyari – Commander-in-Chief Iranian Navy. In his presentation, VADM Voronchenko said that “the aggressive annexation and following militarisation of Crimea by Russia is a serious challenge for the maritime security of Ukraine, as well as for the Black Sea and Eastern Mediterranean regions. Therefore, we must quickly build maritime capabilities to defend ourselves. An option for a continuous presence at sea is a Mosquito Fleet. Such a fleet, with multirole boats like fast patrol boats and minehunting vessels, can provide maritime security capabilities for most of our tasks within littoral waters. Comparatively these units can carry almost the same (or comparable) amount of weapons as a corvette or a frigate. We plan to acquire between 25

and 32 patrol boats, mine countermeasures vessels and raid/amphibious units. We anticipate them to join the fleet by 2021/2022. Such a Mosquito Fleet is an effective solution to ensure a presence at sea and will definitely support further development of our blue water ambition.” Obviously, the presentation of RADM Sayyari attracted considerable attention. He gave an overview on Iran’s experience in ensuring a sustainable security in the Straits of Bab-el-Mandeb, the Persian Gulf, the Gulf of Aden and the Strait of Hormuz. “Since 2008, we continuously participated in antipiracy operations by deploying more than 50 naval task groups to the Gulf of Aden and the Strategic Strait of Bab-Al-Mandeb.” He also said that the presence of foreign navies in the region which impose unsolicited security measures creates instability in the region: “I am in favour of

a revision of international law of the seas and the identification of deterrent and effective mechanisms and enforcement measures to deal with piracy, illegal immigration via the sea and maritime terrorism. We should design a maritime cooperation model and provide the collective security through interaction with the global maritime community.” The admiral also had bilateral talks with his counterparts from the Italian, Netherlands, Algerian, Ukrainian, Russian, Spanish, Greek, Bulgarian, Portuguese, South African, Croatian and Argentinian navies, about possible co-operations and about sharing the Iranian Navy’s lessons learned from experiences in the area.

### Participating International Organisations

**Agenzia Spaziale Italiana (ASI), Centro Alti Studi per la Difesa (CASD), Maricogecap, Fincantieri, Leonardo, ELT, International Maritime Organization (IMO), the EU Commission DG Mare, EU Military Staff, EU Navfor Med, COM JFC Naples, and the Allied Maritime Command (AMC).**

On the final day of the symposium the Italian Ministry of Defence, Sen. Roberta Pinotti and the Chief of Italian Defence General Claudio Graziano, flew in from Rome to attend the RSS. Minister Pinotti noted that “One must make sure that co-operation extends beyond the ships. The development of synergies and a coherent partnership between military, law enforce-



**Admiral Valter Girardelli, Chief of the Italian Navy, during his opening speech**



**The Italian Navy, in its usual flawless way, organised the 11th iteration of the Regional Seapower Symposium in the beautiful surroundings of the Arsenal in Venice from 18 to 20 October 2017.**



**The V-RMTC is a virtual centric network for maritime traffic data exchange in the Mediterranean region. The centre provides unclassified information on all merchant ships displacing more than 300 tons. It was during the 4th Regional Seapower Symposium in 2002 that the delegates agreed on enhancing maritime traffic security in the Mediterranean through related initiatives. The Italian Navy presented the "Pilot Project Virtual Regional Maritime Traffic Centre" at the 5th Regional Seapower Symposium in October 2004. Initially signed by 17 countries (Italy, Portugal, Spain, France, Slovenia, Croatia, Montenegro, Albania, Greece, Turkey, Cyprus, Malta, Jordan, Israel, Romania, the UK and the USA), the project officially started on 20 September 2006. The following year, Germany and Bulgaria joined and in 2008 the navies of Belgium, Georgia, The Netherlands and Senegal signed the Note of Accession to the Operational Arrangement of the V-RMTC at the 7th Regional Seapower Symposium. Accession of the Ukrainian Navy to the V-RMTC on 20 October 2010 brought the total number of Wider Mediterranean Community members to 24. In the meantime, the V-RMTC has evolved into a Trans-Regional Maritime Network (T-RMN) and with another seven navies having joined since, it currently stands at 31 members.**

and requirements by navies. Today, navies must take into account not only physical, geographic, and technological aspects but also the perception of the threat. This is linked to ongoing renewal and upgrading programmes focused not merely on the



***ITS AMERIGO VESPUCCI was the venue for the signing of several agreements during the XIth RSS.***

ment and civilian institutions is imperative for the achievement of maritime security." Hereupon the sessions' chairmen presented their conclusions. RADM Babalola said that "to counter the threats one should increase cooperation with those countries where the threats originate from by providing training and transfer of expertise." RADM Lew noted that "navies must be prepared to face potential risks, instabilities, threats and uncertainties. Navies are not only one of the most valuable instruments to implement effective security policies but they also boost the process of stabilisation in international relations." VADM Krause pointed out that "the exploitation of uncontrolled irregular migration flows by criminal organisations and the rise in illicit activities on high seas are the most dramatic aspect of a complex set of interrelated problems. No single navy can achieve 100 percent comprehensive awareness alone. Sharing operational information amongst navies is essential."

In his closing remarks, Admiral Girardelli stated that a strong cooperation in international and national frameworks is needed

to counter borderless threats. "The growing complexity of the maritime challenges calls for dialogue and cooperation to tackle the phenomena threatening international security and facilitate effective capacity building." Highlights organised alongside the symposium were the second meeting of the navy chiefs of the Adriatic-Ionian Initiative ADRIION (Albania, Croatia, Greece, Italy, Montenegro and Slovenia), the first informal meeting of the navy chiefs of the G7 nations (Canada, France, Germany, Italy, Japan, the UK and the USA), the meeting of the Trans-Regional Maritime Network (T-RMN) members of Brazil, Italy and Singapore, and the signature of the Note of Accession to the T-RMN by the Chilean Navy.

## Conclusion

For the eleventh consecutive time, the Italian Navy succeeded in making the Regional Seapower Symposium an outstanding event with an all-time record of participants. The geostrategic context and regional realities continue to heavily influence the formulation of medium- and long-term plans

number of warships but mainly on increasing capabilities and efficiency of a limited number of platforms which will become technologically more advanced and integrated in a joint, multinational and operational context. The key requirement, shared by several naval forces, is the availability of modern systems for communications and information sharing. Obviously this may be ample food for thought for the next edition of the Regional Seapower Symposium in La Serenissima in 2019. ■



***The XIth RSS saw the attendance of 31 chiefs of navy, 21 top-ranking naval representatives and prominent representatives from 11 international organisations and the naval industry.***



# Viewpoint from Copenhagen

## Attrition or Reverse Engineering

J. Bo Leimand

At this very moment, Danish politicians are finalising the next 5-year Defence Agreement. At the same time we have elections for the town councils, which means that no decisions on the closure of barracks, air bases and naval stations will be taken before November 21, 2017. Nobody wants to rock the boat before election date. So we are left with discussions between journalists, university professors and air force officers on the number of fighter airplanes to procure, which were ignited by a report from the Danish Government Audit Office (GAO). There are four issues under debate: 27 fighter aircraft might not be enough; will the F-35 fighter aircraft be able to fly 250 hours per year, taking the pilots' working conditions into consideration? Life cycle cost, and will the F-35 fighter aircraft be available 70% of the time? In the following, these issues will be dealt with according to the report.

### 27 F-35 Fighter Aircraft

In its report, the Danish GAO concludes that decision-making is generally based on thorough analysis and calculations. However, the investigation shows that, for some core assumptions the MOD has not shown the probability for the calculations and has not reflected the uncertainty. The Danish GAO assesses that there is therefore a greater risk than foreseen by the MOD that the armed forces will be unable to solve all the scheduled tasks with 27 F-35 fighter planes.

### Pilots' Working Conditions, 250 Hours and 70% Availability

The GAO report shows that the MOD calculations of the need for pilot flight hours is not based on the probabilities of synergy or the pilots' working conditions, and that this uncertainty is insufficiently reflected. In addition, the investigation shows that in the calculation of the total flight hour production for 27 F-35 fighter aircraft, the MOD has

not reflected the uncertainty of the assumptions about the average flight hours per year or the degree of availability of the fighter aircraft. It might be likely that the need for pilot flight hours are set too low and that the flight hour production may be too high. Both the uncertainty around the necessary pilot flight hours and of the flight hour production should have been made clear in the decision papers, as it affects whether the 27 F-35 fighters can solve all the tasks.

### Life Cycle Cost

The review by the Danish GAO also shows that in the decision papers the MOD has calculated the life-cycle cost of 27 F-35 fighter aircraft for a 30-year period to stand at DKR66Bn. As a starting point, the MOD has established a satisfactory model for the calculation of life-cycle costs but has insufficiently reflected all the risks of the prerequisites for, inter alia, the synergies and pilot working conditions. It is therefore likely that the expected cost of the risks is set too low and therefore the life expectancy costs will be higher.

In the light of the investigation, the Danish GAO has recommended the MOD to strengthen the Folketing decision-making paper by explaining the uncertainty of the essential assumptions before presenting the Financial Act on the purchase of 27 new fighter aircraft to Finance Committee.

### Reverse Engineering or Attrition

This is now being debated in Danish newspapers, and questions continue to arise around whether 27 fighter aircraft is a good number. One part is claiming that the number of fighter aircraft is based on the amount of money available and that Denmark can only afford to buy 27. Some experts call this reverse engineering.

In any event, the total percentage of a fighter fleet expected to be lost due to accidents



as well as combat is considered "attrition", a planning factor used to help determine how many of a given type of aircraft should be bought. Contingency planners certainly watch the size of fleets closely to make sure enough aircraft are likely to be available when needed, but the percentage of a given type of aircraft lost over time has decreased steadily from one generation of fighters to the next and should continue to do so in the years ahead. By using this explanation, the 27 aircraft match:

- six fighter aircraft on mission\*
- six fighter aircraft for maintenance
- six fighter aircraft for training\*
- two fighter aircraft for air policing\*
- two fighter aircraft in reserve/maintenance\*
- five fighter aircraft in the United States for initial pilot training.

If you take the 22 aircraft and assume that 70 percent are combat ready, you will get 15 fighter combat-ready aircraft. Actually  $6*+6*+2*+(2*)=16$  fighter aircraft would be combat ready. This is called "apportionment".

### Conclusion

History has shown that Denmark bought 10 F-16s at the peak of the Cold War period and it might be foreseen in the future that Denmark could buy an additional number of F-35s from the Mojave Desert. Or as Napoleon said in *Maxims of War* (1831): "When drafting a campaign, it is a prerequisite to foresee everything the enemy may do, and be prepared with the necessary means to counteract it. The campaign plans may be modified ad infinitum according to the circumstances, the genius of the general, the character of the troops, and the features of the country."



# Conventional Submarines – Global Developments

**Conrad Waters**

The decline in global submarine numbers that was one of the key features of the post-Cold War naval environment has been largely halted in recent years. Strong demand for conventional submarines is being spurred on by new regional rivalries, particularly in Asia. This has resulted in a marked geographical split between those countries possessing conventional submarine technological expertise – principally located in Europe – and those regions driving submarine acquisition. Although structural barriers to new entrants are high, it seems unlikely this divide will persist in the longer term.

## Conventional Submarine Demand

Although precise numbers vary according to source, there is a general consensus that around 800 submarines were in ser-

vice globally when the Cold War drew to a close. Approximately 500 of these were conventionally powered diesel or diesel-

electric boats. Today, the number of submarines in service has roughly halved to a little over 400 units. Of these, about 250 have conventional propulsion. This decline in unit numbers has not been replicated by a similar fall in the number of submarine

submarines will remain the preserve of only a handful of countries for the foreseeable future. These expensive programmes will, however, account for the vast bulk of global submarine market expenditure. For example, a 2016 report by UK-based



(Photo: Australian Department of Defence)

**Australian COLLINS class submarines. Demand from the Asia-Pacific region is driving the wider market for conventional submarines; Australia alone has earmarked the equivalent of €33Bn to replace and expand its submarine fleet.**

vice globally when the Cold War drew to a close. Approximately 500 of these were conventionally powered diesel or diesel-

## Author

**Conrad Waters** is a naval and defence analyst based in the UK. He is a regular contributor to ESD and Editor of Seaforth World Naval Review

operators. This has remained little changed at just over forty countries, albeit this hides something of a shift from Europe towards Asia. Moreover, most commentators agree that this period of contraction has now largely run its course, with future procurement plans likely – at least – to sustain current force numbers.

Given the technological, political and economic challenges related to their acquisition, the possession of nuclear-propelled

Strategic Defence Intelligence suggested that around two-thirds of procurement spending would be allocated to nuclear-powered strategic and attack submarines over the following decade. By contrast, conventional submarine acquisition will be far more significant in numerical terms by dint of being the only practical option for most submarine users.

It is undoubtedly the case that it is the Asia and Pacific region that is driving conven-

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tional submarine acquisition. This partly reflects the fact that all the current largest operators of conventional submarines – China, Russia, Japan, South Korea and India – are either wholly or partly located in the region and have an ongoing requirement to update their existing underwater flotillas. Beyond this, two additional factors are also in play.

One is the region's recent economic rise. This makes the heavy expenditure associated with the acquisition and operation of underwater forces a more realistic proposition than previously. The other is the heightened level of tension in the region. This has served to increase the submarine's attraction as a means of both defensive and offensive warfare. Although China's assertive stance to its territorial and economic interests in waters such as the South China Sea is probably having the greatest impact in this regard, it is not the only factor. To give just one example, South Korea's submarine programme is undoubtedly being influenced by a desire to extend the range of options it has available to undertake both pre-emptive and retaliatory strikes on the North. It is also worth noting that issues of national prestige are at stake. Thailand's Premier Prayuth Chan-ocha was quoted as stating his country's acquisition of Chinese submarines was '...not for battle, but so that others may be in awe of us...' when justifying the controversial programme.

### Conventional Submarine Design & Production: Europe

Many countries have undertaken the assembly of submarines under licence. However, there are probably only around

(Photo: Navantia)



**A Spanish S-80 submarine pictured under construction at Navantia's facility at Cartagena. The problems encountered in bringing this programme to fruition reflect the challenges inherent in establishing an independent submarine design and manufacturing capability.**

ten worldwide that have the technological capabilities to undertake the complete design and build process of anything but the most basic submersibles. Even some of these are reliant on the import of key components, such as weapons handling and discharge equipment, to complete otherwise indigenous programmes. The design and completion of submarines remains a hugely challenging process, as Spain's recent experience with the protracted and costly S-80 project evidences. Very few recent submarine programmes have been undertaken without encountering at least some problems in the course of construction and associated delay.

At present, the bulk of conventional diesel-electric submarine design expertise resides in Europe. Here France, Germany and Russia are dominant. All three benefit from long-established and comprehensive design and build capabilities, as well as a track record of successful export orders. In addition, Sweden and Spain have both made significant investment in submarine technology. The United Kingdom should also be mentioned as an important global supplier of various submersible components as a result of its ongoing nuclear submarine programmes. The major groups operating in the sector are as follows:

**thyssenkrupp Marine Systems (Germany):** TKMS probably remains the world's most influential submarine producer through its Kiel-based HDW business. The group's products encompass a wide range of submarines. These extend from updated variants of the venerable Type 209 design through to the recent Type 212A, Type 214 and Type 218 boats equipped with PEM (polymer electrolyte membrane) air independent propulsion (AIP). A flotilla of DOLPHIN class submarines has also been delivered to Israel. Whilst the bulk of recent production has been focused on Kiel, licensed assembly of Type 212A and Type 214 variants has been agreed with Italy, South Korea and Turkey. Recent accords with Norway and Italy for further development of the Type 212A support the business's longer-term sustainability. In broad terms, the group has gained most success in the production of medium-sized boats of

(Photo: Republic of Korea Armed Forces)



**German thyssenkrupp Marine Systems' submarine designs hold a very strong market position. This image shows a Republic of Korea Navy AIP-equipped Type 214 boat, which was licence-built by Hyundai Heavy Industries.**



SCORPÈNES, these will be locally built under licence.

**United Shipbuilding Corporation (Russia):** Russian conventional submarine production remains dominated by the latest Project 636 variant of the 'Kilo' class submarine. This traces its origins to the older Cold War-era circa-3,000-tonne Project 877 type originally developed by the Rubin design bureau. USC's Admiralty yard in Saint Petersburg is the current centre of production of Project 636.3 boats for the Russian Navy. It has also secured export orders for the slightly older Project 636.1 design in recent years from Vietnam and Algeria. Continued reliance on the KILO reflects problems with Russia's follow-on Project 677 or LADA class. The lead boat of this 'fourth generation' type – named Saint Petersburg – commenced trials in 2005 but has suffered significant teething problems. Successful resolution of these difficulties prior to the operational debut of further members of the class will undoubtedly have a significant impact on the Russian industry's future prospects.

Elsewhere in Europe, Sweden's Kockums submarine business is now recovering from a period of decline whilst under TKMS' control following transfer of ownership to



(Photo: Navantia)

**France's SCORPÈNE design – Chile's Spanish-assembled CARRERA is pictured here – has been particularly successful with countries not requiring an AIP capability.**

a little under 2,000 tonnes submerged displacement that are suitable for littoral deployment. This probably reflects Germany's Cold War focus on underwater operations in the shallow waters of the Baltic.

**Naval Group (France):** Naval Group – formerly DCNS – is currently TKMS' main Western European rival. Although production of submarines for domestic requirements has long-focused on nuclear-propelled boats, its SCORPÈNE series of diesel-electric submarines has gained considerable export success. The SCORPÈNE design is broadly similar to TKMS' Type 214,

but sales to date have lacked the latter's AIP capability. This might reflect a lack of customer enthusiasm for Naval Group's MESMA (Module d'Énergie Sous-Marine Autonome) AIP technology. One possible consequence has been greater success in attracting customers with less of a need to operate in confined waters, such as Brazil, Chile and India. Naval Group's latest export success has been the sale of the SHORTFIN BARRACUDA – a larger, over-4,500-tonne oceanic type evolved from the nuclear-powered BARRACUDA class – to the Royal Australian Navy to meet their SEA-1000 requirement. As for Brazil's and India's

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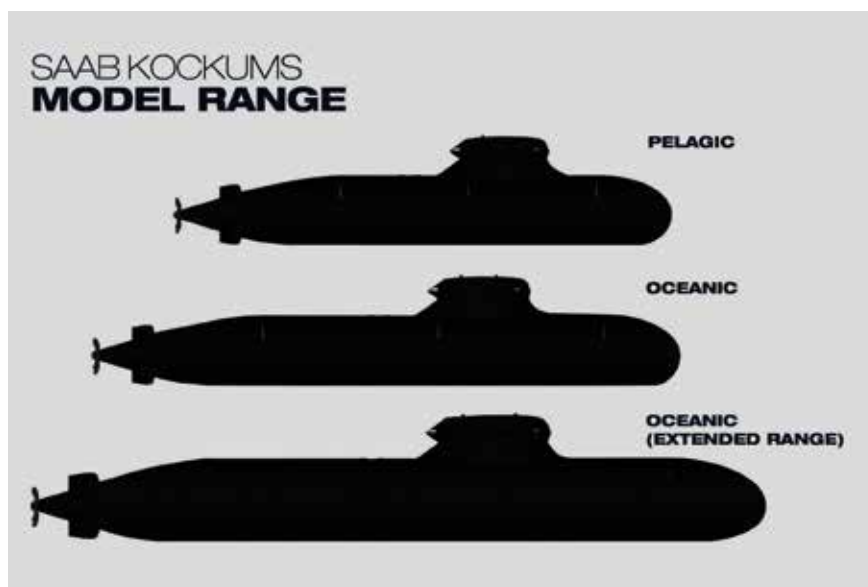
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Saab. Its prospects are supported by the strategic importance Sweden attaches to maintaining an underwater defence sector, as well as the group's ownership of Stirling AIP technology. Two modern A-26 type boats – designed to operate in a broadly similar environment to the German Type 212A – are being built for the Royal Swedish Navy. Collaboration with Damen also places the group in pole position to meet the Royal Netherlands Navy's planned replacement programme. Saab claims that the A-26's modularity provides more flexibility to meet customer requirements than TKMS' Type 212A and Type 214 designs. However, lack of export references may hinder sales. Meanwhile, Spain's Navantia continues to suffer from the S-80 design debacle. This saw the lead boat require substantial redesign after it was found to be overweight. Whilst construction has now resumed, problems developing an AIP-system based around an ethanol reformer and PEM fuel cells means that it is unlikely to be before the mid-2020s before the new class's full potential is achieved.

**Conventional Submarine Design & Production – Elsewhere:** In spite of such setbacks, the European submarine designers' current leadership in AIP technologies is a reflection of their wider dominance of current conventional submarine design. Although a small number of Asian countries



(Photo: Copyright Saab AB)

**Sweden's Saab Kockums has re-entered the submarine construction market with its A-26. The design's modular nature means that it can be easily adapted to meet a range of requirements; different design concepts are illustrated here.**

they are able to overcome these limitations will have a significant impact on future market development.

The Asian country with the most advanced conventional submarine construction sector is Japan. Here, manufacture is split between Mitsubishi Heavy Industries Ltd, Kobe Shipyard and Kawasaki Heavy Industries Marine Ocean Company, also at Kobe. Production is currently dominated by the SORYU class, a large oceanic boat of over 4,000 tonnes submerged displace-

(JMSDF). However, these have been eased in recent years. The design was an unsuccessful contender for Australia's SEA-1000 submarine replacement programme and is likely to be the basis of an offering for India's Project 75(I). Although most of the SORYU class's components are indigenously sourced, all class members currently in service rely on Sweden's Stirling AIP technology. However, Japan has been developing lithium ion battery technology to provide an alternative means of extended underwater endurance. These batteries will be installed in the final submarines of the type to enter service.

Neighbouring South Korea is somewhat behind Japan in developing indigenous submarine design capabilities. The KSS-I and KSS-II series of submarines currently in service with the Republic of Korea Navy are licence-built TKMS Type 209 and Type 214 boats. However, the follow-on KSS-III project that is now underway involves construction of a larger, circa-3,700-tonne indigenous design that will incorporate South Korean technologies in all but a few, critical areas. Construction is being split between DSME and Hyundai Heavy Industries, with DSME currently the lead yard. South Korea intends to build the KSS-III in three batches of three submarines. Each will incorporate incremental improvements. The aim is to reduce the amount of foreign equipment used in subsequent batches. In the meantime, South Korea is ahead of Japan in one important area through its successful export of improved Type 209 submarines to Indonesia.

China operates the largest submarine fleet in Asia. Its first indigenous conventional submarine design was the Type 035 MING series, a development of the older Russian

(Photo: Crown Copyright 2017)



**The latest Russian Project 636 variant of the Cold War Kilo Class continues to attract orders from the Russian Navy and for export. This view shows the Russian Navy's KRASNODAR transiting the English Channel in 2017.**

have matured their industries to the extent they are now able to design and build capable indigenous submarines, they still face gaps in critical areas. The extent to which

ment. Strict controls over defence exports have meant that construction to date has been limited to the domestic requirements of the Japan Maritime Self Defence Force

ROMEO class. Later Type 039 SONG and Type 039A/B YUAN series boats also reflect some Russian influences. However, they appear to have benefitted from incorporation of a number of Western technologies – acquired by various indirect means – as well. For example, there have been persistent rumours that at least some of the circa-2,500-tonne YUAN class are equipped with AIP systems similar in concept to Sweden's Stirling technology. Precise details of class capabilities remain largely a matter of conjecture. However, they may still lag Western equivalents in certain key areas such as stealth. Both Pakistan and Thailand have recently ordered versions of the YUAN series and other export prospects are being pursued.

## Future Developments

Looking to the future, it seems there will be few significant changes to the overall shape of conventional submarine demand and supply. Certainly, the more unstable global environment that forms the backdrop to decisions on naval force structures tends to support the broad consensus of forecasts that suggest stable submarine numbers. Whilst it seems unlikely that few countries would now willingly abandon existing underwater forces, the expense involved in creating or re-establishing such



(Photo: US Navy)

**The Japanese SORYU Class submarine UNRYU. The latest variants of the class will incorporate lithium-ion batteries, reflecting the progress made by Asian submarine designers in closing the technology gap with the leading European groups.**

a capability makes it equally unlikely that there will be many new joiners to the submarine club.

Turning to submarine design and production, there are similarly strong obstacles to any significant change to the current domination of the industry by a small number

of firms. Successful development of an indigenous submarine design capability is a hugely expensive and time-consuming process. It can only be achieved on the back of strong domestic demand and a sustained commitment to relevant industrial and technical investment. The AU\$50Bn

# ESD Spotlight

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(Photo: Courtesy Ian Shiffman)



**China's submarine-building industry has progressed a long way since its production of Russian-influenced ROMEO and MING Class submarines. However, its latest designs still reflect Russian influences.**

(€33Bn) allocated to a rolling programme of submarine acquisition over the course of forty years in Australia's National Shipbuilding Plan and the almost crippling ex-

Europe's largest operator of conventional submarines – has a strong record producing licensed TKMS designs. It could well progress to developing a fully indigenous

tion than desire – has many hurdles still to overcome.

These barriers to market entry suggest few new truly independent submarine manufacturing groups will emerge in the foreseeable future. At the same time, however, it does seem likely that the Asian countries already active in the field will have greater influence than hitherto. This reflects a number of factors. Importantly, China, Japan and South Korea have all worked diligently to establish the domestic infrastructure necessary to supply the key components – combat systems, weaponry, handling systems and the like – that an independent submarine manufacturing capability requires. In certain technologies – for example, with respect to Japan's work in the area of lithium-ion batteries – they are now arguably edging ahead of the field. Alongside this industrial expertise comes the practical advantage of deploying some of the world's largest conventional submarine fleets. This provides operational knowledge that can be fed back into the design process. The fact that it is Asian countries that are driving submarine orders arguably makes this local experience addition-

Conventional Submarines – Principal Manufacturing Countries				
Country	Manufacturer	Principal Designs	Displacement (Submerged)	Location
France	Naval Group	SCORPÈNE SHORTFIN BARRACUDA	1,800+ tonnes 4,500+ tonnes	Cherbourg
Germany	thyssenkrupp Marine Systems	Type 209 Type 212A Type 214 Type 218	1,200+ tonnes 1,800 tonnes 1,900 tonnes 2,400 tonnes	Kiel
Russia	United Shipbuilding Corporation	KILO	3,000+ tonnes	St Petersburg
Spain	Navantia	S-80 Plus	2,500 tonnes	Cartagena
Sweden	Saab	A-26	1,900 tonnes	Karlskrona
China	China Shipbuilding Industry Corporation China State Shipbuilding Corporation	Type 039A/B YUAN	2,500+ tonnes	Wuhan Shanghai
Japan	Kawasaki Shipbuilding Corporation Mitsubishi Heavy Industries	SORYU	4,200 tonnes	Kobe
South Korea	Daewoo Shipbuilding & Marine Engineering Co Hyundai Heavy Industries	KSS-III	3,700 tonnes	Geoje Ulsan

Note: Displacement figures are approximations and often subject to a degree of speculation. They can also change dependent on variant. They are provided only to give a general indication of submarine size.

pense of Brazil's extensive investment in its PROSUB project provide some indication of the extent of the costs involved. Both programmes are heavily reliant on licensed Naval Group technology. However, they could conceivably form the basis of a fully indigenous submarine production capacity in the longer term. There are few other potential entrants to the market. Turkey – currently Western

capability along similar lines to the steps it is pursuing in surface warships. India also has significant experience in the sector, albeit its main current design effort relates to its nuclear-powered strategic submarines. Elsewhere, Iranian and North Korean production of midget submarines will remain focused on domestic requirements. Taiwan's mooted indigenous submarine programme – born more out of despera-

ally valuable. Certainly, being located in the centre of market demand, with the enhanced opportunities for political and trading deals this provides, can only be of assistance.

In conclusion, it is the established European yards that currently dominate conventional submarine design and manufacture. However, as in so many areas, they have a fight on their hands to retain this status. ■

# Mortar Ammunition: New Weapon – New Ammunition

**Michael Johnsson**

During the next two to three years, Denmark will acquire a new autonomous 120mm heavy mortar system. The Danish Defence Acquisition and Logistics Organisation (DALO) has signed a contract for an updated version of Elbit's 120mm CARDOM, called CARDOM 10.

The system will be integrated in a number of the 300(+) PIRANHA 5s that will be implemented in the Danish Army over the next two to three years. The new 120mm mortar will not replace an existing system. It is a new capacity, and the army does not yet have the necessary ammunition port-

folio. After abandoning all the operational 120mm Heavy Mortar Platoons in 2004, DALO decided to keep in stock the high-explosive bomb (HE) M/50. Both the round and the fuse (M49/62) were designed back in the 1940s. Even though the fuse was upgraded in the early 1960s, HE M/50 is outdated ammunition and cannot exploit the full potential of CARDOM 10. The HE M/50 is regarded as outdated and only suitable for training future mortar crews.

The Danish Army therefore needs to purchase modern ammunition for the new 120mm mortar system. The new ammunition should not only utilise the CARDOM

10's technical potential but also offer the effects required on today's battlefield – a battlefield which might differ from the one Danish units know from operations in Iraq and Afghanistan.

Concurrent with the introduction of the CARDOM 10, a new autonomous artillery system is being introduced. The 155mm CAESAR 8x8 by NEXTER will also need new powerful ammunition to utilise the 40 km(+) capability and other new technical possibilities. It is impossible to fund all the effects for both systems. An analysis should give answers to how the army should prioritise some of the effects for different fire support

## Author

**Major Michael Johnsson**

Head of Guns and Mortars Branch  
Fire Support Division, Danish Army  
Combat and Fire Support Centre

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EXPAL's light mortar 60-MX2-KM



# A Further Insight:

## Interview with José María Fajardo, Mortar Systems Product Manager at EXPAL

Photo: EXPAL



**ESD:** Which market trends do you foresee regarding the demand of mortar ammunition?

**Fajardo:** Demand for mortar munitions varies according to the market. There is a discernible trend towards improving the features with respect to the ammunition countries currently have in service. NATO countries talk about enhanced lethality ammunition and guided munitions while in other countries there is growing interest in ammunition with multispectral effectiveness such as IR Illum or RP Smoke ammunition.

When it comes to the NATO market, the trend points in two directions: safety and features. In the past, buyers have placed more emphasis on features, but this is changing as many countries are favouring safety over features. Perhaps this is because Army training with an eye on occupational health

and safety has increased considerably in recent years. Safety has moved to the forefront, not only in regard to usage but also in terms of the effects of the ammunition. Modern asymmetric conflicts and terrorist insurgents hiding among civilians necessitate an increased awareness of the ammunitions' effects in advance. Predicting the effects has become more important to avoid collateral damage.

Examples of safety trends are heightened safety requirements in the ammunition (e.g. double safety fuses), insensitive ammunition, noise level reduction and training simulators. When it comes to the effects, the trend toward more safety is shown by improvements in precision, controlled fragmentation and training simulators.

Examples of trends in features are improved range, improved effectiveness (lethality, lighting, screening, and so on), improved versatility (effectiveness in different situations, such as effective fragmentation against armour vehicles or infrared illumination), improved accuracy, improved precision and last but not least improved reliability.

These terms are indicative of the larger trend; they apply to all munitions. Priorities and demand of features differ also depending on the calibre. There is considerable interest in guided ammunition in calibre 120mm but not in calibre 60mm. The same holds true for ammunition against armoured targets.

EXPAL is working hard to meet all customer requirements without compromising performance. This is a real challenge for the industry. Products like EXPAL's Firing Control System "TECH-FIRE" for instance, are good examples for how technology improves the performance of the ammunition, increases precision and first hit probability and, as a result, reduces ammunition consumption.

**ESD:** When it comes to technology, which future developments can be expected for mortars and mortar ammunition?

**Fajardo:** Mortars have always been among the first targets. They are considered high priority due to their destructive capacity and the effects on enemy troops. Mobility and reaction speed are therefore obligatory, hence the lightness that characterises this type of weapon. Nowadays, however, technology allows capturing instantaneously and in detail the location of enemy fire. That is why it is more important than ever to improve mobility and ensure the withdrawal of fire support. This is where developments trend are headed to.

In the short term, the biggest challenges for mortar operators are mobility, firepower, protection, fast positioning, aiming and reaction. Logistical issues and supply chain management are becoming more important, too, which is proof of the greater complexity that these systems have due to the need for integration and interoperability.

In the medium term, the trend points towards greater sophistication of operations – integrated fire control systems, automatic aiming, aligning devices, communications network, the acquisition of targets, (semi-)automatic loading systems, and so on. In this regard current artillery firing practices could be considered as the near future of the mortars.

When it comes to a long-term perspective, we could talk about the digitalization of operations as well as the introduction of concepts such as sensing the environment, the internet of things or machine learning. These are all concepts common in other industrial sectors. It is true that the new generation of users is more accustomed to technology and solves problems differently. It is only a matter of time until this ends up being reflected in the operation of mortars.

Faced with this panorama of evolution and change, EXPAL's strategies has also evolved. We switched focus from the product to the user and hope to cover all customer requirements to make their work easier by offering a wide range of solutions. This is why we call ourselves a "one stop shop for mortar systems".

EXPAL's "one-stop shop" for mortar systems is a new and unique solution responding to all operational and logistical requirements demanded by a mortar unit. This includes weapons, ammunitions and associated systems (operational needs) and training, maintenance and phase-out at the end of its life cycle (logistics needs).

**The interview was conducted by Waldemar Geiger**

levels (company, battalion and brigade).

This article is the author's personal view on what should be considered when drafting requirements for mortar ammunition.

## Smart Bombs

The paramount challenge in operations in Iraq and Afghanistan was to minimise collateral damage. Loss of civilians or damage to their property was impeding cooperation with the local population and security forces, and it attracted negative media attention. Coalition forces were usually facing smaller units, down to a few people who fought an asymmetric war and among civilians. Small targets like these and the requirement to limit civilian casualties posed a challenge for traditional mortar fire support. Most fire support systems are designed to engage point targets and not area targets, which is the strength of mortar and artillery systems in comparison to conventional ammunition. The only fire support systems that could solve this task for the Danish Battlegroup in Helmand were guided precision munitions from UK artillery (GMLRS, Exactor – aka SPIKE NLOS), US 155mm EXCALIBUR, fixed wings and combat helicopters.

At various international conferences on mortars over the past ten years, I have noticed great interest in mortar ammunitions that could hit the target's "bull's eye". There have been a number of projects to develop this type of ammunition, but not all challenges have been addressed yet. This is because the control unit consumes a sizeable chunk of the volume which reduces the effect of the round itself. There are also technical challenges to the guidance mechanism and these rounds come at a hefty price. The Danish Army has limited funds; it must leave high-priority targets, which require precision ammunitions, to more powerful platforms such as Close Air Support and artillery, and let mortar systems do the task they are made for: providing close fire support to infantry units against enemy area targets.

For years to come, the main requirements for mortar ammunition will be traditional ones: high explosives, smoke and illumination rounds. Therefore, we should look more closely at recent developments in terms of effect when it comes to mortar ammunition.

## Pre-Fragmentation

Pre-fragmentation technology is one way to increase the impact of traditional high-explosive rounds. A controlled fragmentation provides greater effect in the target area against the type of target it is optimised for. It may also reduce the risk of

The Mortar Company.



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With the 60 mm Cdo system, every infantry group becomes one's own 60 mm fire support team.



## A Further Insight:

Photo: JUNGHANS



### Interview with Florian Kunz, Head of Sales & Marketing JUNGHANS Microtec GmbH

**ESD:** In terms of technology, which future developments can be expected for mortar fuses?

**Kunz:** The use of tactical mortars continues to increase steadily. Future key requirements for mortar systems can be summarised as:

- increased lethality
- extended range
- multi-option usability ("lessen the burden")
- increased IM (Insensitive Munitions) compliance and compatibility

On the one hand there is a need to improve the IM characteristics of existing mechanical mortar fuses. On the other hand there is a demand for multi-option mortar fuses with extended proximity and electronic time capability. To JUNGHANS, a solution to these challenges would be to satisfy the future capability requirements listed above.

For multi-option fuses there are two types to be considered. One type features hand-adjustable mode selection, typically used for hand loading mortar systems. These will normally be open systems, powered by a wind turbine generator. The other design features a programming interface for an extended mode selection spectrum for automatic or semi-automatic loading systems, consisting of a closed fuse design powered by a battery. The latter could contribute significantly to current and future demands of the armed forces: to lessen the burden of the soldier in terms of training and physical loads by delivering multi-purpose systems and ammunitions.

When it comes to effectiveness and improved lethality for the mortar round, the fuse can contribute with increased accuracy. There are clear drivers for more precise and adjustable heights of burst for proximity function as well as low delay impact function and/or well defined impact delays. In addition, for certain applications, some penetration capability would also be beneficial.

Regarding the requirement for extended range, JUNGHANS has improved the aerodynamic design of the fuse shape, mass (and/or centre of gravity).

**ESD:** What exactly are the requirements imposed by the current STANAG, and does STANAG compliance constitute a challenge?

**Kunz:** A central requirement of STANAG 4187 is that two fully physically independent mechanisms should prevent the arming of the fuse before firing. In the past, fuses used a safety pin to be pulled out by the operator before firing as a first mechanism. The second mechanism was launch acceleration.

This design is safe and reliable but not fully compliant with STANAG requirements, and it does not fully satisfy future tactical demands. In future mortar fuse designs, two independent safety elements, entirely relying on environmental characteristics (only achieved in live firing), are mandatory.

The JUNGHANS fuse portfolio has been extended to include mechanical PD and time fuses with a second safety mechanism (wind wheel arming unit) to be fully compliant with STANAG 4187. Next generation designs deliver increased safety and usability, with no need to prepare the fuse before firing, and there is no fiddling with prepared fuses in the event of an aborted fire mission. JUNGHANS considers this concept as the basis and way forward for any future mortar fuse development, whether electronic or mechanical.

In support of these goals, JUNGHANS will continue to be proactive and invest in innovative technologies, subsystem building blocks and state-of-the-art fusing systems.

**The interview was conducted by Waldemar Geiger**



collateral damage outside the target area. This is not the case with conventional high-explosive rounds.

In Afghanistan, the Danish Army successfully used 60mm MAPAM (SAAB Bofors Dynamics Switzerland – SBDS) against

### Danish Army CARDOM 10:

**Compared to the 120mm CARDOM used by the Israeli Defence Forces and the US Stryker brigades, the Danish version has several upgrades:**

- **Two-metre barrel enabling longer range.**
- **Semi-automatic loading system to reduce the workload of the crew and the number of human errors when handling the mortar.**
- **Muzzle velocity radar to improve accuracy when the NATO S4 ballistic kernel based Fire Control System is calculating data for the fire missions.**
- **Placed inside the new PIRANHA 5 from MOWAG, the crew will benefit from level 4 protection against ballistic and mine threats.**
- **The system is autonomous and can operate in a hostile counter-mortar environment.**
- **There will be four CARDOM systems for every platoon which support a battalion each. The platoon also includes the platoon leader's command vehicle and two ammunition trucks.**



Photo: ELBIT

**The CARDOM 10 is an upgraded version of the Israeli 120mm mortar CARDOM in use with US Stryker Brigades and IDF. It is fully automated, supported by a semi-automatic loading system, has a longer barrel to improve range, and it will be built into the Danish Army's new APC: PIRANHA 5 from MOWAG.**

unprotected personnel. In addition to the effect on the enemy, MAPAM also brings fire much closer to your own forces (Danger Close) without an increased risk, in contrast to conventional high-explosive rounds.

The development of pre-fragmentation is moving forward, but there are only a few companies developing these rounds for 120mm mortars. SBDS is in the final stage of developing a 120mm version called "THOR", and Hirtenberger offers a 120mm pre-fragmented round produced after their ConFrag concept.

CARDOM 10 can fire Multiple Rounds Simultaneous Impact (MRSI). When combined with the optimised power of pre-fragmentation ammunition, a heavy mortar platoon can achieve the desired effect with a smaller number of rounds. Only the first or, maybe, second rounds fired need pre-fragmentation technology. In most cases, subsequent rounds provide lesser effect as the enemy has taken cover. Therefore it makes sense to use conventional high-explosive rounds for the remainder of the fire mission. When CARDOM 10 is firing MRSI, the platoon's four systems can deliver up to 16 rounds within the same second. This way optimised ammunition offers a lot of firepower to reap the benefits of the element of surprise.

## A Further Insight:

### Interview with Christian Herren, Director of Development and Quality at Saab Bofors Dynamics Switzerland



Photo: Saab Bofors Dynamics Switzerland

**ESD:** What technologies have been implemented with the new THOR mortar bomb?

**Herren:** The new THOR round integrates the following technologies:

- THOR technology, based on a multidimensional fragmentation system. THOR allows the combination of different sizes, shapes and materials into one mortar round. Therefore the adaptability to customer requirements is high. Overall lethality of such a round is at least three times higher when compared to MAPAM. THOR is made possible by a sophisticated analytical model for the fragmentation process itself.
- ODIN technology to guide the fragmentation beam in the desired direction.
- Ammunal++ and Allocator technology. The new mortar round can optionally integrate an enhanced blast module. Based on an explosive formulation called Ammunal++ and using a controlled dispersion principle called Allocator, a highly efficient blast effect can be projected and adapted in relation to customer requirements. This enhancement lifts the new round up to the level of multi-effect/multi-purpose ammunition.

**ESD:** Why did you not just scale the MAPAM ammunition for 120 mm mortar applications?

**Herren:** MAPAM is a 2nd generation mortar technology based on the use of ball bearings in a specific plastic matrix which provides the structural integrity of the round. This kind of application is dependent on the surface/volume ratio, which is very good in a 60 mm round, acceptable in an 81mm one but not promising in a 120 mm round. This is why the lethality gain compared to a 1st generation round is insufficient and demands the integration of improved technologies like THOR and ODIN.

**ESD:** Can you elaborate on the functional principles of ODIN technology?

**Herren:** ODIN uses the analytical model already mentioned as basis of the THOR technology and implements elements of differential geometry into the set of equations. This makes it possible to generate beams of fragments in different directions at different times of the fragmentation process using material parameters and geometrical elements. The result is a multi-beam spray which can be adapted to customer demand. Originally ODIN was developed to provide a back-spray element in a multi-effect missile system. Saab Bofors Dynamics Switzerland has successfully integrated this technology into the new 120mm round.

ODIN offers:

- the advantage to use geometry optimisation resulting in a cylindrical design of the round which provides a spray where more than 90% of the fragments hit the designated target area (compared to less than 60% for a conventional round).
- the possibility to optimise the round aerodynamically to extend its range.

**ESD:** Are there plans to convert or upgrade THOR, such as to a guided mortar bomb?

**Herren:** The new round is adaptable to most of the existing fuse systems (quick response, delay) but of course especially optimised for proximity fuses.

In the future the following enhancements of the THOR round are scheduled:

- Adaptation to different mortar systems (self-propelled and French mortar systems).
- Use of general platonic bodies with an optimised number of edges and corners to increase lethality. This improvement is done in combination with the use of adaptive layer manufacturing (ALM).
- Introduction of a high-performance blast element called DONAR. This element provides a superior blast effect without a specific blast element.
- Use of guided fuse kits (when commercially available at reasonable cost).

**The interview was conducted by Waldemar Geiger**





Photo: SAAB

**A Danish Army mortar crew prepares to load a Saab MAPAM mortar round into their 60mm Expal commando mortar during a firing demonstration in Sweden. The MAPAM round provides the same effect as an 81mm mortar round in its 40-metre lethal zone.**

## Anti-Structure

Another way to increase firepower is to use rounds with anti-structure effect. Thermobaric ammunition utilises oxygen from the air to generate an intense high-temperature explosion with a long blast wave. The blast wave is used to destroy different kinds of structures. Thermobaric ammunition is rarely in stock in Western Europe. Although a 120mm carrier can deliver a strong effect it is unlikely that Denmark will go down that road.

## Smoke Screen

When fighting an adversary that does not have multispectral observation means (e.g. infrared or thermal imagers), smoke ammunition can conceal your movements from the enemy or, when placed directly on and behind the adversary position, create confusion when trying to change position. When battling a near-peer or stronger adversary you also need a multispectral screen of his observation- and target allocating instruments. When acquiring smoke ammunition, there must be a bigger focus on the thermal effect in order to screen the enemy's observation of your actions.

For political and practical reasons, smoke ammunition based on white phosphorus has not much of a future. One should concentrate on the multispectral effects that can be achieved using red phosphorus or other new smoke materials.

## Illumination

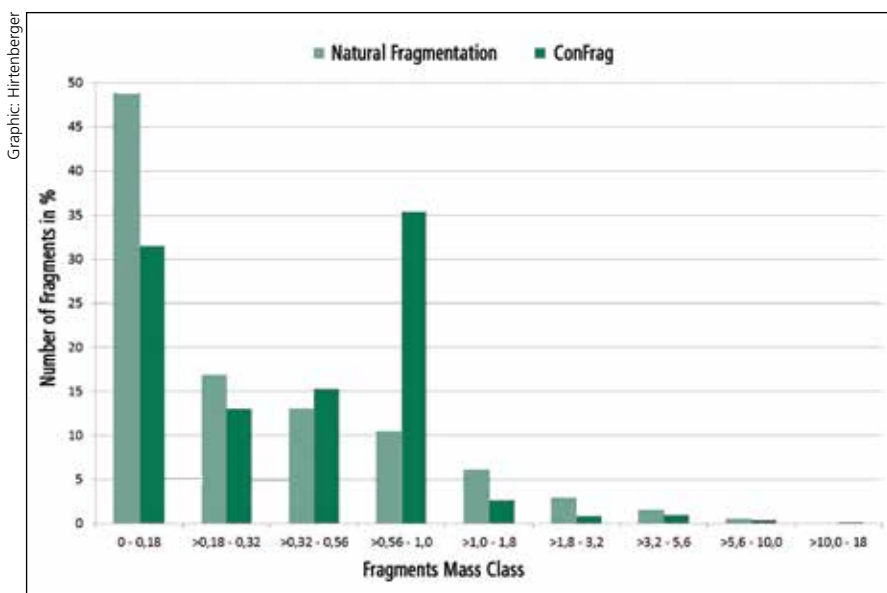
The market offers both 120mm white and IR illumination. No matter if you are fighting counter-insurgency (COIN) or combat operations there will be a need for both types in future conflicts. The Danish infantry companies have various systems in stock to illuminate the battlefield. That is why a more detailed analysis is needed when purchasing the aforementioned types.

## The Armoured Threat

Guided rounds are not the only threat to the army's budget. There is one area where COIN and combat operations differ considerably: the near-peer adversary's use of armoured vehicles. In combat operations on the modern battlefield the adversary will most likely deploy his fleet of armoured vehicles. With the end of the Cold War the Danish army lowered its capability to counter an armoured adversary. Today the armoured threat is back. This necessitates an analysis on what anti-tank capacity each weapon system can contribute with. For the time being the 120mm STRIX anti tank round manufactured by SAAB Bofors Dynamics is the only real answer for mortars when it comes to tackling medium and heavy armoured vehicles. Although this is not a priority at the moment it is something the army should keep an eye on.

## Long Range

CARDOM 10 has a firing distance of 9 km (+). There might be a need to limit dispersion at target ranges above 7-8 km. As the dis-



**A comparison of the fragmentation dispersion of different kinds of 60mm mortar ammunition. Left is a conventional high-explosive; on the right ConFrag, an enhanced-lethality mortar bomb.**

pertion of rounds fired on the same target will increase; steps should be taken in order to achieve the required effect. A similar problem although at longer ranges can also be seen when using artillery. This issue is partly addressed by using 1- and 2D cross-correction fuses. It would be interesting to see how correcting fuses for mortar ammunition might work out but as long as heavy mortars in the Western world are used for ranges of 7 km and below, there is little need to launch an expensive development project.

### Insensitive Ammunition

Another widely discussed topic is insensitive ammunitions (IM). The Danish Army has introduced IM as a valuable method to optimise operational security, transport and storage of the ammunition. Some of the benefits of IM are as follows:

- Reduced loss of life and material because of hostile attacks and accidents.
- Tactical advantages when preserving the ammunition's capability as the secondary result of enemy attacks and accidents.
- Reduced requirements for ammunition storage magazines and security.
- Contribution to maintaining the fighting spirit among own troops.

DALO has established some minimum requirements for IM. All future purchases of ammunition will be based on an individual assessment which describes to what extent the new ammunition types must meet the minimum requirements for IM.

### Summary

When Denmark is to acquire ammunition for the new 120mm CARDOM 10 there should be little focus on guided munitions.

## A Further Insight:

### Interview with Carsten Barth, Vice President Sales & Marketing at Hirttenberger Defence Systems



Photo: Hirttenberger Defence Systems

**ESD:** What do you think are the future requirements and demands for conventional and enhanced lethality mortar ammunition?

**Barth:** Increasing the lethality of HE mortar rounds will have a very high priority. Enhanced lethality ammunition has to come with the same ballistics as well as size and weight as a standard HE round. It should have a fully proven IM footprint, including the use of modern IM explosives. It also needs to be cost effective. At Hirttenberger we have introduced our ConFrag Technology for all standard mortar calibres to achieve these enhanced lethality requirements (at least doubling the lethality of a standard HE round of the same calibre). A third independent party scientifically verified the increased lethality.

**ESD:** What do you anticipate in terms of future requirements for precision and accuracy of modern mortar ammunition?

**Barth:** Precision and accuracy will be important requirements in the future. We believe that increasing the first-hit probability is a key feature. The capability to engage individual targets, even armoured vehicles, will also become more important, of course in combination with Multiple-Round-Single-Impact (MRIS) capability. This will require more accurate weapons and sighting systems and improved ammunition and the capability to guide them.

**The interview was conducted by Waldemar Geiger**

This kind of ammunition should initially be acquired for the artillery only and solely be used for destroying high-priority targets. This is not for tactical reasons but due to the limited budget. The Danish Army will keep an eye on any future development of correcting fuses as they help to reduce the number of rounds required to achieve the desired effect above 7 km. There is also a

need to acquire conventional and pre-fragmentation high-explosive rounds. Smoke and illumination ammunition should undergo a comprehensive analysis together with other effectors in the inventory of a combat battalion. There is no need for training ammunition as the old HE M/50 will cover the needs of the Danish Army for years to come. ■

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# Night Vision and Night Combat Capabilities

**Waldemar Geiger**

The ability to conduct military operations at any time of day and under any conditions of visibility is a core requirement for modern and powerful armed forces. Image intensification and thermography (infrared detection) constitute the two core technologies which decisively contribute to acquiring night vision and night combat capabilities.

Night vision capability enables soldiers to see their surroundings in low light conditions. Night combat capability goes one step further; it enables soldiers to take aim and to operate their weapons or weapon system effectively in low light conditions. The classic way to achieve these capabilities has traditionally been with battlefield illumination which, however, has the disadvantage that it is available for a limited period of time only and also allows the adversary to profit from this artificial lighting for his own operations. Particularly with respect to combat operations against irregular troops, access to state-of-the-art night vision technology is a unique feature.

## Image Intensifiers

Like many other technological achievements, night vision technology has its roots in Germany. Generation 0 (image converter principle) still required the use of IR beamers and was first employed in limited numbers in World War II by the German Wehrmacht. Modern night vision goggles (NVG) are significantly lighter and more powerful and now constitute Generations I and II+.

Irrespective of their generation, all modern NVGs are based on the same functional principle: Photons in the near-infrared-spectrum (approx. 750 to 950 nm), which is invisible to the human eye, are collected and collimated in the objective lens and converted by a photocathode into electrons. A micro-channel plate then amplifies these electrons by a zillion-fold and transforms them into visible light appearing on a phosphor screen. According to the laws of optics, the resulting image is upside down and must be turned around with another lens in front of the eyepiece. The assembly of photocathode, micro-channel plate and phosphor screen is called a "tube".

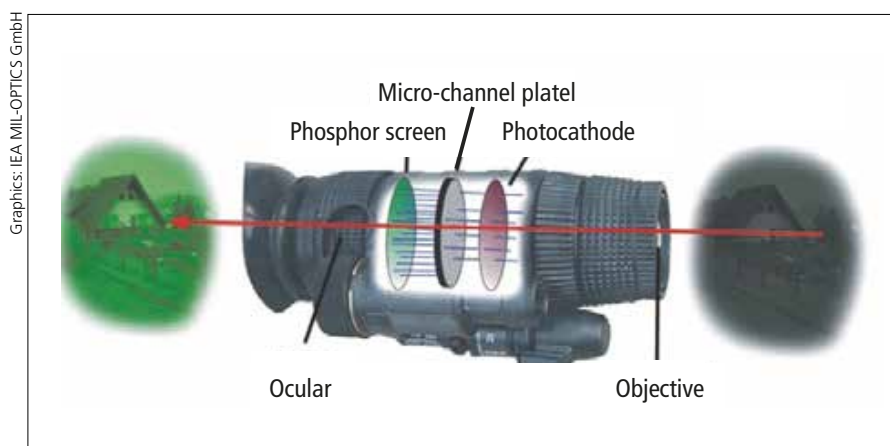
## Tube Technology Generations

As already mentioned, tubes of GEN II (Photonis, The Netherlands and France) and GEN III (L3 and ITT-Corporation, both USA) are integrated into state-of-the-art military NVG whose functional principle has been used and further advanced since the 1970s and 1980s. The vast majority of the present US-produced tubes feature a

photocathode of 18 mm which, from the American point of view, offers the best performance–weight tradeoff. Photonis also supplies GEN II+ 16-mm tubes in addition to the 18-mm tubes.

As regards their function, light intensifiers have not seen any particular technical advancement in the past decades (except for the fusion method). However, they have meanwhile become considerably smaller, lighter, more robust and more powerful. In addition, the production costs of the tubes have fallen drastically over time. Accordingly, they are now in common use and no longer reserved for just a few selected units, as was the case in the past.

The photocathode makes the technical difference between the tubes of GEN II+ and GEN III. In GEN III tubes, multi-alkali photocathodes were substituted by gallium/arsenide cathodes, which have the advantage of opening up a slightly wider IR-light spectrum for image taking and being more sensitive to IR radiation. In the end, more electrons, and thus more visible light, can be obtained from available ambient light. The improved sensitivity of GEN III tubes initially entailed the adverse effect of electrons emitted from the micro-channel plate causing damage to the photocathode. As an initial countermeasure, an ion barrier film was inserted between cathode and micro-channel plate to achieve acceptable durability. The useful life of the presently available tubes of any generation ranges from 10,000 to 15,000 operating hours. Meanwhile industry has succeeded in producing equally durable GEN III tubes without the use of ion barriers. This enhances the clarity and contrast of the images and represents the current state-of-the-art technology. In the beginning, these "filmless" GEN III tubes were incorrectly designated Generation 4.



*Functional principles of an image intensifier*

## A Question of Generations

A popular misconception is to assume the performance of night vision devices from their respective generation. Yet it is irrelevant for performance whether the tubes belong to GEN II+ or III; rather, quality and technical functionalities of the tube are the decisive factors (gain, resolution, S/N-value, auto-gating and so on).

Broadly speaking, two different possible solutions exist to the same problem. Like diesel or petrol engines for vehicle propulsion systems, GEN II+ and III tubes represent two valid approaches to implement night vision capability, with both having their pros and cons.

The multi-alkali photocathodes of GEN II tubes are less sensitive to light, but they have the advantage that both their sensitivity to dazzling and the halo around a light source are likewise significantly reduced. State-of-the-art GEN II+ tubes are therefore particularly suitable for military operations in urban terrain.

GEN III tubes are based on gallium-arsenide cathodes, which increase their sensitivity to light, resulting in an improved light yield in the presence of little residual light. Yet this higher light sensitivity increases the sensitivity to dazzling; so these tubes play to their strengths particularly in a low-light environment (such as forests or areas of operation with underdeveloped or destroyed power supply installations).

## Performance Determination

Tube performance is determined, among other metrics, in terms of the resolution, low-light intensification (gain) and signal-to-noise ratio (S/N) of the produced image. Whatever generation, virtually all modern military tubes provide a resolution of approx. 64–72 line pairs per millimetre. Since an even higher resolution is no longer perceptible to the human eye, efforts are now primarily directed at improving S/N value and increasing gain to generate a clearer image even in dark surroundings. The higher the S/N value, the less disturbing background noise affects the image. The higher the gain, the brighter the image, which results in a sharper contrast under poor light conditions. Advanced devices additionally allow manual gain adjustment. High gain produces a brighter image, yet more image noise, while lower gain generates a darker image with less image noise.

The result of the multiplication of resolution value with signal-to-noise ratio (lp/mm x S/N) represents a quality feature. In the USA, this value is called FOM (Figure of Merit – performance of the device relative to its available best alternative) and decisively determines the export release of US tubes. Currently, European GEN II+ tubes occasionally come up to a FOM of approx. 2,300.

In addition to the aforementioned values, the auto-gating function represents an essential advantage of advanced tubes. Autogating immediately downregulates a sudden increase of the light to which the night vision goggles are exposed and automatically keeps the brightness at a constant level. This is achieved by a timer, which ensures that the photocathode converts only a desired maximum number of photons

per unit of time into electrons. Auto-gated tubes are capable of producing a constant, sharp and high-contrast image even in changing light conditions, including daylight. In practice, the auto-gating quality can be recognised by the speed of down-regulation. For the time being, this function is so well engineered that changes in lighting are hardly visible to the eye, even in case of an abrupt and very strong exposure to light (explosion, muzzle flash, and so on) and still produces a consistent and smooth image in the dark.

## NVG Cases

As night vision goggles do not consist of a tube alone, their cases constitute a crucial factor for their function and performance. Different mechanisms ensure the precise adjustment of the goggles to the user's eye.

In order to make NVGs operational even in complete darkness (such as in basements or tunnels), many of them have integrated and optionally connectable IR lamps, which can compensate for insufficient natural low light if necessary.

In order to save weight, however, IR lamps are not always available, as many soldiers are equipped with stronger IR booster lights mounted on their helmet or handgun anyway.

Different military missions also call for different NVG designs. In addition to monocular devices, binocular goggles (LUCIE goggles in the Bundeswehr) are in common use. They contain only one tube and are therefore obtainable at a reasonable price. A beam splitter distributes the generated image to

the two eyepiece lenses to make it appear more natural to the wearer of the goggles. Nonetheless, such goggles fail to provide a stereoscopic view, especially at close range. Users must therefore pay special attention not to trip over obstacles or to stumble while walking. Injury patterns like twisting one's ankle or impact with obstacles occur, particularly when soldiers are unfit to keep their mind on their own movement due to fatigue or in stressful situations. Likewise, these goggles are unsuitable for drivers. Binocular NVG represent a third type of goggles. The two synchronised channels of such binocular goggles are more expensive but produce an image which agrees considerably more with reality than monocular or bi-ocular goggles do. As such goggles correctly indicate ranges they can also be worn by vehicle drivers. The use of a second tube makes such goggles almost twice as expensive to procure but offers the advantage of retaining a monocular night vision capability for the soldier, should one of the tubes fail.

Quad-eye goggles are currently right out in front of the light intensifier evolution and are therefore issued only to Special Forces. Four separate and synchronised input channels generate a horizontal field of vision of more than 90 degrees which comes closest to the natural 120-degree field of view of human beings. What does not sound particularly overwhelming in theory has an impressive effect in practice. Due to their limited field of vision, traditional binocular goggles always have the disadvantage of developing a tunnel vision. Accordingly, to keep aware of the situation, the soldier is forced to shift his line of sight constantly from one side to the other. Especially when engaged in close-quarters combat, it takes some time to get a total overview of newly



**The XACT-nv33 binocular from Telefunken RACOMS weighs less than 500 g despite its integrated IR-lamp and dioptric and focus adjustment mechanisms.**



occupied terrain. This problem does not occur with quad-eye NVG, which ensure situational awareness similar to that achievable in daylight.

Photo: Bundeswehr



**The Quad-Eye GPNVG (Ground Panorama Night Vision Goggle) from L3 in use with a German special forces operator.**

## Infrared Detectors

Infrared detectors are based on the principle of thermography. They respond to emanations in the medium IR-spectrum (3,000 to 5,000 nm) from objects of differing temperature and convert temperature differences into an image even in total darkness.

Compared to light intensifiers, infrared detectors do without low light or artificial light sources, provide larger effective ranges, and have proven to be significantly superior in detecting human targets and identifying vehicle targets.

The range of application of this technology covers all conceivable platform-based

## Fusion

The disadvantages of light intensification and infrared detection can be eliminated by fusing these two technologies into one image. This "fusion" approach is achieved by superimposing the optical or low-light-intensified image with the infrared detector image. The idea behind this is to merge at least two different image sources into one "more useful" image which can make it much easier to take on specific tactical challenges on the battlefield.

For instance, it is very difficult for light intensifiers detect stationary individuals in a wooded spot even at ranges as short as 50 m, especially when they lean against trees or bushes. Superimposing the infrared detector image on the low-light image allows operators to exploit any differences detected between the temperature of constructions and vegetation relative to body temperatures. So, the targets become clearly discernible also at longer ranges.

Photo: IEA MIL-OPTICS GmbH



**The internally fused image of an AN/PSQ-36 Fusion Goggle Enhanced (FGE) sets the human target clearly apart from the background.**

sion. Technically speaking, fusion devices represent a separate category in night vision technology. These devices are designed from scratch with in-built light intensifier tubes and an infrared sensor. The superimposition of the two images is performed internally, producing a significantly more detail-rich fusion image. If not needed, the infrared detector may be disabled to save energy. Such binocular fusion goggles constitute the current state-of-the-art.

There are two ways to perform such fusion. One option already in use for quite some time is to mount an infrared detector attachment in front of the night vision device (clip-on). In this way, the combat efficiency of existing night vision devices can be improved if necessary. The considerably more efficient second option is internal image fusion.

and platform-independent systems. The image is produced by displaying in different greyscales or pseudocolours the thermal differences in the observed environment. In general, two categories of infrared detectors can be distinguished: cooled and uncooled.

## Cooled Infrared Detectors

Cooled infrared detectors have the advantage that they sense and depict environmental temperature differences much more precisely. Accordingly, they detect and identify potential targets at a much greater distance than non-cooled devices. Before they can display an image, the sensors of a cooled infrared detector have to be brought to their respective operating temperature. This consumes both time and energy. While the cooling process with devices of previous generations took several minutes, modern devices are operable after no more than a few seconds. The additional cooling system makes these devices heavier, more energy-consuming and more expensive compared to uncooled systems. However, the state-of-the-art meanwhile enables the production of compact cooled infrared detectors with a total weight of less than two kilogrammes, making this technology also suitable for infantry operations. Handheld or weapon-attached observation devices enable the detection and identification of individuals at maximum ranges of 4,000 m and 1,500 m, respectively.

## Uncooled Infrared Detectors

Doing away with the cooling system and the attached power supply not only lowers the purchase price; it also allows a significantly more compact infrared detector design with a total weight of just a few hundred grammes. Yet this cost saving is bought at the expense of performance. Individuals can be detected and identified only at maximum ranges of 1,800 m and 500 m, respectively.

## Physical Limits

In addition to energy, infrared detection technology is particularly dependent on temperature differences to provide optimum results. The closer the ambient temperature approaches the target temperature, the poorer are the resolution and consequently the produced detector image. Solar reflections, major fires on the battlefield, as well as rain, fog and snowfall may gravely interfere with the performance of the detector or even eliminate its functionality. Infrared detectors also cannot spot light sources or light cones. Detected objects are depicted in only two dimensions. Moreover, infrared detectors cannot sense through glass surfaces. So, it is impossible to ascertain by means of an infrared detector image if and how many crew members are present within a vehicle.

## Night Combat Capability

Night vision and infrared detector attachments with crosshairs enable the soldiers to fight under limited visibility conditions, but they cannot be used in connection with night vision goggles. The shooter is forced to turn up his goggles every time before he takes



**The multifunctional uncooled L3-LWTS-LR (Light Weapon Thermal Sight – Long Range) detects individuals at a range of up to 4,000 m and weighs no more than 850 grammes, including batteries.**



Photo: AIM Infrarot-Module GmbH

**HuntIR Mk2 from AIM is an example of a versatile cooled infrared device which can be handheld for observation purposes or clipped onto a weapon as a targeting sight or riflescope attachment.**

his shooting position. This drawback not only involves additional motoric effort but also the loss of the panoramic field of view as the shooter has only the tunnel-type vision through the eyepiece. What might be still acceptable for fighting out of a prepared defence position develops into a life-threatening danger in battles for area or on urban terrain, because in such scenarios the shooter depends on permanent environmental awareness to be able to engage suddenly occurring targets. This drawback is avoided by employing night-vision-compatible gunsights or IR-laser modules. Special diffusers widen the collimated IR-beam of the laser modules to a field of view of approx. 100 degrees

and concurrently prevent any dazzling occurring in house-to-house fighting.

## Summary

Since all the mentioned technologies are key factors for any military operation, night combat capabilities are not just nice to have, but a key factor for the efficiency and survivability of soldiers. Still, most European armed forces are fully aware of the inappropriateness of their equipment in the field of night vision and night combat capabilities. The existing devices are frequently dated and only available in insufficient numbers in many European armies, among them major actors like the German Bundeswehr. It is no longer acceptable for soldiers on missions that procurement law or economic measures entail dramatic delays in the provision of equipment which is urgently needed for mission fulfilment and personal protection. ■

## SWIR

The efforts of industry in advancing night vision technology extend more and more into the field of short-wave-infrared (SWIR) radiation. At present, such sensors and infrared detectors are being rapidly developed and should be capable of detecting short-wave infrared radiation and depicting it in an operationally usable manner. Considering their function, these devices resemble light intensifiers more than infrared detectors. SWIR technology combines the advantages of the infrared detection and night vision technologies and offsets their respective disadvantages. Short-wave infrared radiation features properties similar to visible light and can therefore be exploited in a similar way. Light sources are found in the near-infrared (700–1,400 nm) and the short-wave infrared (1,400 to approx. 3,000 nm) spectra. Objects are depicted by SWIR devices in an inverse monochrome image.

Once mastered, SWIR technology promises several benefits. Unlike traditional infrared detectors (medium IR spectrum), SWIR devices would be capable of detecting light cones and laser beams even in the spectrum so far invisible to GEN II+ and III night vision technology (1,350 nm). Another and very important advantage is their capability of sensing through glass surfaces. Short-wave infrared radiation penetrates glass, smoke, and fog and detects any objects and individuals that may be hidden behind.



## A Further Insight:

### Interview with Mark de Nes, Regional Sales Director and Gert Nützel, Chief Innovation Officer, Photonis Netherlands.

**ESD:** There are only few high end tube manufacturers in the world. What is the challenge in manufacturing military grade night vision tubes?

**de Nes:** The complexity of bringing a combination of different scientific disciplines (High-Vacuum, Chemicals, Electronics, Specialised Production etc.) together in a small tube is a challenging concept and doing that in a large and steady output is challenging in itself, especially if you are continuously improving a product that has been around for quite some time. This is why there are only a hand full of companies that are able to provide quality high performance tubes in large volumes with a stable performance.

**Nützel:** In addition the manufacturing of image intensifiers requires a huge investment in clean rooms, ultra high vacuum equipment and other process industry tools.

**ESD:** What are the characteristics of your state-of-the-art tube and what capabilities does it provide?

**de Nes:** Our 4G image intensifiers are currently the state-of-the-art tubes, which despite being only 4-5 years old, have already been improved at various levels considering inputs from our end-users and OEMs. We listen to the market and work intensely on matters such as high FOM performance (signal-to-noise improvements), extended bandwidth photon collection, fast autogating and small Halo and smaller/lighter tubes like the 16mm 4G tubes. Another very important feature of the 4G is the sensitivity down to green, blue and even the UV spectrum of the wavelength band.

**Nützel:** The night vision community has always taken it for granted that the night sky is "infrared". All performance parameters like gain, signal to noise ratio and FOM are measured with infrared light. The source of the infrared light at night sky is a phenomenon called "night glow". Recent studies have shown that night glow varies a lot from season to season, day to day and even during one night. There are

nights which are "infrared dark" because this phenomenon is absent. Light from all other sources at night: moon, stars and galaxies, is blue. Therefore, it is of great importance that an image intensifier has a high sensitivity from the UV up to the infrared spectrum.

**ESD:** Photonis produces 16 and 18 mm tubes. What are the advantages/disadvantages of 16 mm tubes?

**Nützel:** When asking users what changes they would like for new night vision equipment almost 100 percent respond with the wish for lighter and smaller equipment. Further improved image quality only comes as the third priority.

**de Nes:** With a trend in weight reduction at soldier systems level and an increasing demand for binoculars, or multi-functional monocular configurations, we are able to save 40% using the 16mm tube in comparison to an 18mm tube. Ultimately, the soldiers will have less weight to carry which makes their challenging job a bit more comfortable. The 16mm tubes also offer high FOM values (min. 1800 FOM or min. 2000 FOM) as they are also part of the 4G family technology.

**ESD:** What trends do you envision for night vision devices?

**de Nes:** We see an evolution from monocular/ binocular into binocular for one. Secondly, the performance level requirement is a continuous improvement trend to stay ahead of the potential enemy who has a night vision capability, too. So the technology for the soldier must be superior to that of the enemy (see the enemy before he sees you). Add-on functionalities such as augmented reality input of battlefield data, lower weight in response to an increased number of equipment items for the individual soldier and a (collaboration) fusion of thermal imaging and image intensifying technology is the future.

**The interview was conducted by Waldemar Geiger.**



**Mark your diary: Brussels, 23/24 January 2018  
14<sup>th</sup> NATO Life Cycle Management Conference**

### LCM as a Joint Effort - Perspectives and Objectives for NATO, Major Industries and SMEs

**MITTLER  
REPORT**

Chaired by: Thomas E. Pedersen and J. Bo Leimand (ret), Danish Defence Acquisition and Logistics Organisation (DALO)

The annual NATO LCM Conference will continue to consider the lessons learned and achievements made in areas such as Quality Assurance, Life Cycle Costing, Configuration Management, Acquisition Practices, Material Maintainability et al. as a basis for new and innovative, even disruptive approaches and perspectives which will be introduced in respective presentations. The event will again be organised in cooperation with the NATO Life Cycle Management Group (AC/327) and with the support of the NATO Industrial Advisory Group (NIAG) and the German CALS Forum. The conference will be combined with a small exhibition to showcase respective capabilities and will take place at the Parker Hotel Brussels Airport (formerly: Golden Tulip) on 23/24 January 2018.

**Contributing Organisations:** NSPA, SSM (Turkish MoD), NETMA, FFI, UK MoD, Airbus Defence & Space, Leonardo, QinetiQ, Ukroboronprom (tbc), KPMG, T-Systems, Systecon et.al.

**More Information:** Mittler Report Verlag, Jürgen Hensel, Phone: +49 228-35008-76, Email: [juergen.hensel@mittler-report.de](mailto:juergen.hensel@mittler-report.de), [www.mittler-report.de](http://www.mittler-report.de)

# Getting the Picture – The Individual Weapon Sight Sector

David Saw

**There was a time when the concept of providing the ordinary infantry soldier with a weapon that had an add-on optical sight would have been inconceivable. Optics were precision instruments and expensive.**

While it was perfectly reasonable to equip a sniper with an optical sight, there was no rational argument to justify the widespread issue of optical sights. The perception was that iron sights worked perfectly well at all common battle ranges and that was all that was needed.

submachine gun in certain applications. The new weapon also needed a new round and this resulted in the adoption of the .280 British round (7x43mm) classed as an intermediate round. To provide some context, the 7x43mm round would offer more in the way of range and penetra-

and designated as the No.9 Mk 1 rifle. The British Army had always put great emphasis on marksmanship. That is why it is particularly significant that this new rifle was equipped with a telescopic sight in a fixed mount on top of the carrying handle. The decision to adopt the NATO standard 7.62x51mm round marked the end of the EM-2 rifle, as it could not handle the more powerful round, and saw the British Army adopt the FN FAL as their standard battle rifle. This also meant that the British Army would not have a telescopic sight on its rifle, although Canada, which had also



Photo: Defence Images, MOD

***On overwatch in Afghanistan in early 2011, a sharpshooter of the Royal Scots with an L129A1 (Lewis Machine & Tool LM308MWS) 7.62x51mm rifle. In British service the rifle has a Trijicon 6x48 ACOG sight and a Trijicon Rugged Miniature Reflex (RMR) red dot sight.***

Then perceptions started to change. The British Army had developed a new small arms strategy based on its operational experience gained between 1939 and 1945, and it had also incorporated ideas gained from the evaluation of foreign weapons. Its plan was to field a new weapon to replace its 7.7x57R-calibre Lee Enfield bolt-action battle rifle and the STEN 9x19mm

tion than the Soviet 7.62x39mm round of the AK-47. In comparison to a 5.56x45mm round, the British round was equivalent in velocity at 300 metres and greater at 500 metres.

The British Army designed a true assault rifle to handle the 7x43mm round in the shape of the EM-2 and this was officially adopted as the future British rifle in 1951

adopted the FAL, did try unsuccessfully to develop a telescopic sight solution.

## Austrian Vision

It was the Steyr AUG (Armee Universal Gewehr) that would see the successful fielding of an integrated sight solution. The AUG was designed to be a replacement





Photo: Canadian Forces Combat Camera

**Canadian infantry from Princess Patricia's Canadian Light Infantry (PPCLI) during exercise Allied Spirit VI at Hohenfels, Germany, in March 2017. The Canadian Forces use the Elcan C79/C79A2 optical day sight with their carbines, rifles and support weapons. The US uses the sight as the M145 on M240 and M249 machine guns.**

to the FN FAL for the Austrian Army using the 5.56x45mm round. The programme started at the end of the 1960s, with the first prototype ready in 1974. The prototype did not have an integrated sight. The AUG was adopted by Austria as its service rifle in 1977 and this had a Swarovski Optik x1.5 telescopic sight integrated onto the receiver.

Eventually the British would develop sights for their SLR battle rifle. Initially, the aim was to have a sight for low-light conditions and/or close quarter battle ranges and this need was met by the L5A1 Trilux sight. Then came the L2A1 Sight Unit Infantry Trilux (SUIT). This was a x4 optical sight and was fitted to a rail that was attached to the top cover of the SLR. SUIT was issued in limited numbers primarily to what would these days be called 'designated marksmen', but it was also used on the GPMG medium machine gun. Both Australia and New Zealand acquired SUIT.

In the late 1960s, the British Army developed a new rifle as the replacement for the SLR as part of the Small Arms for the 1980s (SA80) programme. Eventually this would result in the L85 assault rifle being issued in 1985 and remaining in production through to 1994. As is well known, the original L85 had tremendous problems.

The only part of the weapon to emerge with any credit was the L9A1 Sight Unit Small Arms Trilux (SUSAT). SUSAT is a x4 optical sight attached to a mounting on the rifle body. Rugged and reliable, SUSAT was also used by the British Army on its L108A1

and L110A2 5.56x45mm Squad Automatic Weapons (SAW), otherwise known as the FN MINIMI. The SUSAT was also exported to a number of customers including the Swedish Army, who used it for designated marksmen on their AK5 (license built FN FNC) assault rifle.

## Canadian Solutions

Canada also replaced its SLR battle rifle with a 5.56x45mm assault rifle, selecting the Colt Model 715, otherwise known as the M16A1E1, a weapon that incorporated some features from the M16A2. The weapon was known as the C7 in Canada, with a carbine variant known as the C8. These initial weapons were superseded by the C7A1 and the C8A1. Here the carrying handle was replaced with a flat top upon which a 'Weaver-type' rail is fixed and attached to this is the Elcan C79 sight, a x3.4 magnification sight. The C79 is also used on the Canadian version of the FN MINIMI, the C9A1 light machine gun. This weapon is fitted with a MIL-STD-1913 Accessory Mounting Rail for Small Arms Weapons, otherwise known as the Picatinny rail. As the Canadian Forces upgrade their weapons to the C7A2 and C8A3 standard, they receive the new C79A2 sight. The US uses the C79 sight under the M145 designation for machine guns such as the M249 and the M240.

The French Arme Individuelle Future (AIF) assault rifle programme to replace the current FAMAS rifle was won by the Heckler & Koch HK416, with the version for the French military being given the HK416F designation. The first 300 weapons were

## KAHLES K 624i 6-24x56

The K 624i RAL 8000 is the new telescopic sight for the new sniper rifle of the Jagdkommando (Austrian Special Forces), the SteyrMannlicher in .338 Lapua Magnum. The particularity of this tactical scope is the placement of the parallax wheel. Austrian scope specialist Kahles holds a patent for an integrated parallax wheel in the elevation turret. This configuration allows the placement of the windage adjustment turret on the left or the right side of the scope, which allows the shooter to use all operating elements with the support hand. The shooting hand remains in shooting position at all times. This ambidextrous architecture makes left- or right-handed manipulation of the scope elements equally comfortable.

(wg)



Photo: Kahles

delivered to France in early May and the objective is that 5,000 HK416F will have been delivered by the end of 2017. In total, France has ordered 90,380 HK416Fs. The delivery schedule calls for 50% of the weapons to be delivered by 2022 and deliveries to be complete by 2028.

The HK416F has been acquired in two variants: The standard variant has a 14.5-inch barrel and the compact variant has an 11-inch barrel. Both variants have Picatinny rails. The HK416F programme also saw the acquisition of 10,767 HK269F 40 mm grenade launchers, but the grenade launchers can only be utilised with the HK416F standard version. The standard HK416F will also be the host for elements of the FELIN future soldier system. In total 14,915 weapons will be optimised for FELIN. The FELIN system has a combined day/night sighting system and so the sight requirements in this case are already fulfilled.

As to the other HK416Fs that are not destined for FELIN integration, the aim is to utilise sighting systems that are already in service with the FAMAS. The standard French sight is the x4 magnification Scrome J4F1. This is used on both the FAMAS and the MINIMI in France. They also use the Aimpoint red dot sight; reportedly, EOTech sights have also been acquired.

## Picatinny World

The Picatinny rail provides the ability for a weapon to accommodate a host of different sighting options. In the case of the Special Operations Peculiar Modification (SOPMOD) of the M4A1 carbine, the list of sighting options is extensive. For example, options include the Trijicon CQB reflex sight, the M150 Trijicon x4 magnification day optical scope, the ECOS-N CQB sight (a version of the Aimpoint CompM2 otherwise known as the M68, the US Army purchased over a million of these units), or

the current version of the M68CCO could be used, this sight is based on the Aimpoint CompM4. Other options for the SOPMOD include the AN/PVS-17A mini night vision sight from L3, AN/PEQ-2 target pointer/illuminator/aiming light from EOTech, AN/PEQ-5 carbine visible laser from Insight Technology and the AN/PSQ-18A M203 day/night sighting system from ASU. The US Army M150 Rifle Combat Optic has become one of the more common sighting options internationally, this system is also known as the Advanced Combat Optical Gunsight (ACOG). The standard ACOG is a 4x32 magnification optical scope built by Trijicon that was originally developed for

the M4 carbine and the M16A4 rifle. The US Marine Corps classifies the ACOG as the AN/PVQ-31 Rifle Combat Optic and every Marine rifleman is equipped with the system. Other users of the ACOG include the British military, with the optic available in many different variations.

As previously noted, the British had immense problems with their L85 assault rifle, with the SUSAT sight being the only part of the system to emerge with any credit. The L85A2, the current version of the rifle, has resolved – courtesy of Heckler & Koch, the issues that had plagued the weapon. Combat experience in Iraq and Afghanistan led to a decision to acquire

Photo: US Marine Corps



**On the range in the Philippines, the Picatinny rail systems opens up a host of possibilities for attaching sights and other devices to a weapon, note the AN/PVQ-31 Rifle Combat Optic otherwise known as the ACOG and the AN/PEQ-5 carbine visible laser on this US Marine Corps M4A1 carbine.**



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Photo: Defence Images, MOD



***The British SA80 encountered tremendous problems when it entered service, these have now been resolved with the L85A2 variant of the weapon, which was modernised and upgraded by Heckler & Koch. Note the multiple Picatinny rails on the rifle, and the optical sight with the CQB red dot sight located above.***

the ACOG sight, as the SUSAT was starting to show its age, although this did not mark a complete replacement of the SUSAT system. The key point is that although the British were in combat and were reacting to changing needs by acquiring capability

Shield. The CQB is a x1 red dot sight offering quick and accurate close quarter engagement capabilities at ranges of under 75 metres. The CQB is mounted on all of the other sight elements of the STA. Shield had previously supplied their MINI SIGHT

### CONTROP at D&S Thailand

CONTROP Precision Technologies Ltd. recently highlighted its aircraft upgrade capabilities for the modernisation of light aircraft, helicopters, and UAS at D&S Thailand 2017. The company recently reported the sale of the A-DSMS Airborne Defense Surveillance Mission System with the iSky-50HD as part of an upgrade programme for Search & Rescue missions in Africa. The A-DSMS is a complete integrated solution specially designed for converting military, law enforcement and government aircraft into an advanced EO/IR surveillance mission configuration. It is offered with a variety of CONTROP's EO/IR gyro-stabilized payloads, including with a full HD day camera. In addition, the A-DSMS includes an operator's work station with a display monitor, DVR, control unit, mission computer, moving map software, video downlink. The iSky family is CONTROP's line of six medium and long-range aerial payloads (iSky-20HD, iSky-30HD, iSky-50HD) which provide solutions for most medium and long-range aerial surveillance platforms. Features include a continuous optical zoom lens in HD day camera and thermal imaging (SD/HD) cameras, gyro-stabilised gimbals, and multi-sensor options including EYESAFE LASER RANGE FINDER (ELRF) and/or Laser Pointer. Ideal for manned or unmanned airborne platforms, all of the iSky systems include real-time image enhancement features, built-in INS, and Automatic Video Tracker. (sb)

through Urgent Operational Requirements (UOR), they also had a comprehensive Surveillance and Target Acquisition (STA) programme underway as a part of their Future Infantry Soldier Technology (FIST) effort. The systems that go to make up the STA element of FIST are now in service, giving the British Army a very credible selection of STA options. The STA package includes the Close Quarter Battlesight (CQB) manufactured by

to the British Army and Special Forces (some 15,000 units in total), as well as to US, Australian and New Zealand Special Forces amongst others, with over 100,000 sights built. The CQB was developed from the MINI SIGHT and, according to Shield, 35,000 of these sights have been delivered to the British Army. The Lightweight Day Sight (LDS) is the x4 magnification ELcan C79 as used by the Canadian Forces. This is the SUSAT replacement.

Other FIST STA elements include the FIST Thermal Sight (FTS) from Qioptiq, this replaces the existing Lightweight Thermal Imager (LWTI) and offers enhanced detection and recognition features. The CWS-Maxikite Conversion (CMC) is an upgrade to section-level night sights such as the Common Weapon Sight (CWS) and the MAXIKITE III, both manufactured by Qioptiq. The CMC integrates these systems with FIST, adds a Picatinny rail and the CQB sight. There is also the Underslung Grenade Launcher Sighting System (UGLS), built by Isteq, for use with the L123A2 (Heckler & Koch AG36) 40 mm UGL.

In 2009, the British Army developed a UOR for a designated marksman rifle in 7.62x51mm for Afghanistan, with this programme being won by Lewis Machine & Tool with their LM308MWS, which was then classified as the L129A1 rifle. The selected day sight was the 6x48 Trijicon ACOG TA648 on a Picatinny rail. Also present is the Trijicon Rugged Miniature Reflex (RMR) red dot sight. The L129A1 can also be fitted with the Schmidt & Bender 3-12x50 PM II daylight scope, with the FLIR AN/PVS-27 MUNS (Magnum Universal Night Sight). The L86A2 Light Support Weapon (LSW), another member of the SA80 family, has also been used as a designated marksman weapon and is effective in that application, although as a 5.56x45mm weapon its performance is limited in comparison with the L129A1.

As things stand today, there is no doubt that an infantry weapon will be fitted with a sighting system, whether it be a red dot sight for close quarter work, or an ACOG or similar system for the full range envelope of an assault rifle. With the fitting of Picatinny rails there are few limitations on day or night sight integration. The anointed successor to the Picatinny rail will be the NATO accessory rail (STAN-AG 4694), although the Picatinny will be around for many years yet. Added to which, powered versions of the Picatinny and the NATO rail will inevitably appear offering some very interesting mounting possibilities.

Into the future though, the evolution of the infantry weapon sight sector is directly linked to the progress of future soldier systems. If these deliver a more complete integration of the soldier, the sensor and the weapon then one of the most important objectives of these systems will have been achieved. Until that point it is still a matter of selecting rails, sights and other weapon accessories to achieve the desired objective. ■

# Milipol In Sight

The MILIPOL exhibition was held in Paris at the end of November, although this exhibition is normally perceived to be devoted towards the internal security, paramilitary and police marketplaces, it also had much to interest those focused on the military. This was particularly true as regards weapon sights for dismounted soldier and related applications. There were a number of key developments in terms of new sighting systems from Israel, new contracts in Europe and some insight into the impact of rapid technology evolution. Israel's SK Group is the holding company for such key defence capabilities such as Israel Weapon Industries (IWI), the small arms manufacturer, and Meprolight, the leading Israeli capability in optical and

ers and provide the production numbers necessary to support being competitive in export markets.

At MILIPOL Meprolight unveiled a number of new products that will be of interest to military users. The MEPRO NYX-200 is a multi-spectral weapon sight that can also be used as a hand-held device, the system has an uncooled thermal channel and a high resolution day/night digital camera, providing an all-in-one solution to both day and night sight requirements. Two variants of the system are available: thermal channel and digital night camera and thermal channel and digital day camera. The sight also supports image capture and video recording on an internal SD card for post-mission debriefing.

hind reflex/red dot sights such as the MEPRO MOR. When longer range engagements are required the MX3-T sight is flipped into position, with no re-zeroing required, and when no longer required the magnifier is flipped to the side.

Elsewhere, the Finnish Defence Force has ordered the Aimpoint Micro T-2 compact red dot sight for use with the RK62 7.62x39 mm assault rifles that are being modernised. The value of the contract is €5.5 million and the sights are to be delivered before the end of 2018. Finland has ordered the sights through the NATO Support and Procurement Agency (NSPA), in which it is a partner. Earlier in September Aimpoint unveiled the CompM5 red dot sight, at 147 grams it is the most compact



**The Meprolight MEPRO NYX-200 is a multi-spectral weapon sight that can also be used as a hand-held device; it can provide an all-in-one solution to both day and night sight requirements. Meprolight unveiled many new sight developments at MILIPOL in November 2017.**

electro-optical sights for small arms. Back in 2016 the Israel Defense Forces (IDF) had placed a major order for 'many thousands' of the Meprolight MEPRO MOR reflex sight, this came when the company was still delivering MEPRO M5/RDS PRO red dot sights to the IDF from a previous major order. Other sights in use with the IDF include MEPRO M21, MEPRO MX3, MEPRO LIOR sniper night vision sight and the MEPRO GLS grenade launcher sight. Meprolight is not the only Israeli company active in the weapon sights area, competitors include Elbit for example. However, the size and competitive nature of the Israeli market is such that it can support innovation from multiple manufactur-

A new version of the MEPRO MOR red dot reflex sight was introduced, this now has a green laser pointer to meet the needs of users for higher visibility in certain environments. There are now three versions of this sight available: IR and green pointer, IR and red pointer, and red and green pointer. There is also a new version of the MEPRO M5 red dot sight featuring a bullseye reticle, with the reticle colour being green or red depending on customer preference. The sight allows the user to rapidly engage targets, while reducing power consumption and extending battery life. The MX3-T is another new system, this is a x3 reflex sight magnifier and fits on a Picatinny rail be-



**The FIST Thermal Sight (FTS) manufactured by Qioptiq (shown here on an L85A2) is a key element of the British Army Future Infantry Soldier Technology (FIST) Surveillance and Target Acquisition (STA) programme. The rapid fielding of enhanced technology allows sights to achieve better performance, while reducing weight.**

version of this sight family. The CompM5 sight was developed to meet the requirements of an undisclosed user, the sight is now available for sale worldwide.

Qioptiq, one of the major suppliers into the British Army Future Infantry Soldier Technology (FIST) Surveillance and Target Acquisition (STA) programme, noted the importance of rapidly integrating improved/enhanced technologies into such systems as the FIST Thermal Sight (FTS), the objective being to increase performance and reduce system weight wherever possible. Both weight and size reduction are becoming important topics in the weapon sight area these days.

**(David Saw)**



# The Development of the Maritime Defence Industry in Germany

Peter Grundmann

**Dedicated to national entrepreneurial responsibility and committed to serving the Navy as a matter of long tradition – this is the image that the German maritime industry (shipyards, system companies and suppliers) – wants to portray based on respective equipment supplies and materiel management for the past five decades.**

Despite many recent market adjustments, the current industrial capabilities and capacities continue to provide the Navy with the supply it is accustomed to. The naval industry makes a significant contribution

tries such as Germany had to radically restructure their shipbuilding industry. Within a few years, the labour-intensive mass shipbuilding industry disappeared. Even with modern production facilities for super tank-

port facilities, which was important for the restructuring of traditional shipyards.

Consistent portfolio streamlining and the inevitable reduction of overcapacities have left their indelible mark on German shipyards. According to the Association for Shipbuilding and Marine Technology (Verband für Schiffbau und Meerestechnik – VSM), the number of jobs in German shipyards has fallen from 62,000 to 18,000 during the past 35 years.

The invisible hand of the free market was the only principle that determined adaptation to changing conditions, since the German shipbuilding industry is privately owned and, to a large extent, family-owned. The government does not grant subsidies, regardless of the volume of orders. And industry has never requested subsidies for fear of losing entrepreneurial independence. Only the development of technical skills has been taken on to a limited extent under OECD and EU rules. This also applies to shipbuilding for the Navy. In Germany, this is not a state domain and the German naval industry, unlike many international competitors, receives no support. Until recently, Navy contracts were predominantly awarded at national level. However, the current Europe-wide call for tenders for the MKS180 warship shows that the German Government is not protectionist in principle.

## Concerns about National Security

The significance of a national naval industry for the country's security policy has long been discussed against the background of rapid changes and fundamental challenges in the international security architecture. According to its own statements, the Ministry of Defence does not see itself as a representative of the interests of any industry, but it still wants to



Graphic: A&R

## A&R design study for a small multifunctional corvette in co-operation with Rheinmetall

to national security. However, the process of continuous adaptation and development of German shipyards has reached a degree of consolidation which should be considered in more detail with regard to its significance for the defence sector.

## Significant Shrinkage over the Decades

Just over three decades ago, when the construction of merchant ships – in particular tankers, bulk carriers and container ships – increasingly became the domain of the large new shipyards in Asia, European coun-

tries and container ships it has not been possible to regain the market shares of the past. After a critical examination of their performance, German shipyards and their domestic suppliers are now relying on the construction of high-quality special ships. These include not only cruise ships, ferries, large yachts and floating equipment for the offshore industry, but also highly specialised naval vessels. These product areas have a long tradition in Germany, and there is recognised market presence. In addition, a supply industry spread across a wide geographical area also allowed for a corresponding distribution of the various

be able to rely on core competences and capacities in existing defence technology. For selected technology sectors, this has already been laid down in a federal government strategy paper on strengthening the German defence industry and in the 2016 White Paper as the basis for the country's military capabilities. At present, however, there are no concrete measures to put this into practice. As far as the Navy is concerned, only a few sectors have been defined as key national technologies. The more comprehensive parliamentary resolutions of October 2015 and March 2017 on the anchoring of naval surface ship-building as a key technology of strategic importance for Germany have met with little response so far. The EU-wide call for tenders for the largest procurement project of the German Navy, the Multi-Role Combat Ship Class 180 (MKS 180), is in line with this narrow view of national key technologies.

There are also political questions concerning the procurement of military materiel. The European Defence Action Plan aims to harmonise defence equipment in the EU and to promote bi-national or multinational procurement through European financial incentives for research and development and to strengthen the sovereignty of the



Photo: German Naval Yards

**Task group support ship FRANKFURT AM MAIN at the German Naval Yards drydock in Kiel**

EU and its defence industries. Cooperative procurement should enable more economical batch sizes.

### Current Suppliers of Naval Vessels

There are only five shipyards or shipyard groups left in Germany for the construction of new naval vessels: FLW, tkMS, GNY, A&R and Fassmer. They differ in terms of production facilities, engineering knowledge for the design of naval vessels and the integration of weapons and control systems.

The national range in the naval sector is still relatively broadly diversified:

The Bremen-based Lürssen Group (FLW) employs more than 2,700 people at six

production sites in northern Germany. FLW generates one-third of its turnover in the navy, police and customs sectors. FLW is regarded as the world market leader for mega yachts, but also has a long military tradition, from new buildings and repairs to complete refits. For the German Navy, the family-owned company designed and built high-speed Class 141, 142 and 143 Alpha fast patrol boats, followed by the SM343 and MJ332 minesweepers in a consortium with A&R, the K130 corvettes in a consortium with the Blohm+Voss shipyard, which has also been part of Lürssen since 2016, and the EGV task group support ship fleet. The construction portfolio currently comprises the national Class F125 frigates in a consortium with tkMS and the second batch of the

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Photo: tkMS

**Class 214 tkMS export submarine**



Photo: Lürssen

**The OPV80 from Lürssen is destined to support seaborne strike forces in multinational engagements.**

K130 corvettes, while Lürssen is a contender for MKS180 in the consortium with thyssenkrupp Marine Systems (tkMS). Exports focus on a variety of ships and boats, including the successful PV80 type, as well as various fast attack craft and patrol boats. Customers worldwide include a large number of navies that in many cases also require a comprehensive range of maintenance and logistics services from the group. With its extensive production capacities, many experienced engineers and the necessary financial strength, Lürssen is capable of assuming a role as the prime contractor for complex frigate programmes.

As mentioned above, tkMS is another major player. tkMS consists of the three former large shipyards Blohm+Voss, HDW and Emden Nordseewerke and was supplemented by ATLAS ELEKTRONIK in 2017. tkMS employs 5,800 people and offers sophisticated technology. The company has decades of experience in the areas of submarines, surface ships, naval electronics and services. The Kiel-based tkMS shipyard has built and delivered more than 160 submarines worldwide, including class 209 and the modern

class 214/214A boats with air-independent propulsion systems based on fuel cell technology. The core business of tkMS is the design and development of state-of-the-art frigates, corvettes and naval support vessels. References are the F125, K130 and the EGV fleet. The project expertise enables the company to build surface vessels not only in German shipyards but also in selected

partner shipyards in the customer countries. At present tkMS is a contender for the MKS180 contract together with FLW.

With the acquisition of ATLAS ELEKTRONIK, tkMS has become a supplier of complete systems. ATLAS ELEKTRONIK has a leading position in maritime high technology arena, from control systems, including radio and communication systems for submarines and surface ships, to mine countermeasure systems, heavy torpedoes and unmanned maritime systems (UMS).

German Naval Yards (GNY) consists of the former surface shipbuilding facilities of Howaldtswerke-Deutsche Werft GmbH (Kiel), as well as its sister shipyards Nobiskrug (Rendsburg) and Lindenau (Kiel). With integrated management and joint administration, GNY employs around 1,000 people in the German state of Schleswig-Holstein. The German Naval Yards Kiel facilities (GNYK) specialise in the planning and construction of large naval vessels – frigates, corvettes and patrol boats. Under a subcontract to tkMS, GNYK handed over two frigates for Algeria in record time in the summer of 2016. In addition to the consortium partnership with Lürssen and tkMS for the second batch K130, the Kiel shipyard's order backlog currently includes the construction of corvettes for Israel. GNYK is also a contender for the MKS 180 programme. German Naval Yards is a wholly-owned subsidiary of Privinvest Group, a leading provider of marine solutions. This European shipyard group also comprises internationally renowned specialists, such as the French CMN naval shipyard, Hellenic Shipyards and Isherwoods in Great Britain. Their expertise complements the expertise of German Naval Yards Kiel as a system integrator for large, complex naval vessels. Abeking & Rasmussen (A&R), primarily focused on the construction of large yachts, but also successful specialist shipbuilders such as the SWATH ships, have a hundred

Photo: HMK



**Hagenuk Marinekommunikation (HMK) has supplied its HF Series 3000 equipment to all German naval units. Shown here is the new digital HF broadband exciter ERX 3003.**

years of tradition in the military sector in mine countermeasure vessels (MCMV). In addition to MCMV, the shipyard will in future deal intensively with naval vessels up to corvette size, including associated auxiliary and support vessels.

The Fassmer shipyard, another family-owned company with 1,200 employees worldwide, has recently caused a stir with interesting new building projects. These include innovative research vessels and ferries with environmentally friendly LNG propulsion, patrol boats and various special vessels. Fassmer successfully developed an 80-metre-long Offshore Patrol Vessel (OPV80), which was sold to a considerable extent in South American countries. In addition to the OPV market, Fassmer will also be involved in more complex naval units.

The shipyards have additional partners for dedicated equipment at their disposal, covering the entire spectrum from sensors to effectors with products developed and manufactured in Germany, both above and under the water. In addition to ATLAS ELEKTRONIK, there are Rheinmetall Defence (multi-sensor platforms, medium-calibre guns and decoys), Diehl Defence (missiles, ammunition, and surveillance systems), HENSOLDT (radars,

optoelectronic sensors), MBDA (missiles, and Hagenuk Marinekommunikation HMK) and Rohde & Schwarz (communication and antenna systems). With this product range, the German naval yards are well positioned to offer complete systems which are important for export.

### Preservation of Capacities and Expertise

All these naval yards also have a strong civil production branch. It is uncertain whether the German shipbuilding industry will continue to offer naval products in the distant future; this depends largely on companies' assessment of the expected order situation. However, it also depends to a large extent on the political climate in Germany, which must promote research and development, secure national procurement, take a reliable position on arms exports and adopt an active political stance in armaments cooperation. After all, industry is not obliged to preserve defence capabilities and resources. Ultimately, a more or less resilient market for grey ships is what counts, in order to fully utilise the highly specialised workforce. The German Navy's procurement plans are a forecast indicator. On the one hand, the plans allow conclusions to be drawn about

potential national orders for the next decade; on the other hand, they show in which areas advertising can be made in the future, whereby the parent navy serves as an important reference for entering the international market.

### National Requirements

The German Navy is currently in control of a fleet that is too small and largely obsolete for the required tasks. Not only the coalition partners, but also most of the parties in the Bundestag call for a stronger presence of the Bundeswehr in UN and Alliance operations, and a clear increase in capabilities and materiel resources is being discussed. Repeated demands for a higher defence budget suggest an increase in procurement and new construction activity. Chancellor Merkel and Defence Minister von der Leyen have promised NATO to increase the defence budget from its current level of 1.2 to 2 percent of Germany's gross domestic product by 2024. The strong economy and the growing security awareness of the population, coupled with the recognition that national security also requires the willingness to enter into an international security partnership, means that the implementation of these promised goals is not only nec-



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essary, but also possible. The current plans of the Navy lead us to expect additional procurement of tankers, fleet service vessels and new minehunters, in addition to the MKS 180 and type U212CD submarines for the joint German-Norwegian procurement programme. A successor to the Class F123 frigates, new replenishment vessels and the renewal of the armament sector's fleet are also planned.

Modernisation of the Navy beyond this framework and within the time frame envisaged in the plan could be fully implemented by the German maritime industry with current production capacities. But even if these plans were to be implemented, i.e. prioritising naval projects in the Bundeswehr with sufficient financial resources, there would still be no firm foundation for the naval shipyards. A forward-looking approach would primarily be a planning approach that is also attractive from the Navy's point of view, based on line instead of class. A long-term, constant procurement process would allow for the continuous use of industrial resources and a uniform modernisation of the Navy. Concepts for this already exist and they are just waiting to be implemented.

The equipment of the German Navy is an important technological and referential basis for the German shipbuilding industry. However, additional export business is required to secure economic capacity utilisation. The export market is even more difficult to forecast than domestic demand. There are too many factors beyond the control of the shipyards. "Made in Germany" still stands for quality, but this has its price. Without political support, orders can hardly be won in international competition, as current examples from the submarine industry show. Support measures, such as the provision of personnel and equipment for the testing and acceptance of ships or the training of foreign crews by the German Navy, are the most important element. Extensive packages of services, financing and compensation will be put together, with the ship project itself being only part of the deal. Political support for exports has been and still is fundamental to the survival of the maritime defence industry.

### Opportunities in Export

In conventional submarines with fuel cell technology, the Kiel-based products are among the world's best systems. In order to maintain this lead, everything must be done to constantly adapt the product range to demand, but in the medium term, the know-how acquired over decades should also be a contract guarantee. The current list of contracts and enquiries still present a largely



Photo: Fassmer

**Fassmer OPV80 for the Chilean Navy**

positive picture. However, the practice that has existed for years to offer customers the opportunity to build submarines for themselves by transferring the basic elements of design and production, will greatly intensify the competitive situation in the future.

The market for frigates and corvettes, which are difficult to handle and expensive to procure, is relatively narrow. The countries that qualify as customers are looking for a low-risk and proven all-in-one solution from a single source. A key component is a nationally available spectrum of system competence to be able to combine the weapons and sensors specified by the customer in a control system. The operational value of a frigate derives primarily from the performance of the warfare system on which a particular class is optimised, such as an ASW or AAW frigate (Anti-Submarine/Anti-Aircraft Warfare). The highest demand applies to the design of the air defence system of an AAW unit due to the potentially complex threats and the very short response times. Only those who are able to master the increasingly complex technology of this core segment of warship technology and offer it as a package will be able to survive in the market for frigates and corvettes. In this regard, Germany has a solution available with the command and weapon control system from ATLAS ELEKTRONIK and the sensors from HENSOLDT in the required higher performance class. However, national access to advanced technology is time-consuming and costly due to the associated development capacities. This can be positively influenced by the use of national synergies from other projects (such as TLVS or MANTIS) or by international cooperation, such as a more intensive interaction with Thales. This requires a fundamental decision to be taken by industry. Exports on the highly competitive OPV market are very likely to be possible. Increasingly, there is a demand for ships with high ocean freight capacity, which offer rough handling and high flexibility in armament. In this area, a considerable number of potentially efficient suppliers from other nations are also present.

For this reason, export customers will only select German products if they receive an attractive overall package including convincing after-sales service. This also applies to the area of the mine countermeasure vessels. With the experience in building low-signature boats that are well-protected against mine explosions and the equipment required for mine neutralisation, such as hull-mounted, side-scan or synthetic aperture sonars, as well as UUVs and USVs for mine hunting and simulation, attractive complete packages can be offered.

### The Outcome

The German naval industry is still well positioned to meet the national requirements even after the current consolidation and to hold its own position on the international market. In order to secure the existing structures, however, a scheduled contract award for the projects for the German Navy is essential. Although this will not yet bring sufficient basic capacity utilisation of the production capacities and system sectors, it will nevertheless provide important references for export. And without the economic success that can be achieved through exports, the privately-owned companies will switch to other products in the medium term. The preservation of national security is not mandatory for them.

Economic success is the decisive key to continued cooperation on the international stage. It is not whether, but only who, with whom and when, that is unclear. European industry itself is the driving force behind this process. The premises are strength and success through size, competence, quality, innovative ability and the corresponding market presence. Today's status quo leaves important questions unanswered, especially with regard to a stronger commitment to industrial policy in Germany. In the area of security policy, it would be an encouraging development if a future naval industry would have significant German participation. This can only be achieved from a position of strength. ■

# "We are designed to be a European player."

**Interview with the Co-CEOs of the KNDS Group:  
Frank Haun, CEO of Krauss-Maffei Wegmann GmbH & Co. KG,  
and Stéphane Mayer, Chairman and CEO of Nexter Group.**



**Frank Haun, CEO of Krauss-Maffei Wegmann and Co-President of KNDS Group**



Photos: KNDS

**Stéphane Mayer, Chairman and CEO of Nexter Group and Co-President of KNDS Group**

**ESD:** The contract governing the establishment of the KNDS Holding was signed at the end of 2015. Which steps have since been taken? Which issues are you approaching jointly?

**Mayer:** We are currently working on a lot of different subjects. To begin with, we are working on our corporate functions leading to more and more integration, bringing synergies, efficiency and best service to the customer. This concerns for example sales, financing, purchasing, and communication. Secondly, we are working on the product line. Our strategy clearly is to pursue a more integrated product portfolio while keeping in mind that existing products in Germany, France and many other countries will stay in service for 30, 40 years, and we will continue to support them. We are looking at our existing product range and will try to bring even better products to the customer in the short term. Thirdly, and I think that is a very important point for KNDS, we want to identify and to participate in common programmes resulting from the discussions between the French and the German government. Two programmes are already taking shape – a new generation main battle tank and an artillery programme, the Combined Indirect Fire System (CIFS). The governments

are discussing these programmes, and we are looking at our portfolio to decide how we can find the best solution in response to this common vision of France and Germany.

**ESD:** We are talking about 2020, 2025?

**Haun:** 2030, 2035. The governments first indicated interest in these activities in 2012, three years before we, KMW and Nexter, signed our contract. France and Germany are thinking about joint requirements. According to their time schedule they will have their work more or less completed by 2018.

**Mayer:** The product definition started already in 2012. We do not wait until 2018 or even later. We are already busy with dedicated R&D efforts.

**ESD:** Are you doing it jointly?

**Haun:** This is our interest. Our intention has been to support the formation of a European industrial base and to become one of its main elements. This is an urgent need as can be demonstrated by the MBT project pursued by France and Germany. Currently a huge number of tanks are in service throughout Europe – the CHALLENGER, the LECLERC, the LEOPARD 2, different versions of Russian tanks in the Eastern part of Europe. Altogether

there are at least 17 versions, and when you also consider the different versions of the LEOPARD you better stop counting. We have too many systems and too many of low quality. That does not make sense from a European point of view. On the other hand, whenever soldiers are in theatre, that is the experience of the last two or even three decades, they operate jointly; you see for example French, Belgian, Dutch, German, Danish, Swedish or other European military forces acting together. Look at Afghanistan, look at former Yugoslavia, go down to Africa, go down to wherever you want to go to, it is always the same. So why in heaven should they use different systems? And it is not only the system itself, that also applies to logistics aspects like spare parts, maintenance and whatever you need in operations. Why do they use different boots? Why do they use different weapon systems? From my point of view we have to synchronise much more than we have done in the past.

**Mayer:** And it is a matter of competitiveness, too! When you develop a product for two, three, four or even 17 countries, the result will be much more competitive – not only for the countries participating in the programme but also in terms of export perspectives. Therefore we achieve





**The GTK BOXER, shown here with the turret of the PUMA infantry fighting vehicle, is already in service in Germany and The Netherlands. The first vehicle has been delivered to Lithuania.**

a real win-win situation for both the customer and the supplier if products are jointly defined and developed.

**ESD:** The product portfolio of both of your companies overlaps to a certain extent. Do you envision a streamlining process?

**Haun:** We do not have that much overlap. Everybody talks about it. The reality is different. As an example, look at the broad range of artillery products of KMW and Nexter. There is not a single overlap. Or look at the KMW and Nexter 8x8 vehicles we exhibited at our common KNDS stand at DSEI. Are they 8x8? Yes. Are they the same? No. The DNA is different. Taken as a whole the overlap of the product portfolios of KMW and Nexter is pretty small. Consequently, the same applies for the markets we are dealing with. I do not see that much overlap in terms of competitive segments.

**Mayer:** Another example for the merely slight extent of overlap are the long-standing activities of Nexter in the field of weapon and ammunition that have had no equivalent in the KMW portfolio. Now they are activities of KNDS as a whole. In addition to what was already said: We coordinate our decision processes to decide jointly what product to offer to the customer.

**ESD:** It could be different ones?

**Mayer:** If the requirements of a customer are not that clear maybe we would offer different solutions to leave the choice to him.

**ESD:** The MIV programme in the UK might be such a case?

**Haun:** The MIV programme is a huge programme and indeed very interesting for us. But at the moment we do not know how the UK will go ahead with this programme. Decisions still have to be made. Hopefully, we will know more by the end of 2017.



**The VBCI armoured infantry vehicle has been in service with the French armed forces since 2008 and has been deployed in Afghanistan and Mali.**

**ESD:** But at the moment, BOXER and VBCI might be options?

**Haun:** The BOXER is British by birth, the UK participated in the development before they withdrew from the programme several years ago.

**Mayer:** And the VBCI is an option, too. It is well known to the British Army from joint training. We have to wait and see which product meets their needs best.

**ESD:** What is the long-term vision for KNDS?

**Haun:** The European leader in land defence. I think we said that several times, there is no change.

**Mayer:** With a common range of products, with common products for France Germany and many other countries, more and more integrated.

**Haun:** But it will take a long time. Look at the SCORPION programme. The contract was awarded in late 2014. Our Joint Venture came too late, as a result, SCORPION is a French programme without German participation. When the last vehicle will have been delivered, how long will it stay in service? Until 2050, 2060 or even longer. This gives you a good impression of how long-lasting activities in the field of defence procurement are. If we, Nexter and KMW, had signed our JV agreement earlier, we would have made SCORPION a European programme; now it is a French programme only.

**ESD:** The revenue of KMW and Nexter together adds up to €2.5Bn. Do you need to grow much bigger or is your size good for the moment?

**Mayer:** First of all: Yes, size matters. I do not know about an ideal or "magic" figure, but size matters. This is why we are together now. More revenues give you more power to invest in R&D and other sectors. Have a look at our competitors, some of them are large, very large companies; especially the US; there are giants working for the huge US market.

**Haun:** We are designed to be a European player. Look at the trend, the direction is more and more consolidation within Europe leading to more and more competitiveness if compared with US companies, too. Therefore, our door is open and we are working on becoming a much more European based company than we are now.

**ESD:** A simple speculation: If the German Bundeswehr defines requirements for a new programme and you perceive that a Nexter product will meet these requirements better than any KMW product does, might it be possible to propose a Nexter product in this case?

**Haun:** It depends on the requirements,

the quality the customer is looking for; and then we have to decide what fits best.

**Mayer:** I think it is more realistic that joint requirements lead to joint products.

**Haun:** But not only with respect to France and Germany. This statement applies for Europe as a whole. The more joint the requirements there are the more standardised products will be there and the higher will be the interoperability of the soldiers operating in the same theatre.

**ESD:** KNDS is not the first and only example for industrial consolidation within Europe. Another has been MBDA. Is this a kind of model for you?

**Mayer:** MBDA is a success story that was enabled by joint programmes and a state treaty providing the best conditions to cooperate. But we definitely would try to pursue that in less than 20 years.

**Haun:** We draw two lessons from the MBDA and the Airbus success story as well. First: We have to be faster. And second: We have to be more efficient. The world is changing so fast that R&D phases of 30 years and more cannot be accepted anymore. Do you know what kind of threats we have to expect in 30 years? We will have to be much faster in

getting our products to the customer in the future.

**ESD:** Could a treaty like Lancaster House between France and the UK be desirable for France and Germany? For instance, to provide you with a kind of roadmap?

**Haun:** That is what we need. We have got support from the French and the German government. Now we need more deeds instead of words.

**Mayer:** We have had strong support from the beginning of the negotiations for the creation of KNDS. We perceive the recent defence minister council as a confirmation of our course as well. Of course, a treaty like Lancaster House providing a framework for joint programmes would properly foster our activities.

**ESD:** A European Commission programme on defence – would it help?

**Haun:** We need something as a base for cooperation in the future. A more detailed government-to-government agreement should be in place. Our governments know about it and I am still confident that they will do the right thing.

**The interview was conducted by Peter Bossdorf.**

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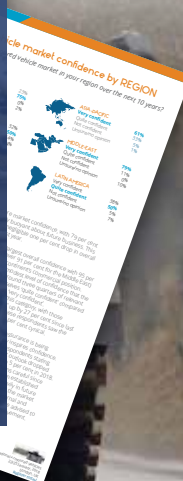
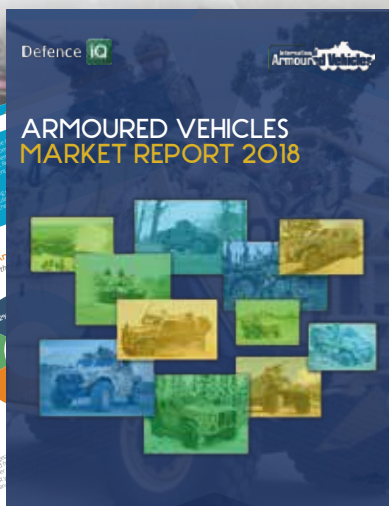
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**An industrial base with high technological capacities and skilled personnel is important for the security of Switzerland. The perceived threat and requirements profile of the security forces (army, police, civil protection and rescue services) have changed constantly over the past 25 years, and not only in Switzerland.**

**T**oday's conflicts often occur among the civilian population. Often it is difficult to uniquely identify the enemy, and the intensity of the battle can change quickly. The Swiss Society of Technology and Armed Forces (STA) points out that the country's security forces must adapt to these threats. This means that they must be properly trained and equipped, and they must have adequate resources to do so.

## Long-Term View

In Switzerland, security and armaments policy must regain political and social importance and, above all, have a long-term orientation. In order for the army to be able to respond appropriately to all threats at all times, it must be able to mobilise quickly and decentrally. This means that there must be a multi-layered reaction system. And this means, above all, that the emergency services must be fully equipped again in order to be ready for action at all times. With the WEA (Further Development of the Army), which is to be implemented shortly, all this should be operational. The new army will still have a numerical strength of 100,000, but it must catch up in terms of operational readiness, training of senior officers and, above all, equipment. Essentially, this means correcting the mistakes of the euphoria after the end of the Cold War and prioritising things that have been pushed into the background. The representatives

## Author

Prior to his retirement **Peter Jenni** worked for several companies as director of communication. Since 2004 he has been responsible for the "Armament & Technology" segment of "Schweizer Soldat". He served in the Swiss Army as an officer of the militia, including positions as unit commander and intelligence officer in a brigade as a lieutenant-colonel.

Photo: NATO



*Swiss infantrymen*

of the Military Department hope to invest CHF5Bn annually over the next four years to fill the biggest gaps. By the end of this four-year period, most of those responsible for dismantling the Swiss Army will have retired.

## The Industrial Base has Suffered Too

The shortage of materials and personnel in recent decades has also caused damage to the domestic defence industry. Government expenditure on the military dropped from 16 percent in 1990 to 7 percent in 2016, and currently a modest 0.7 percent of GNP is being allocated to the military in the budget, which has led to a reduction in staffing and capacity in the respective sector and thus to a loss of know-how. The sustainability and persistence of an army is strengthened by a country's defence industry. For this reason, the STA calls for "sufficient capacities of a domestic defence industry with export capability" to be revived. A broad technology base strengthens the army's resilience. It is difficult to assess future global and regional develop-

ments in the medium and long term, so the army must be flexible enough to respond to a serious threat. Only a competitive Swiss defence industry with a broad technological base can guarantee this flexibility in material terms.

## Important Industrial Base

For a small state such as Switzerland, it is important to have an industrial base capable of supplying its security organisations with all kinds of goods – arms, vehicles, ammunition and communications equipment – and to maintain them, as well as to carry out conservation and value-enhancement programmes. Industry must be able to offer modern technologies at competitive prices. Against this background, the government has formulated procurement rules for the army. The development and maintenance of industrial defence capabilities are the guiding principles of Switzerland's new armaments policy.

The Swiss market itself is comparatively small. Exporting its products is an obvious and vital solution to ensure the survival of our industrial base. In other words, there is



Photo: SWISSMEM

**The Swiss mechanical engineering, electrical engineering and metalworking industry is by far the country's largest industrial employer.**

no domestic security and defence industry without exports. If this industrial sector were to fall by the wayside, this would inevitably lead not only to a loss of know-how and jobs, but would also affect the country's security. Only a domestic defence technology industry can guarantee the army's self-sufficiency in times of crisis. For this reason, the government declared in its "Procurement Strategy of the Federal Council for the VBS (Federal Department for Defence, Civil Defence, and Sport) in March 2010 that competitive aspects of procurement for the military and security sector are secondary if procurement sustainably strengthens Switzerland's industrial base or is indispensable for ensuring security.

## Export

The export of military equipment is a sensitive political issue, not only in Switzerland. The Swiss defence industry should be able

defence sector. It is difficult to draw a dividing line between these industries. It is obvious that no Swiss security and defence technology company can survive solely on the basis of its domestic market. The export of goods and services has long been a survival strategy in this sector. Procurement for the Swiss Armed Forces is not just about turnover, profits and jobs for domestic companies. In the international context, it is also about the very important reputation of the home market.

## Disadvantages and Success Factors

On the international market, Swiss companies suffer from disadvantages such as high labour costs, a strong currency, non-membership in NATO and restrictive export legislation for military products. On the other hand, the strengths of the Swiss defence industry lie in technological mastery, innovation, excellent product quality, punctuality, reliability and a good price/performance ratio.

## Scope of the MEM Industry

With more than 300,000 employees, the Swiss mechanical engineering, electrical engineering and metalworking industry (MEM) is by far the country's largest industrial employer. With an export share of around 30 percent, it contributes significantly to the country's economic success. The association of the MEM industry is called Swissmem and represents the interests of its more than 1,000 members.

Within Swissmem, many member companies work in one or more specialist groups. The SWISS ASD (Aeronautics, Security & Defence Division of Swissmem) division comprises around 60 small and medium-sized companies in the aerospace, security and defence technology sectors. The few larger companies are mainly contractors for complex systems. Medium-sized and small companies manufacture state-of-the-art technological equipment and

modules as well as components and spare parts or provide special services. These are primarily development and production businesses. These companies often offer dual-use products and services that can be used for both civilian and military purposes.

These companies offer among other things:

- Complex systems for air defence operations, armoured vehicles, command and control information systems, simulators
- Mechanical, electrical, electronic or optical modules and equipment such as wing segments, external tanks, cockpit window fittings, gearboxes and transmission systems, galleys, power plant monitoring systems.
- Demanding components and individual parts, such as engine wings and hot gas components
- Services for surface coatings, basic engineering for various services, modern CNC machine tools for demanding tasks.

The ASD industry has a workforce of some 15,000 with an annual turnover of about CHF3.5Bn.

## Certifications

SWISS ASD focuses on five specific areas of activity. Swiss companies must be certified according to EN9100 in order to be a supplier for the international aviation industry. In the past, companies had to be certified by foreign authorities, but ten years ago SWISS ASD set up the necessary organisation and infrastructure, which it now operates together with the official accreditation body of the Federal Administration.

## Offset Transactions

If the Swiss army purchases armaments from abroad, suppliers are obliged to participate directly and indirectly in Swiss industry. In this way, many local companies have been able to access the supply chains of international corporations. The obligation from offsetting transactions is included in the contracts with the supplier. Progress is monitored by Offsetbüro Bern agency, which was founded in 2009 and can extend over a period of several years. This system is important for Swiss industry. SWISS ASD now has a seat on the supervisory board and represents the interests of the local and domestic economy. In other countries there are similar methods of compensation, but under a different name. For example, a company from Switzerland was able to win a major contract for the Bundeswehr with the obligation to assemble the vehicle on site, that is, at a factory in Germany. ■



Photo: SWISSMEM

**Hans Hess, President of Swissmem**

to operate at least as freely as its European competitors, which has been recognised by the government and parliament with the adoption of the regulation on defence equipment. One challenge is that defence technology is not a hermetically sealed industry. For example, aviation, satellite technology, communications and the automotive industry are closely linked to the



# Romanian Procurement Programmes: Wish List versus (Sober) Reality

**Eugene Kogan**

According to the Romanian MoND press release in December 2015, the proposed defence budget for 2016 amounts to 1.5% of the GDP in 2016, plus other [unspecified] expenditures that totalled 1.7% of the GDP. Back in January 2015 President Klaus Iohannis negotiated a cross-party agreement to reach the 2% threshold starting in 2017, and maintain it for the next ten years.

As a result, Romania has increased its defence expenditure to 2% of GDP in 2017, worth RON16.3Bn (€3.6Bn). According to Gabriel Les, former Minister of National Defence, "Under the current budget worth RON16.3Bn about 45% are to be allocated to investments and acquisitions." The figure of 45% should however be taken with a grain of salt since past experience shows that funds allocated for this purpose were not spent properly.

The latter lost both manpower and income, while some of the enterprises declared bankruptcy. In terms of military modernisation almost every piece of equipment, from assault rifles and APCs to air-defence missiles, will need to be replaced. This is indeed a tall order and there is no guarantee that mistakes of the past will not be repeated. It is known that the ability of the MoND to manage an increased acquisition budget is questionable. The ministry has a bad record

a service that requires the most attention because of the Russian intensive military modernisation and militarisation of Crimea in particular, has been strongly affected by these developments. The long-awaited tender to modernise the Navy's British-built Type 22 frigates acquired by Romania from the UK in 2003 came to a halt in 2017. The sum of €180M allocated for both frigates including their overhaul and fitting with modern anti-ship and SAM missiles, new search and fire control radars, electronic warfare suits, etc was insufficient. In late August 2017 it was finally reported that the purchase of four corvettes will be paid in instalments between 2018 and 2024. In addition, Romania's public acquisition rules are not just complicated but also not transparent. Whether or not the government may reform public acquisition regulations remains to be seen.

Therefore, the credibility of the entire government in general and of the MoND staff in particular is on the line. Furthermore, the country's credibility as a NATO ally and its defence are at stake. The words and plans of the MoND officials are good but deeds are better.

Still, as a good start, on 11 May 2017 the Romanian parliament has finally approved a spending programme valued at €9.3Bn for the next decade, 2017-2026, which includes eight major programmes:

- 1 Advanced surface-to-air missile (ASAM) systems that include four missile systems for the Land Forces and three for the Air Force worth €4Bn;
- 2 Integrated weapon systems for short-range air-defence system (SHORAD) and very short (VSHORAD) worth €2.1Bn. In a first stage the acquisition will only target SHORAD components and cost €1.37Bn.
- 3 Mobile anti-ship missile launchers worth €0.2Bn;
- 4 Four multirole corvettes with related equipment such as ship-to-ship missiles,

Photo: NATO



**Address by Klaus Iohannis, President of Romania at the Plenary session of the NATO Parliamentary Assembly in Bucharest in October 2017**

It needs to be remembered that Romania has to overcome a decade of defence underinvestments which requires to modernise the entire military and urgently restructure the state-run defence industry which has been neglected for quite some time.

in managing both major and minor programmes. For instance, a tender for acquisition of 18 light anti-submarine torpedoes was cancelled three times since 2014. The modernisation of a mechanised infantry battalion with Piranha IIIs APCs has taken about a decade to implement.

Furthermore, since 2015, a number of important defence programmes had to be either delayed or reassessed because of bureaucratic errors or political disagreements that dominated the discourse in Romania. For instance, the Romanian Navy,

## Author

**Eugene Kogan** is a defence and security expert based in Tbilisi, Georgia.

ship to air missiles and encrypted ammunition worth €1.6Bn;

- 5 C4I systems with ISTAR integration capabilities worth €0.180Bn;
- 6 Armoured Personnel Carriers (APCs) 8x8 and 4x4 worth €0.370Bn. According to the Press Office of the MoND, during the first stage, 94 out of total 657 vehicles is to be acquired.
- 7 Modernisation of the MLI-84M IFV worth €0.138Bn and
- 8 Long-range Multiple-Launch Rocket Systems (MLRSs) worth €0.69Bn.

Romania's Supreme Council of National Defence (CSAT) has approved the aforementioned programme in August 2017. Further programmes may be approved in the near future, namely the acquisition of attack and transport helicopters, and the recently cancelled contract for purchasing of the Israeli-based Aeronautics Defense Systems' Orbiter 4 UAV. Regarding the acquisition of attack helicopters it is known that Bell Helicopter of the US has signed a MoU with Romanian company IAR Brasov for the potential support of the AH-1Z VIPER attack helicopter. The MoU, announced on 14 November 2016, covers the possible MRO of the AH-1Z should it be procured by the Romanian government. In July 2017 it was reported that Lockheed Martin-owned Sikorsky helicopter manufacturer set its sight on producing S-70 Black Hawk helicopters in Romania, if the army chooses this helicopter model to replace the old helicopter fleet of Puma. Airbus Helicopters is the third contender for the tender.

Photo: Bell



**Based on an MoU with the Romanian company IAR Brasov, Bell offers the AH-1Z VIPER to Romania to replace the old PUMA helicopter fleet.**

The recent change of the government and appointment of a new minister of national defence has delayed an international tender of the aforementioned programmes. The newly appointed minister of national defence has not yet made himself clear. As a result, it remains to be seen when exactly the aforementioned programmes are up for an international tender, negotiated,

signed and ultimately implemented. Still, certain programmes discussed below have been approved by the previous government but not yet implemented.

### Focus on Approved Programmes

CSAT has approved the contract to build 600 8x8 Boxer IFVs, worth about €2Bn in March 2017, while parliamentary approval was given on 11 May. The deal was mentioned for the first time back in November 2016 by then Prime Minister Dacian Cioloș. The deal was signed on the condition that Rheinmetall Defence of Germany construct the vehicles in Romania and that its Romanian partner Uzina Automecanica Moreni (UAM or Moreni Mechanical Plant) share 50 per cent in the new Romanian Military Vehicle Systems (RMVS) company. Under the plan, the new IFVs will replace Romania's TAB vehicles, which are locally built variant of the Soviet-designed BTR-70.

The founding document of the joint venture RMVS for the building of 8x8 APCs was signed at the Romanian Ministry for Economy, Trade, Industry and the Business Environment in June 2017. The agreement foresees transfer of German know-how and development of technology in Romania. In April 2017 it was reported that Romanian army could be taking delivery of new APCs in 2018.



Photo: US Naval Institute

**The modernisation of the Romanian Navy's British-built Type 22 frigates, shown here the REGINA MARIA, is still pending.**





Photo Romanian Navy

### **Romanian Fleet Command building in Constanța on the Black Sea**

The amount of the planned acquisition was not disclosed, but the Romanian Armed Forces is planning to replace about 1,500 such vehicles in the coming years. It is known however that Romania has already replaced an undisclosed number of those vehicles with aforementioned Swiss-built MOWAG Piranha IIIs. Ciolos said back in November 2016 that: "A portion of the funds [how much? is not known] will stay in Romania and allow creating new jobs in the country." Ciolos also insisted at the time that Romania would pursue similar deals with other foreign manufacturers, including upgrading its navy. Besides the 8x8 APCs, the Army would need 4x4 APCs that may also be manufactured by the RMVS. Romania filed request to purchase Patriot ASAM systems as part of its aforementioned procurement programme back in April 2017. According to the Defense Security Co-operation Agency (DSCA), the State Department has cleared the sale in July. It needs to be remembered however that all announcements from DSCA are subject to congressional approval and must pass final negotiations with the potential buyer. The country's Parliament and CSAT have

also approved purchase of additional 20 F-16 fighters in February 2017. According to the Press Office of the MoND, the number of aircraft is likely to increase to 36 and the aircraft would be procured after modernisation. Les told Parliament on 13 February 2017 that: "Romania intends to buy these fighters from the United States. All further details will be announced [in due course]". No further details were announced as late as September 2017. In August 2017 it was reported that the MoND will purchase four multipurpose corvettes worth €1.6Bn in the upcoming seven years. However, the corvettes are to be built and equipped in not yet specified Romanian shipbuilding facility. And the allotted funds will be paid between 2018 and 2024. Despite the announcement no new tender was launched as late as September 2017.

### **But Impossible to Implement in 2017**

In an interview on a wide-range of topics conducted in March 2017, Les said that military hardware supplies for the Romanian Army's major equipping projects are "almost impossible" in 2017, underscor-

ing that he intends to sign this year all the relevant contacts that are likely to be implemented starting from 2019 onward. Les' explanation is based on legal ground. According to Les, "the legislation is very clear: previous to initiating the proceedings one must first get Parliament endorsement through the joint committees on defence, public order and national security. Parliament should endorse every deal that exceeds cost of €100M. This means that the Government commit to a multi-annual financing and multi-annual contracts. Therefore, it is logical to seek Parliamentary endorsement and not to release the government decision before the endorsement is in place." As was above-mentioned Parliament approved programmes on 11 May 2017 and CSAT approved them in August 2017 but nothing yet has changed regarding the procurement programmes. With regard to the question on the Damen Shipyard in Galati that was supposed to build multipurpose corvettes Les said: "Our intention is not to choose a shipyard or to come up with a suggestion like "build at this or that facility". Any global operator, preferably NATO and EU, can come to (...) forge associations with companies in Romania, to integrate on the product we need in a Romania-based shipyard. We also have what comes from offset compensation. Offset operations should bring Romania top benefits." What kind of top benefits Les did not elaborate on and since Les is no longer Minister of National Defence there is no sense to speculate on his statement. To conclude, the geostrategic position of Romania as one of the NATO littoral states around the Black Sea region has worsened because of Russia's intensive military build-up and the Russian annexation and militarisation of Crimea in particular. From Crimea Russia is capable to bully and intimidate three NATO member states located around the Black Sea region (namely, Bulgaria, Romania and Turkey). Furthermore, the long-belated procurement programmes have put the local defence industry and the armed forces under immense stress since the first one is in a bad operational shape, while the latter lacks modern equipment. Even though a new Romanian government of Prime Minister Mihai Tudose was installed in late June 2017 it remains to be seen how quickly the aforementioned programmes are likely to be negotiated, signed and implemented. The Romanian military modernisation wish list looks very promising. However, sobering reality may not match the expectations and produce needed results. ■



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## Eurofighter Companies to Make an Offer to Belgium

(ck) Four companies from the Eurofighter nations have made a formal offer to the Belgian government: If Eurofighter TYPHOON is selected to replace Belgium's existing F-16 fleet, those companies will support the



Photo: Belgium Innovation Centres

establishment of two National Innovation Centres for Belgium, one in Flanders and one in Wallonia. The Eurofighter partner companies - BAE Systems, Airbus Defence & Space and Leonardo, along with missile systems business MBDA - signed the formal endorsements to support the development of these centres. BAE Systems is supporting the UK Government in offering the Eurofighter TYPHOON as a multi-role combat aircraft to replace the Belgian fleet of 54 F-16 aircraft. The agreement was signed during a visit of the UK's Minister for Defence to Brussels. The innovation centres are part of the Eurofighter industrial commitment to develop the Belgian defence and aerospace industry, and would focus on advanced manufacturing and additive layer manufacture, bringing around 1,800 new jobs into Belgium and building on some 40,000 jobs sustained by the Eurofighter companies in Belgium already. Equally importantly, the Eurofighter proposal would give Belgium direct input into decisions and developments affecting Europe's biggest-ever defence project, and would sustain high-tech jobs and capabilities within Belgium.

## New CEO for Airbus Americas

Photo: Airbus



(ck) Aerospace industry veteran Jeffrey Knittel, formerly both Chief Executive of C2 Aviation Capital and President of CIT Transportation Finance, will join Airbus early next year, taking the reins of the company's business in the Americas and succeeding Barry Eccleston, who is retiring.

He will join the company at its Americas headquarters in Herndon, Virginia, early in 2018, as Airbus Americas Chairman and CEO. He will be responsible for the Airbus commercial aircraft business throughout the Americas and for the company's helicopters and space and defence businesses in North America. With more than 5,000 employees, Airbus Americas is the US-based operation of Airbus, encompassing the regional corporate offices, engineering centres, training facilities, MROs and spare parts distribution centres, as well as manufacturing facilities producing commercial aircraft, helicopters and satellites.

## AFCEA Hybrid Combat Conference

(gwh) At the AFCEA Europe TechNet Europe conference which took place 9-11 October 2017 in Stockholm, participants discussed the relationship between cyber and hybrid military threats. The hybrid military threat in Europe is related to developments in cyber technology. Cyber can both favour hybrid warlike activities and bolster situational awareness and swift reaction. Defending a modern society, which depends on social



Photo: AFCEA Europe

media and critical infrastructure, requires a well-trained cyber defence force. The event was supported by the Swedish Minister of Defence Peter Hultqvist who opened the conference by sharing his experience of how blackmail, insinuation and fake news increase political tension. He said that immediate, well-informed reaction is key to winning this battle. Most Nordic and Baltic countries have a comprehensive defence concept which links military capabilities designed for wartime operations with civilian cyber defence, law enforcement and the cyber security industry to ward off criminal or state-sponsored attacks and maintain or regain information sovereignty. Featured speakers included John A. Zangardi, acting US Department of Defense Chief Information Officer; Udo Helmbrecht, Executive Director of the EU Agency for Network and Information Security; and Kevin Scheid, General Manager of the NATO Commu-

nications and Information Agency, who, together with others, brought insights into various activities and challenges. In conjunction with the conference, Europe's first capture-the-flag-style AFCEA hack-athon took place, in which several international teams competed over two and half days.

## ESSOR Waveforms for Bittium Radios

(ck) Finnish company Bittium is part of Operational Capability 1 (OC1) phase that continues the ESSOR (European Secure Software-defined Radio) programme. During the OC1 phase, the operational capabilities of ESSOR High Data Rate Waveform (HDR WF), meant for joint operations between defence forces of different countries, will be enhanced. The contract partners for the OC1 phase are an industry consortium on the one side (Bittium, Indra, Leonardo, Radmor, and Thales) and on the other side OCCAR (Organisation Conjointe de Coopération en matière d'Armement) representing the ESSOR participant countries. The ESSOR HDR WF is also part of Bittium's TOUGH SDR handheld and vehicular radios. These radios, together with the waveform, enable broadband data transfer, joint operations, and direct communication between defence forces of different countries in international operations. With the development of the operational capabilities of the ESSOR HDR WF during the OC 1 phase the new functionalities will be available also for Bittium radios. Bittium radios can flexibly use the most appropriate waveform, offering the best fit considering the conditions and the mission, says the company. The wide range of frequency bands improves combat usability, and using several waveforms, often simultaneously, improves compatibility and enables operations at different levels and on different missions. The duration of the ESSOR OC1 phase is 45 months and the value of the contract is around Euros50M. The value of the contract is to be divided between the five participating companies.

## Naval Surveillance for Vietnam

(ck) Controp Precision Technologies Ltd., a company specialising in the field of electro-optics and IR defence and homeland security solutions, will sell a significant number of maritime EO/IR payloads to the Vietnamese Navy. This is a follow-on order to an order placed three years ago. CONTROP's iSea-40HD will be used for surveillance. Delivery will commence in 2018. The iSea-40HD Maritime EO/IR Payload, weighing 29kg, has a thermal camera with continuous

optical zoom, a full HD day camera, four gimbals for high stabilisation, and an optional laser pointer and laser range finder. The iSea Family of maritime EO/IR payloads consists of a variety of payloads in different sizes for different maritime missions. These camera payloads are designed for Coast Guard and Naval surveillance. All of the CONTROP iSea day/night camera payloads have an interface to NMEA0183 radars for slewing the EO/IR camera to the detected target. CONTROP specialises in the development and production of Electro-Optical and Precision Motion Control Systems for Surveillance, Defence and Homeland Security. The company's main product lines include high performance stabilised observation payloads used for day/night surveillance; automatic intruder detection systems for coastal and border surveillance, port/harbour security, the security of sensitive sites and ground troops security; and thermal imaging cameras with high performance optics and state-of-the-art image enhancement features.

### Indonesia Selects NASAMS

(ck) Kongsberg has signed a contract worth US\$77M to supply a NASAMS air defence system to the Ministry of Defence of Indonesia. The contract comprises delivery of a complete NASAMS system with com-



Photo: Kongsberg

mand posts, radars, launchers, radios and integration, and training and logistics support. AMRAAM missiles will be provided in a separate government-to-government agreement between Indonesia and the US. NASAMS defends high-value civilian and military assets on the ground against threats from the air. The flexibility and modularity of NASAMS makes it a world leading solution to combat modern airborne threats, according to the company, as well as having the ability to integrate with a variety of sensors and weapons. Several nations have chosen NASAMS, including Norway, Finland, The Netherlands, USA, Spain, Oman and now Indonesia.

"We are very pleased that Indonesia, as the first nation in its region, chooses NASAMS for its homeland defence," said Eirik Lie, President of Kongsberg Defence & Aerospace.

### Airborne EW Training from France

(ck) Défense Conseil International (DCI) has been responsible for the "international transfer of French military know-how" on behalf of the French MOD for some 45 years, and has recently developed a training course to improve Electronic Warfare (EW) protection of helicopters and, more generally, of slow airborne platforms such as combat helicopters and tactical transport aircraft. Provided for the first time to Belgian and Austrian officers, this training has been developed in agreement with military staff to meet their specific requirements. Jean-Michel Palagos, Chairman and CEO of DCI, said: "Owing to the rapid changes occurring in electronic warfare threats, equipment and technologies, knowledge must constantly be updated. We are very proud to have developed this electronic warfare training, an area in which the French armed forces excel, for partner countries such as Austria and Belgium." The one-week course from DCI improves detection of threats and their identification, and appropriate responses via acoustic, infrared and electromagnetic protective systems. Instructional software illustrates operational missions in an EW environment. To develop the course, DCI worked with a number of experts from defence, industry and research, thus covering technological trends currently emerging in order to integrate threats that are hard to detect such as physically small devices in urban areas.

### IAI Wins Airbus D&S Contract

(ck) Israel Aerospace Industries (IAI) has won a contract from Airbus Defence & Space to supply 16 ELM-2022A maritime patrol radars to Canada. Canada is purchasing 16 C295MSA aircraft from Airbus



Photo: IAI

Defence, equipped with sensor systems to support Canada's Search and Rescue (SAR) operations. The key surveillance sensor to be installed on board the C295MSA is the ELM-2022 radar system developed by ELTA Systems Ltd., a subsidiary of IAI. The ELM-2022 is multi-mode radar for detection, localisation, classification, and tracking of targets over water and land in all weather conditions, day and night. It will assist in Canadian SAR missions. The ELM-2022 radar provides 360° azimuth and sector mode operation from an antenna located under the fuselage. ELM-2022 provides a cost-effective solution for missions in the maritime theatre, such as maritime surveillance and EEZ patrol, maritime law enforcement and fishery patrol, Air-to-Air surveillance, Air-to-Ground (SAR and GMTI) intelligence, and reconnaissance and surveillance (ISR).

## Preview

**ESD Special Issue**  
**"International Armoured Vehicles"**  
**Publication Date: 22 January 2018**

- Mobility vs. Protection
- Remotely Controlled Weapon Stations
- Armoured Ambulances
- East European AFV Capabilities & Programmes
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missions. Modular hardware, flexible interfaces and antenna design allow ELM-2022 radars to be installed on a wide range of fixed- and rotary-wing, manned and unmanned aircraft. To date, more than 250 ELM-2022 Maritime Patrol Radars have been sold to customers in more than 25 countries.

## IAI Supplies Air Defence Radar System to European Customer

(ck) Israel Aerospace Industries (IAI) has also supplied an advanced 3D air surveillance and defence radar system manufactured by ELTA Systems to a European NATO country. The contract includes several mobile 3D Air Defence Radars, integrated within the national and NATO air and missile defence capability. The mobile radar provides close-to-the-force air defence support while detecting a variety of airborne platforms, including low altitude high-speed fighter aircraft, hovering helicopters, UAVs and low speed ultra-light aircraft. The radar provides accurate range, azimuth and elevation measurements for each target, differentiating between fixed-wing aircraft and helicopters and providing coherent data for associated weapon systems.

## Kelvin Hughes SharpEye Radar for Hyundai Heavy Industries (HHI)

(ck) The Philippine Navy Frigate Acquisition Project (FAP) contracted Hyundai Heavy Industries (HHI) in October 2016 to build two 2,600-ton frigates for handover starting in 2020. For this project, Kelvin Hughes will supply HHI with two SharpEye navigation radars, together with multifunction bridge radar displays. HHI also contracted Kelvin Hughes to supply the Integrated Navigation Bridge System (INBS) for the Royal New Zealand Navy (RNZN) Maritime Sustainment Capability (MSC) Vessel. The new naval vessels for the Philippine Navy will have enhanced survivability, seakeeping and manoeuvring capability, will be operable in up to Sea State 5 and will also feature stealth characteristics. The vessels will have a low Radar Cross Section (RCS) design because of the upmast radar sensor carbon fibre housing and antenna-turning unit. The reduced probability of intercept by ESM equipment, a characteristic deriving from the SharpEye's 300W low power output, complies with requirements of the HHI HDF-3000 frigate design. SharpEye radar systems deliver a navigation and situational awareness capability - through transmission of a low-power pulse sequence enabling short, medium and long-range radar returns to be detected simultaneously - that

can provide early warning not only of the presence of larger objects but also small targets and asymmetric threats with a low RCS such as RHIBs, small wooden boats, USVs and jet skis. Operating in I and E/F Band, the new radar will enable the Philippine Navy frigates to distinguish between targets and environmental clutter even in adverse weather conditions.

## Indra and Lockheed Martin

(ck) Spanish technology group Indra and Lockheed Martin from the USA have signed an agreement to expand their collaboration in the development of a state-of-the-art S-band active electronically scanned array (AESA) radar for the Spanish Navy's F-110 programme, and to provide a framework for the commercialisation of this solid-state radar for other air defence capabilities worldwide. The F-110 frigate is the Spanish Navy's future multi-mission surface vessel, which is due to enter into service in the next decade. As production is expected to begin in 2018, the first F-110 frigate, equipped with the first Aegis weapon system to integrate the new solid-state S-band radar, is scheduled to be operational in 2023.

## MQ-9 PREDATOR Sub-Surface Detection

(CK) An MQ-9 PREDATOR B Remotely Piloted Aircraft (RPA) successfully detected and tracked submerged devices during a US Naval exercise over the Southern California Off-shore Range west of San Clemente Island in October 2017. During the exercise, US Navy helicopters deployed sonobuoys from which acoustic data was used to track underwater targets: the data was transmitted to the MQ-9 and processed onboard, then relayed to the MQ-9's Ground Control Station (GCS) several hundred miles away from the target area. The exercise successfully paired sonobuoy receiver, supplied by Ultra Electronics, and data processing technology, provided by General Dynamics Mission Systems-Canada, onboard the MQ-9: a track solution was calculated and transmitted from the aircraft to the Ground Control Station (GCS) via SATCOM. This technology might provide long-range patrol capabilities to the MQ-9 and give the US Navy new maritime patrol capabilities that include anti-submarine warfare. The MQ-9 was also equipped with GA-ASI's LYNX Radar. The LYNX radar operated in its Maritime Wide-Area Search (MWAS) mode, which detects maritime surface targets over a wide area with Inverse Synthetic Aperture Radar (ISAR) for target classification. The aircraft's Electro-Optical/Infrared (EO/IR), high-definition Full-motion Video

(FMV) camera supports the identification of surface vessels. These sensor contacts are correlated with the Automatic Identification System (AIS) to verify target identity. General Atomics Aeronautical Systems (GA-ASI) is a manufacturer of Remotely Piloted Aircraft (RPA) systems, radars, and electro-optic and related mission systems, and managed the MQ-9 for the exercise.

## Lithuania to Acquire NASAMS

(ck) Norwegian NASAMS manufacturer Kongsberg has signed a contract worth €109M with the Ministry of National Defence of the Republic of Lithuania to supply the NASAMS air defence system. The contract includes two air defence batteries



Photo: Kongsberg

and a logistical maintenance package, as well as operator and maintainer training from Kongsberg. Upon the completion of the project, Lithuania will have acquired a complete and integrated medium range air defence capability. The system is new and unused except for the launchers which are being bought after being used by the Norwegian Armed Forces and which will be restored to the manufacturer's specifications. On 21 October 2016 Lithuania announced an agreement with the Norwegian Ministry of Defence for the procurement of NASAMS components, and by 2021 all the parts of the systems are expected to have been delivered to Lithuania. By that time all personnel are expected to be trained and all the components integrated to make up a system capable of carrying out air defence tasks: monitoring and controlling airspace, alerting ground units to any air threat, and destroying targets, if necessary.

## Kongsberg and TKMS Form Joint Venture

(ck) thyssenkrupp Marine Systems (TKMS), its subsidiary Atlas Elektronik and Kongsberg have formed a 50:50 joint venture to build command and weapon deployment systems for conventional submarines, with the goal of establishing the "reference" systems in these areas. The company, named "KTA Naval Systems" becomes the exclusive supplier of C2 and weapon deploy-

ment systems for TKMS. In June 2017, the German and Norwegian Governments reached a bilateral agreement for the joint development, procurement, operation and maintenance of submarines and naval ordnance. Following the invitation to submit a proposal, TKMS and its partners are developing an offer to supply four submarines to the Norwegian Navy and two submarines to the German Navy. A joint contract for the new Common Design Class 212 submarines („CD“) is currently planned to be signed in 2019. The submarines might be delivered from mid-2020 onwards. The company will supply the Command and Weapon Control systems for the new 212-CD class as well as for future TKMS submarines as part of a joint procurement programme of the German and Norwegian Navies. Such a system enables the submarine crew to fully capture their environment, identify objects and analyse the situation in detail. It brings all the information together to provide fast and reliable situational awareness. The cooperation between the German and Norwegian Navy will reduce maintenance, training and logistical costs. The future submarines will be based on Class 212A and specially tailored to the requirements of both countries: Class 212CD combines low 212A Class signatures with greater range, speed and endurance to support worldwide operations.

### Pre-Flight Simulation of Radar Threats

(ck) Leonardo has signed a contract with the UK Ministry of Defence to provide equipment to simulate radar threats to the RAF's new A400M transport aircraft prior to take-off. By simulating threat radars while the aircraft is still on the ground, commanders will be able to ensure that the complex defensive aids suite fitted to the A400M will function correctly during flight and can, therefore, make an evidence-based decision on whether or not to commit to a mission in hostile territory. The threat simulation equipment uses special Radio-Frequency (RF)-emitting 'hoods' which will cover the A400M's sensors while the aircraft is still on the ground, stimulating its RF sensors with real radar energy. The UKMoD has procured one full system with through-life support, with additional orders anticipated as the RAF's fleet size grows. The kit ensures that the A400M's defensive aids suite is working properly on a mission-by-mission basis, providing 'capability assurance' throughout the operational life of the A400M. Most defensive aids suites, including that on the A400M, come with 'built-in test equipment' (BITE), which signals to the

pilot that the equipment is working as designed. However, throughout the life of an aircraft problems can emerge undetected as the aircraft is maintained and operated - for instance RF antenna head sensitivity can degrade, or they can be mistakenly wired into the wrong aircraft quadrant - and these type of issues cannot be picked up by BITE. This leaves a gap where the equipment is technically operational, but could still endanger the crew as the installation is not operationally effective and could provide limited or incorrect information to the pilot. Leonardo's 'capability assurance' equipment and training closes this gap. This UK-designed and -built capability assurance solution is already in service with the UK's TYPHOON, TORNADO, C130J, WILDCAT, MERLIN and CHINOOK fleets, making the A400M the 7th UK platform to benefit from using the kit.

### MBDA VP DiCarlo to lead Strategic Business Development



Photo: MBDA

(ck) Nancy DiCarlo has joined MBDA as Vice President, Strategic Business Development where she will be responsible for the planning and execution of long-term business development strategies for MBDA. Ms. DiCarlo recently left the US Missile Defence Agency (MDA), where she served as the Director of International Affairs. She was a key US government senior executive with personal engagement in a wide array of negotiations and transactions in Europe, the Middle East and Asia. In addition, DiCarlo worked with leading US and international defence companies. She has more than 30 years of leadership experience in the Department of Defense, in international affairs, strategic planning and acquisition programme management, and she also served ten years as a member of the Department of Defense Senior Executive Service, most recently as the Director, International Affairs in the United States MDA. Ms. DiCarlo also served as the Chair, NATO Ballistic Missile Defence Committee and the NATO Missile Defence Project Group, leading 28 NATO nations in the oversight and management of NATO's Ballistic Missile Defence Programme. She holds a BA in Management from the University of Notre Dame of Maryland, and a MSc in National Resource Strategies from the National Defense University, Industrial College of the Armed Forces.

### MBDA and Safran in Australia

(ck) MBDA and Safran Electronics & Defence are partnering to support the development of Australian sovereign industrial and strategic capabilities. Safran Electronics & Defence is a manufacturer of optronics, avionics, electronics and software for both civil and defence applications. The company's products are deployed on more than 500 ships, 7,000 armoured vehicles and 10,000 aircraft worldwide. Safran Electronics & Defence Australasia, a Safran subsidiary that has been operational for over twenty years in Australia, will be delivering optronic and navigation equipment to Australia's armed forces. MBDA and Safran are offering the MMP multi-purpose guided missile system to the Australian army. The MMP (Missile Moyenne Portée) was developed by MBDA for dismounted applications and for integration onto armoured fighting vehicles. The system has been ordered by France for its infantry and combat reconnaissance vehicles as part of the SCORPION programme. It will be fitted onto the French army's new JAGUAR combat vehicles along with Safran Electronics & Defence's PASEO advanced sighting systems. Qualification of MMP was completed in July 2017, and deliveries have now started. With the MMP missile system Safran is responsible for critical optronic elements such as dismounted firing posts, sensors, command system and missile seekers. Safran's PASEO sighting system has also been ordered by France and integrated onto the JAGUAR combat reconnaissance vehicles.

### New Helicopter Pilot Training Facility in Slovakia

(sb) Slovak company MSM GROUP, in cooperation with the Czech company European Air Services, will run a new helicopter pilot training centre at the international airport in Košice, Slovakia. The Slovak Training Academy (STA) will be operational from December 2017. Students from all over the world will attend this unique centre for supplementary training of helicopter pilots, which offers 15 helicopters, including four American Sikorsky UH-60 BLACK HAWKS, as well as a flight simulator. "Training will take place in the sense of European legislation. We are glad that we can provide theoretical courses for the STA project, and due to it, we can continue the long tradition of training of aviation personnel in Košice," said Stanislav Szabo, Dean of the Faculty of Aeronautics of the Technical University of Košice, which cooperates on the project. Although the Ministry of Defence of the Slovak Republic is not participating in this



project, Juraj Lauš, STA Director, plans to offer the Slovak Armed Forces the possibility to use the STA: Slovak soldiers have so far been trained in US Armed Forces training facilities: „We will be glad if the Ministry of Defence accepts our offer. It is a great project, also appreciated by our partners abroad. We are proud to be the only civilian operator of Sikorsky UH-60 BLACK HAWK helicopters in Europe,” Lauš said. Construction of the STA, including the purchase of helicopters, cost several tens of millions of euros and was realized without any State aid. The international airport in Košice also welcomed the founding of the STA. „Several regions strove to gain this project, so we are very pleased that our infrastructure will also be used for such purposes. It is another piece of the mosaic of developing Košice as a modern metropolis of aviation in eastern Slovakia,” commented Michael Tmej, Executive Director and Chairman of the Board of Directors of Letisko Košice.

## MyDefence Partners with Boeing

(ck) Danish counter-UAV specialist company MyDefence has signed an agreement with Boeing Defense, Space & Security (BDS) under which MyDefence will conduct and support research and development activities on future defence projects. MyDefence has expertise in developing counter-UAV technologies for mitigating the threat of small commercial unmanned vehicles. Boeing intends to draw on this expertise within the fields of aerospace and advanced research and development. BDS has already previously partnered with other Danish companies, including SkyWatch, which develops UAV systems.

## Naval Group Announces New EVP

Photo: Naval Group



(ck) Naval Group has appointed Alain Guillou as Executive Vice President for International Development. His mission will be to boost internationalisation in terms of business development. Guillou, who is 58, spent most of his career in positions with an operational dimension and linked to social-change management, industrial management and international cooperation. At a time when discussions on a possible industrial alliance with Fincantieri have been initiated and Naval Group's internationalisation has become a strategic priority to counter the competition of new entrants, Hervé Guillou, PDG of Naval Group,

has chosen to form a small and tightly-knit team to boost development of the group. Alain Guillou underlines that „The aim is to transform Naval Group into a profitable international group to offer to our customers the ships and equipment able to ensure sovereignty and possessing technological and operational superiority.”

## Navantia and BIW to Collaborate on FFG(x)

(ck) Navantia and General Dynamics Bath Iron Works (BIW) have signed an agreement to collaborate on the US Navy's next-generation FFG(x) Guided Missile Frigate. The Spanish and the US shipyards will collaborate on designs evolved from Navan-

Photo: Navantia



tia's family of AEGIS Frigates, which include the Spanish F-100, the Norwegian F-310 and the Australian HOBART class ships. The objective of this agreement is to be positioned to bid for an initial US Navy procurement plan of 20 FFG(x) frigates. The detailed design and construction award is anticipated to occur in 2020. The key attribute of this Spanish-US partnership is the ability of Navantia to provide smaller warships but with the same capabilities. „Bath Iron Works evaluated many US and foreign designs suited to the FFG(x) requirement and found that the family of frigates designed and built by Navantia is an ideal match,” said Dirk Lesko, President of Bath Iron Works.

## Rafael Opens in Australia

(ck) Rafael Advanced Defense Systems has opened a company in Australia as part of an expansion of the company's operations in-country and of Rafael's marketing efforts towards armaments programmes of the Australian armed forces on both land and sea. The new Melbourne-based company will be managed by an Israeli and local team. In addition, the company will be engaged in deepening the inter-industrial relationship between Rafael and Australian companies to create joint ventures and joint production and marketing of systems. Several Rafael systems have been in use for years by the Australian Army, including

remote-controlled weapon stations, naval systems, aerial attack guidance systems, and more. Rafael has also signed agreements with Australia's Bialloy for the supply of metals for the manufacture of military systems and with Varley for joint production of SPIKE missiles.

## TSA Certification for Rohde & Schwarz

(ck) Rohde & Schwarz, a company manufacturing test and measurement, communications, and broadcast equipment, has received TSA Advanced Imaging Technology (AIT) detection certification for its R&S QPS200 millimetric wave technology. TSA certification validates that the R&S QPS200 meets the TSA's aviation security detection requirements. The R&S QPS200 security scanner uses millimetric wave radio frequency technology to screen passengers automatically for concealed threats while protecting passengers' privacy. This is the first Rohde & Schwarz AIT system to achieve TSA detection certification: it has achieved certification by the European Civil Aviation Conference (ECAC) and is in use at airports across Europe. Millimetric wave technology is based on the company's expertise in developing test and measurement equipment. The QPS system requires only a few milliseconds to scan passengers, which can speed up checkpoint-screening operations. Privacy is protected by the use of a generic outline of a person to indicate to operators the location of an alarm. Scanning is easy as individuals stand in front of the technology with their arms held slightly away from the body and the system detects potentially dangerous objects on the body. The QPS200 millimetre wave technology produces no more transmission power than a mobile phone.

## Alkassar to Depart Rohde & Schwarz Cybersecurity

(ck) Ammar Alkassar, CEO of Rohde & Schwarz Cybersecurity GmbH, will leave the company at the end of the year at his own request. Alkassar had taken over his tasks within the technology group as part of the acquisition of Sirrix AG by Rohde & Schwarz in 2015; Alkassar was the person who originally founded Sirrix. As part of the integration of various corporate acquisitions within Rohde & Schwarz Cybersecurity GmbH the management will be reorganised. The second executive director and CFO, with equal rights at the special provider of IT security, Reik Hesselbarth, will manage the company alone until a new CEO is appointed.

## Andreas Schwer New SAMI CEO

Photo: SAMI



(sb) Saudi Arabian Military Industries (SAMI) has formed its Board of Directors, chaired by H.E. Ahmed Al-Khateeb. The Board has permanent status and will play an active role in overseeing

SAMI's growth. SAMI's Board members are HH Prince Faisal bin Farhan Al-Saud, HE Eng. Khalid Al-Falih, H.E. Dr. Ghassan Al-Sulaiman, Dr. Ghassan Al-Shibl, Mr. Abdulaziz Al-Sowailim and 3 defence industry experts who will join the board at a later stage. SAMI has signed MoU agreements with defence companies including Boeing, Lockheed Martin, Raytheon and General Dynamics as well as Rosobornexport to support the development of its four business units: Air Systems, Land Systems, Weapons and Missiles and Defense Electronics. SAMI has appointed Dr. Andreas Schwer as its Chief Executive Officer. Schwer brings industry experience and an understanding of managing international defence and aerospace companies. Schwer will be responsible for the management of SAMI's operational business, focussing on the achievement of key milestones as defined by SAMI's Board-approved business strategy. His priorities include the selection of a senior management team, drawing from accomplished professionals, taking the aforementioned MOUs into full partnership agreements, and seeking new partnerships. Prior to joining SAMI Schwer was President of Rheinmetall International and CEO of its Combat Systems Division, with more than 6000 employees and US\$1.5Bn revenues. He will start working as SAMI's CEO at the end of 2017. The Saudi Arabian Military Industries (SAMI) company is a new national military industries company that will provide a platform to deliver military products and services. SAMI's mission is to develop cutting-edge technology and deliver integrated solutions to drive the Kingdom of Saudi Arabia's military industry forward and keep the Kingdom and its allies safe. SAMI has three main goals: to increase the local content of military products and services; to invest in strategic, profitable areas; and to ensure that the military industries contribute to the wider economy. SAMI will manufacture products and provide services across four business units: Air Systems, which includes maintenance of fixed-wing aircraft as well as manufacturing of unmanned

air vehicles; Land Systems, which includes manufacturing military vehicles; Weapons & Missiles - including ammunition -; and Defence Electronics, which includes radars and sensors, communication systems and electronic warfare. SAMI is wholly owned by the Kingdom of Saudi Arabia's Public Investment Fund (PIF), and will be a major contributor to achieving the goals set in Vision 2030, which states that 50% of Saudi Arabia's military procurement spending will be domestic.

## Naval Forces on a Global Scale

(jh) As the only yearbook on global developments in the naval arena Conrad Waters' Seaforth World Naval Review is now firmly established as an authoritative but unbiased source of information. The book combines regional surveys with expert assessments of new naval units whereby also considering other elements of relevance to modern naval forces, such as aircraft, weapons, sensors, etc. Apart from an introduction and survey the new 2018 edition's contents are organised according to „World Fleet Reviews“, „Significant Ships“ and „Technological Reviews.“ Features of this edition include an analysis of the Republic of Korea Navy and the response to its aggressive northern neighbour. The biennial review of the British Royal Navy assesses whether 2017 lived up to the political „spin“ as the „Year of the Navy“. Be-



sides, there are geographical analyses of the maritime situation in North and South America, Asia and the Pacific, the Indian Ocean and Africa, as well as Europe and the Russian Federation. Significant Ships includes the USN's ARLEIGH BURKE Class destroyers, the Class F125 frigates of the German Navy, and the Royal New Zealand Navy's OTAGO Class OPVs. For anyone with an interest in contemporary naval affairs Seaforth World Naval Review 2018 offers highly qualified and distinguished reading. Conrad Waters: Seaforth World Naval Review 2018; Seaforth Publishing, Barnsley,

United Kingdom 2017, 192 pages, £ 35.00; ISBN 978-1-5267-2009-2 (Hardback), ISBN 978-1-5267-2010-8 (Kindle), ISBN 978-1-5267-2011-5 (ePub)

## Integrated Telekom Defence and Security Centre

(ck) Deutsche Telekom Security has opened its Integrated Cyber Defence and Security Operation Centre (SOC) in Bonn. Deutsche

Photo: Deutsche Telekom



Telekom has combined part of its cybercapacities in this centre and monitors the IT systems of Deutsche Telekom and its customers around the clock from this, the master SOC and other national and international locations. By analysing the events with more than one billion safety-relevant events from 3,000 data sources every day, the centre detects irregularities (attack vectors) and initiates countermeasures. With this, Europe's largest cyber defence centre, Deutsche Telekom ensures cyber security for its own operations and - as a service - for more than 30 DAX and medium-sized companies. Only an entire network of IT systems, authorities and users can optimise cyber security, and with the German Federal Office for Information Security (BSI), the German Armed Forces Cyber Command and the Fraunhofer Institute and the university close by in the former German capital city of Bonn the topography offers a promising environment for the SOC.

## EU SECRET for SINA

(sb) Following NATO, the EU has now also approved the SINA Workstation H crypto client for "SECRET UE/EU SECRET" classification. This makes German company secure the only German manufacturer to meet NATO and EU requirements for IPsec solutions to this high classification level. SINA Workstation H has been developed for users with high protection requirements: it offers IPsec-protected transfer of data across



any IP networks - including those which are not secure – as a counterpart to SINA Box H, which has been approved for EU SECRET for some time. It offers multi-session capacity: for example, with SINA Workstation H, open data and classified data up to SECRET can be processed in parallel sessions, and stored locally with cryptographic separation. This feature is advantageous for use in the EU environment in particular, as users often need to process diverse classified information from a range of networks, and SINA Workstation H enables them to process this information on a single device, instead of – as previously – having to switch between several workstations. This is where the use of SINA, in addition to security advantages, also offers potential savings. SINA networks can be accessed using wireless or wired media. Professional applications used via commercial Satcom IP services such as BGAN require the cryptography equipment used to meet significant technical specifications. Tests performed by the German armed forces found that SINA Workstation supports applications such as video conferences, even where double-hop satellite connections are used.

## Hensoldt to Cooperate with Huneed

(ck) Thousands of Korean aircraft, ships and air defence systems are to be upgraded from their current IFF Mode-4 to the new Mode-5 IFF standard. Modernisation will run until mid-2020 for all US and NATO

cooperate in future in the local (Korean) manufacture and integration of Mode-5-enabled Friend-Foe Detection (IFF) systems. Hensoldt and Huneed have recently completed the "localization" (or in Indian usage "indigenisation") of the LTR-400 IFF transponder: Huneed has demonstrated that it can manufacture and integrate transponders adapted to the military requirements in South Korea. IFF systems enable the identification of ships and aircraft by automatically transmitting interrogation signals, which are answered by transponders of friendly units; systems can distinguish friendly from enemy troops. In contrast to the previous Mode-4, Mode-5 IFF uses state-of-the-art encryption techniques to avoid signal manipulation. Hensoldt has significant experience with IFF systems, in June 2017 being awarded, together with Leonardo, a contract worth some €300M to upgrade the IFF systems of 450 aircraft, ships and GBAD systems of the British Armed Forces to Mode-5 standard.



Photo: Hensoldt

Alliance troops, after which only Mode-5 equipment can be deployed on joint missions. To this end, sensor manufacturer Hensoldt is strengthening its relations with the Korean defence through cooperation with Korean defence group Huneed Technologies. The two companies intend to

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	CALIBER		MAGAZINE CAPACITY	FRAME	BARREL LENGTH (MM)	LENGTH OF WEAPON WITH STOCK FOLDED/UNFOLDED, RETRACTED -EXTENDED (MM)	HEIGHT WITHOUT MAGAZINE (MM)	WIDTH OF WEAPON WITH STOCK FOLDED/ UNFOLDED (MM)	WEIGHT WITHOUT MAGAZINE (G)
CZ BREN 2	8"	5.56x45 mm NATO	30	ALUMINIUM	207	505/684-733 ± 10	202 ± 5	80/104 ± 5	2891 ± 50
CZ BREN 2	11"	5.56x45 mm NATO	30	ALUMINIUM	280	577/762-807 ± 10	202 ± 5	80/104 ± 5	2985 ± 50
CZ BREN 2	14"	5.56x45 mm NATO	30	ALUMINIUM	357	657/840-884 ± 10	202 ± 5	80/104 ± 5	3103 ± 50
CZ BREN 2	9"	7.62x39 mm	30	ALUMINIUM	227	525/706-753 ± 10	202 ± 5	80/104 ± 5	2847 ± 50
CZ BREN 2	11"	7.62x39 mm	30	ALUMINIUM	280	573/755-802 ± 10	202 ± 5	80/104 ± 5	2896 ± 50
CZ BREN 2	14"	7.62x39 mm	30	ALUMINIUM	357	650/833-880 ± 10	202 ± 5	80/104 ± 5	3009 ± 50

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W [WWW.CZUB.CZ](http://WWW.CZUB.CZ)

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