European Security SPOTLIGHT Defence

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Get Ready For Climate Change

Dorothee Frank

The Intergovernmental Panel on Climate Change (IPCC), that was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988, has published its Sixth Assessment Report on Global Warming, including key facts brought together by scientists and their studies worldwide. The message the 91 international authors of this report have for people: better prepare for climate change.

"Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C. Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate. (high confidence)," the report states. "Trends in intensity and frequency of some climate and weather extremes have been detected over time spans during which about 0.5°C of global warming occurred (medium confidence). This assessment is based on several lines of evidence, including attribution studies for changes in extremes since 1950. Warming from anthropogenic emissions from the pre-industrial period to the present will persist for centuries to millennia and will continue to cause further long-term changes in the climate system, such as sea level rise, with associated impacts (high confidence), but these emissions alone are unlikely to cause global warming of 1.5°C (medium confidence). Anthropogenic emissions (including greenhouse gases, aerosols and their precursors) up to the present are unlikely to cause further warming of more than 0.5°C over the next two to three decades (high confidence) or on a century time scale (medium confidence)."

This is why IPCC predicts that the world is most likely to face a 1.5°C global warming between 2030 and 2052. Even though 1.5°C does not sound very terrific, it will have quite an impact on the world as we

Cumulative emissions of CO2 and future non-CO2 radiative forcing determine the probability of limiting warming to 1.5 $^\circ$ C

a) Observed global temperature change and modeled responses to stylized anthropogenic emission and forcing pathways



know it today. "Climate models project robust differences in regional climate characteristics between present-day and global warming of 1.5°C, and between 1.5°C and 2°C. These differences include increases in: mean temperature in most land and ocean regions (high confidence), hot extremes in most inhabited regions (high confidence), heavy precipitation in several regions (medium confidence), and the probability of drought and precipitation deficits in some regions (medium confidence)," is one of the messages of the report.

Graphic: IPCC)

"By 2100, global mean sea level rise is projected to be around 0.1 metre lower with global warming of 1.5°C compared to 2°C (medium confidence). Sea level will continue to rise well beyond 2100 (high confi-

dence), and the magnitude and rate of this rise depends on future emission pathways. A slower rate of sea level rise enables greater opportunities for adaptation in the human and ecological systems of small islands, low-lying coastal areas and deltas (medium confidence)." But the sea level rise will not stop, even if there is no more global warming, the report concludes. "Sea level rise will continue beyond 2100 even if global warming is limited to 1.5°C in the 21st century (high confidence). Marine ice sheet instability in Antarctica and/or irreversible loss of the Greenland ice sheet could result in multi-metre rise in sea level over hundreds to thousands of years. These instabilities could be triggered around 1.5°C to 2°C of global warming (medium confidence)."

But, to speak the truth, most of these findings are not new. Scientists from around the world have named them for decades. In their last Strategic Foresight Analysis NATO has named climate change a "Threat Multiplier", that "not only threatens to exacerbate conflicts within and between states, it is itself a threat to international peace and security." NATO continues: "Natural disasters will have greater impact, partly due to increases in frequency and severity of extreme weather events, but also due to shifts in the areas and times of the year where these events may occur and to the growth in the size of exposed populations."

There will be winners and losers due to climate change. The north – Canada, Russia, the Scandinavian states, Northern and Middle Europe – will be winners. Africa, South and Middle Asia and North America will be losers. The losers will face droughts, extreme weather and natural disasters. The winners will gain additional harvest seasons and land for crop. Due to warming oceans even fish swarms are going north. The actual report of IPCC therefore states: "The consideration of ethics and equity can help address the uneven distribution of adverse impacts associated with 1.5°C and higher levels of global warming, as

How the level of global warming affects impacts and/or risks associated with the Reasons for Concern (RFCs) and selected natural, managed and human systems

Five Reasons For Concern (RFCs) illustrate the impacts and risks of different levels of global warming for people, economies and ecosystems across sectors and regions.

Impacts and risks associated with the Reasons for Concern (RFCs) Very high () 2.0 () 2.0 High indus indus M - 2006-2015 Moderate 0 Undetectable RFC2 Extreme weather events **RFC1** Unique and threatened systems RFC3 Distribution of impacts RFC5 Large scale singular events RFC4 Global aggregate impacts Level of additiona impact/risk due to climate change

Purple indicates very high risks of severe impacts/risks and the presence of significant irreversibility or the persistence of climate-related hazards. combined with limited ability to adapt due to the nature of the hazard or impacts/risks. Red indicates severe and videspread impacts/risks Yellow indicates that impacts/risks are detectable and attributable to climate change with at least medium confidence White indicates that no impacts are detectable and attributable to climate change.

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(Graphic: IPCC)

well as those from mitigation and adaptation, particularly for poor and disadvantaged populations, in all societies (high confidence)."

But still, all data the IPCC report offers on the impacts, it is only about a global warming of 1.5°C, and society needs to take action to reach this goal. "In model pathways with no or limited overshoot of 1.5°C, global net anthropogenic CO, emissions decline by about 45% from 2010 levels by 2030 (40-60% interquartile range), reaching net zero around 2050 (2045-2055 interquartile range). For limiting global warming to below 2°C CO, emissions are projected to decline by about 20% by 2030 in most pathways (10-30% interquartile range) and reach net zero around 2075 (2065-2080 interquartile range). Non-CO, emissions in pathways that limit global warming to 1.5°C show deep reductions that are similar to those in pathways limiting warming to 2°C. (high confidence)."

But if the society fails to reduce its CO₂ emission to a degree, that will lead to only 1.5°C global warning, the next generation might have to face a world that differs complete, with all possible impacts on population and boundary shifts. "Most adaptation needs will be lower for global warming of 1.5°C compared to 2°C (high confidence)," the report states. "There are a wide range of adaptation options that can reduce the risks of climate change (high confidence). There are limits to adaptation and adaptive capacity for some human and natural systems at global warming of 1.5°C, with associated losses (medium confidence)." Summarising the impacts the report concludes: "Transitions in global and regional land use are found in all pathways limiting global warming to 1.5°C with no or limited overshoot, but their scale depends on the pursued mitigation portfolio. Model pathways that limit global warming to 1.5°C with no or limited overshoot project the conversion of 0.5-8 million km² of pasture and 0-5 million km² of non-pasture agricultural land for food and feed crops into 1-7 million km2 for energy crops and a 1 million km² reduction to 10 million km² increase in forests by 2050 relative to 2010 (medium confidence). Land use transitions of similar magnitude can be observed in modelled 2°C pathways (medium confidence). Such large transitions pose profound challenges for sustainable management of the various demands on land for human settlements, food, livestock feed, fibre, bioenergy, carbon storage, biodiversity and other ecosystem services (high confidence). Mitigation options limiting the demand for land include sustainable intensification of land use practices, ecosystem restoration and changes towards less resource-intensive diets (high confidence). The implementation of land-based mitigation options would require overcoming socio-economic, institutional, technological, financing and environmental barriers that differ across regions (high confidence)."

www.ipcc.ch



Technology

Contract On The EU's Cyber Security

(df) The team of Airbus CyberSecurity and its co-partner Atos have been selected by the Council of the European Union to provide cyber security expertise, products, services and solutions to help protect the IT systems of 17 European institutions, services and agencies. Within this framework contract European institutions will be able to implement a co-ordinated and upgraded cyber protection solution for all 17 entities, which include highly automa-

New Black Hornet Vehicle Reconnaissance System

(df) At AUSA FLIR Systems is launching its new FLIR Black Hornet Vehicle Reconnaissance System (VRS), featuring the Black Hornet 3 nano-unmanned aerial vehicle (UAV) designed for global military, government agency, and first responder vehiclemounted operations. The Black Hornet VRS is based on an adaption of the unique Black Hornet Personal Reconnaissance System (PRS), a small combat-proven nano-unmanned aerial system (UAS). With its capabilities Black Hornet VRS enables the warfighter to maintain situational awareness, threat detection, and surveillance for batted surveillance, warning, detection and response, training, and studies to develop a cyber security roadmap to tackle future cyber threats.

The experts from the consortium will provide on-site threat analysis for the European authorities and response schemes to attacks, enabling them to respond effectively and rapidly to these risks. In addition, the consortium will be responsible for raising the awareness of all European institution employees to cyber threats and provide cyber security training courses. "This is a landmark agreement for us in the area of cyber security", said Dirk Hoke, Chief Executive Officer of Airbus Defence and Space, about this major new contract for the companies. "The EU's decision to award Airbus CyberSecurity such a critical cyber protection contract is a strong endorsement of our capability and expertise. Cyber Security is a growing area of concern for many institutions in the era of digitalisation."

www.airbus.com www.atos.net

targeting information without the need for warfighters to exit a vehicle.

The Black Hornet combines with the VRS to create a real-time situational awareness (RSTA) airborne system for warfighters protected inside a vehicle. The Black Hornet VRS includes a launch unit that holds multiple Black Hornet 3 UAVs and mounts to the exterior of any military vehicle, including armoured personnel carriers, infantry fighting vehicles, and light utility vehicles. Operators inside a vehicle can use an integrated battle management system or only a display to launch and fly the Black Hornet 3 on its mission.

www.flir.com/blackhornet

WiSENT Engineer Vehicle For Norway

(gwh) The Norwegian procurement authority NDMA has placed an order with FFG Flensburger Fahrzeugbau Gesellschaft mbH (FFG) valued €45 million of WiSENT 2 engineer vehicle to be delivered between 2019 and 2021. Three years ago, Norway ordered six WiSENT 2 armoured recovery vehicles, which were handed over to the Norwegian armed forces ahead of schedule.

WiSENT 2 is a multi-purpose armoured support vehicle on the chassis of the Leo-

pard 2 main battle tank, which can be flexible configured for different tasks – in this case recovery and engineer tanks. The WiSENT 2 pioneer tank is highly digitised and will be delivered with the Integrated Combat Solution (ICS) system from Kongsberg already installed in the Norwegian WiSENT 2 armoured recovery vehicle, a powerful excavator and clearing system as well as FFG's new Auxiliary Power Booster (ABP) as a replacement for the previously diesel-powered auxiliary power units (APU). As a lithium battery solution, the APB offers a genuine "silent watch", as the



system operates completely noiseless and emission-free. For self-protection, all Norwegian WiSENT 2s will be equipped with Kongsberg's remote-controlled Nordic Phase 1 weapon station.

www.ffg-flensburg.de



tle damage assessment, pre-deployment and route and point reconnaissance, and



WFEL Bridges Delivered To Australia

(gwh) WFEL has delivered the first batch of rapidly deployable bridges, Dry Support Bridges (DSB) and Medium Girder Bridges (MGB) for the Australian Armed Forces' Land 155 programme to improve battlefield bridge capabilities. The transport vehicle is a MAN 45m from RMMV with five driven axles. In the protected cabin, the crew is protected from projectiles, fragments, mines and IEDs as well as NBC weapons.

The DSBs can carry more than 120 tons and span wet or dry gaps up to 46 m wide. The system's off- and on-road capability has been extensively tested at the British Army's Millbrook Proving Ground.



www.wfel.com

Autark Safety Roboter With Fuel Cell

(gwh) SFC Energy presented the Oneberry RoboGuard security robot with EFOY Pro fuel cell, developed jointly with Oneberry Technologies, at Security in Essen.

Thanks to the self-sufficient, quiet, environmentally friendly EFOY Pro fuel cell from SFC Energy, the robot also works remotely from the network around the clock and over long periods of time without in-



terruption and completely self-sufficient. The system thus offers decisive advantages over conventional battery-operated robots, which have to be recharged over many hours between operations. With sensors, actuators and communication, the robot can be configured for monitoring and safety functions as well as for information, marketing and administrative tasks. Intelligent video-based monitoring and analytics increase safety and at the same time enable operating and personnel cost savings.

www.sfc.com www.oneberry.com

Detection Of Explosives In Passing By

(gwh) As part of the Franco-German RE(H) STRAIN project, scientists from the Institute for Security Research (ISF) at the Bonn-Rhein-Sieg University of Applied Sciences (H-BRS) have developed an airlock that enables the contactless detection of volatile substances originating from explosives or drugs at entrances to facilities. The contact-free inspection of passers-by takes place in an airlock that is easy and quick to enter and does not stop the flow of people. The air flow exits on one side of the airlock and is sucked in again on the other side. It is then examined for hazardous substances with various sensors. The know-how of the system lies in the combination of the commercially available sensors, their evaluation and the fusion of the data for reliable discrimination of the results.

ISF last presented the laboratory sample at Security 2018 in Essen. Further develop-

ment of the project, funded by the Federal Ministry of Education and Research (BMBF) and French L'Agence Nationale de la Recherche (ANR), is planned.



www.h-brs.de/rehstrain

Container Loading System For UK Logistics

(gwh) The British Army receives container loading systems from Rheinmetall for its logistics vehicles. Rheinmetall MAN Military Vehicles (RMMV) is supplying 380 "Enhanced Pallet Load Systems" (EPLS) for €43 million, which will be integrated into the existing vehicles by the UK subsidiary. Between 2005 and 2013, the British Army procured more than 7500 HX logistics vehicles. This "military off the shelf" vehicle



family forms the backbone of the logistics force and has proven itself very well. At the same time, the demand for transport solutions for containers has increased. On the basis of its operational experience, RMMV developed a plan together with the customer to retrofit existing flatbed vehicles with a hook lift system.

The hook loading system to be integrated was supplied by HIAB, with whom Rheinmetall also cooperates on numerous other comparable international projects (e.g. Australia, Norway, Sweden, New Zealand). Delivery and conversion should be completed by the end of January 2021.

www.rheinmetall-defence.com



Autonomous Dozers

(df) Israel Aerospace Industries (IAI) won a contract for conversion of Caterpillar Dozers into autonomous dozers that will be commissioned for complex engineering tasks in threaten areas. This is a significant military robotics contract reflecting the preparations undertaken for the challenges posed by the future battlefield, IAI said. The new autonomous system mounted on the Caterpillar Dozer's, belongs to a family of robotic solutions developed by IAI. It incorporates the company's robotic technology, which can be integrated in a range of platforms based on the customer's operational needs. The new autonomous dozer provides various degrees of autonomy including movement and earthworks for a range of applications: construction, trail blazing in hard off-road conditions and the removal of large or suspicious obstacles efficient and without risking human lives. The system is fitted with object detection and avoidance capabilities and is designed to work in all weather and visibility conditions.

Meir Shabtai, General Manager of the Robotic Systems Division at IAI, said: "The Au-



(Photo: Caterpilla

tonomous Dozer takes us additional step further in providing the necessary readiness level for the future battlefield." www.iai.co.il

Development Of U.S. LTAMDS

(df) Raytheon is advancing in the U.S. Army's Lower Tier Air and Missile Defense Sensor, or LTAMDS, competition and now enters the Technology Maturation and Risk Reduction (TMRR) phase of the programme, the company announced. During TMRR, Raytheon will demonstrate LTAMDS performance through multiple technology demonstrations, using a fully operational array and later an integrated radar prototype, to prove the maturity of the Raytheon design.

Within the LTAMDS programme Raytheon will have to develop key prototyping that reduces risk and further matures the technology, deliver detailed designs that prove capability and production readiness, and deliver a support plan to the Army's testing for mobility and sustainability. Raytheon's prototype technology test bed in New Hampshire continually tests several systems planned for LTAMDS. The testing environment allows the programme team to determine key requirements including optimal frequency band, prime power capacity, 360° surveillance and fire control, resiliency in contested environments, and reliability and maintainability.

www.raytheon.com

New HaWC Controllers Shown At AUSA

(df) At AUSA Esterline Corporation unveiled its new HaWC controllers to the North American defence industry for the first time. The HaWC suite of rugged game-style controllers provide versatile performance for mission-critical appli-



cations in the civilian, law enforcement, military, industrial and commercial markets. Both the In-Sight HaWC and Mighty HaWC allow the operator to stand at a determined safe distance while maintaining maximum situational awareness, full autonomy and control, ensuring survivability and mission effectiveness.

"With these newly-evolved HaWCs, we are taking our experience and proven success and putting everything we know – literally into the customer's hands," said David Tessier, President of Esterline Mason.

www.esterline.com

Amarok For Norway

(gwh) Norwegian Homeland Security – the reserve for the armed forces – will receive 360 Volkswagen Amarok unprotected transport and liaison vehicles. The procurement authority NDMA has agreed with the Norwegian importer Harald A. Møller in a framework agreement with an initial term of three years for up to 700 vehicles to supply a first batch of 360 vehicles for the equivalent price of €45 million.



The Amarok will be converted in the Netherlands to meet the needs of the armed forces and will have a fixed-cover compartment. EMC protection, brackets for weapons and communication equipment, camouflage lights and a 24-volt system are further features of the military version of the vehicle. The engine is a 100 kW Euro 3 diesel engine that can be operated with F34.

The first 152 vehicles will be delivered in the second half of 2019. The remainder will follow by mid-2020.

www.forsvaret.no www.volkswagen.de

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NH90 For Special Forces

(gwh) France intends to equip NH90 transport helicopters with dedicated tools for special forces in the medium term. By 2025, six of a total of ten planned NH90 SOF helicopters are to be delivered.

In return, the helicopters will be equipped with an improved visual system for landings in poor visibility conditions. The French procurement authority Direction Générale de l'Armement (DGA) has commissioned Safran Electronics & Defense to carry out a study to improve the vision system on the basis of the existing sensors as required. Safran intends to use the Trailblazer system, which combines the capabilities of the EuroFlir 410 with the Eurofl'Eye sensor tower. This allows images from numerous multispectral sensors to be distributed in the helicopter, including a laser designator, to be combined to give the pilot a 200-degree panoramic view that is available for



Photo: Airbus Helicopters

surveillance tasks, target assignment and flight guidance, especially during landing. www.defense.gouv.fr/dga www.safran-electronics-defense.com

Australia Seeks Helicopter For Special Forces

(gwh) The Australian Capability Acquisition and Sustainment Group (CASG) has issued a Request for Information (RFI) for the supply of helicopters to special forces to be deployed from 2025 onwards. The company is looking for a fully developed civil or military helicopter equipped with a reconnaissance and surveillance package and optimised for use in densely built-up areas. Several helicopters are to be transported simultaneously in a C-17 Globemaster of the Royal Australian Air Force (RAAF). Boeing has expressed interest with the UH-1Y Venom and NorthStar Aviation with the 407 Multi-Role Helicopter (MRH). Airbus Helicopters had already previously associated the H145M with Australian demands, Jane's reported.

www.defence.gov.au/dmo

Risk Minimisation For The Tiger Helicopter

(gwh) On behalf of the national procurement authorities DGA (France), BAAINBw (Germany) and DGAM (Spain), the European procurement authority OCCAR has commissioned a consortium of Airbus Helicopters, Thales AVS and MBDA in two contracts to minimise the risks for the removal of obsolescence and for the implementation of new capabilities.

This was preceded by a three-year work phase of the three participating states (France, Germany and Spain), Airbus Helicopters and OCCAR, in order to examine



possible technologies and architectures that can meet future operational requirements.

As a result of these de-risking studies, France, Germany and Spain will have a technical basis to decide whether to start developing a mid-life upgrade (MkIII). MkIII will integrate advanced technologies such as a new avionics suite and provide an improved weapon system that will enable Tiger to maintain superiority on the battlefield for decades to come.

www.occar.int www.airbushelicopters.com

Spanish Helicopter Simulation Centre

(df) In 2019, two Indra-developed simulators of the new NH90 helicopter will enter service at the Agoncillo Base. With this, the network of simulators connected for joint training will reach the milestone of ten devices.

The Helicopter Simulation Center (CESI-HEL) is one of the backbones of the Aviation Academy of the Spanish Army (ACAVI-



ET). The simulation center comprises flight simulators (FFS) and helicopter trainers for the CH-47D Chinook, AS532 Cougar, EC135 and EC665 Tiger, located at two different bases: Colmenar Viejo, with six simulators, and Almagro, where two simulators for the Tiger helicopter are located.

Through a partnership agreement with the Army, Indra provides maintenance and improvement services for the simulators. In return, the Army allows the use of the facility, whenever available, for Indra to provide training services to other clients. Therefore, several Armed Forces perform their training at CESIHEL.

www.indracompany.com

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Spain Signs Contract For TAURUS Upgrade

(df) The Spanish Ministry of Defence and TAURUS Systems signed a contract for an upgrade and maintenance of the operational capability of the TAURUS KEPD 350 Weapon System used by the Spanish Air Force. The contract value is just below €30 million, the company announced.

The TAURUS KEPD 350 has been in the inventory of the Spanish Air force for 10 years now and is operated on their EF-18 fighter



Aircraft. Among the special capabilities of TAURUS KEPD 350 are its long range and the so called intelligent warhead. It is optimized for attacking deep buried bunkers, infrastructure and aerial targets even in anti-access and area denied environments. As part of the contract the operational capability of the Spanish TAURUS will be hardened and get an improved navigation system. This will increase the survivability considerably beyond the original configuration, TAURUS Systems stated. With the update, the Weapon System will be prepared for highly defended modern scenarios and joint operations environments. The project will start immediately.

https://taurus-systems.de

Remote Virtual Tower For The U.S. Air Force

(df) The U.S. Department of Defense selected Frequentis' remote virtual tower (RVT) technology, the company announced. The project will include two fixed-base RVT systems and two deployable systems for use by the Air Force and other DoD agencies. "The evaluation team chose Frequentis' remote tower solution based on the company's global organisation and support structure in airspace management and communications," said Ed Wright, Executive Director, USAF Flight Standards Agency. "By enabling the provision of milATC services on demand and remotely, RVT will reduce the risk to controllers and infrastructure, while reducing capital investments and allowing for the optimization of our resources." Frequentis will install two fixed-base systems, one at an Air Force base in Florida and the second location to be determined at a later date.

www.frequentis.com

Will Germany Sell EuroHawk?

(gwh) In 2013, two years after the programme has commenced, the then Federal Minister of Defence stopped testing the GlobalHawk, designated EuroHawk in the Bundeswehr. It was not foreseeable whether the unmanned aircraft could be certified as required for military flight operations. One consequence was the establishment of the Bundeswehr Aviation Office, in which all tasks of the military aviation administration were bundled.



The aircraft, which is no longer needed, is now to be sold in order to return part of the procurement costs amounting to more than €700 million to the federal budget. According to Associated Press, sales negotiations are underway with Canada regarding the drone, ground stations and related spare parts. For sale, the drone must be fully demilitarised. The ISIS reconnaissance system, which was to become the drone's main payload, has long since been expanded and is to be further developed in another carrier (Triton).

Experts doubt whether the drone can be operated as an aircraft after the extensive hardware has been expanded. Therefore the sale of the remains of the drone will only return a very small part of the procurement costs to the federal budget.

Close Air Support With Spectre

(gwh) At DVD2018, MBDA unveiled the Spectre unmanned aerial vehicle, which can be used in challenging operational environments. All combat phases – navigation, detection and tracking of targets – are controlled by one operator (Operator Over The Loop, OOTL). The operator retains sovereignty over the fire order.

Spectre is an electrically powered vertical take-off and landing unmanned aerial vehicle (eVTOL). For take-off and landing, the four rotors rotate in parallel to the ground. During cruising flight (up to 180 km/h) Spectre flies like an aeroplane. 25 kg payload can be transported over a combat distance of up to ten kilometres at an altitude of 100 metres. For example, two Enforcer missiles or a Missile Moyenne Portée (MMP) anti-tank missile can be integrated as active weapons. Instead, sensors or means for electronic combat can also be used as payloads in combination with kinetic effects.



The mission modules can be changed on the battlefield. Thus, modules with the latest technology are always available according to current requirements.

www.mbda-systems.com

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Laser Guided Rocket Launcher System On Naval UGV

(df) Following the exceptional levels of interest expressed in the new FLETCHER Laser Guided Rocket Launcher system, Arnold Defense has been exploring a number of exciting ground and maritime-based concepts for their revolutionary new system, now shown at AUSA. Since its first presentation at DSEI one year ago the FLET-CHER system has undergone successful test-firing and has now commenced initial

low-rate production. The wider concepts now being explored further expand FLET-CHER's utility into the arena of Unmanned Ground Vehicles (UGV), naval and littoral platforms. The ability to mount FLETCHER on UGV will offer the capability to remotely support base or mobile defensive operations; giving considerably wider scope for the tactical siting of remotely operated, laser guided weapon systems, whilst significantly minimising exposure and risk to ground-based troops. Further to that, mounting FLETCHER on naval/littoral platforms will gift maritime troops a precision weapon system with a range of up to 5 km that can be deployed and operated at a tactical level never previously available, the company stated.

www.arnolddefense.com

Hands-Free Underwater Navigation

(df) The United States (US) Navy's Naval Surface Warfare Centre – Panama City Division (NSWC PCD) has partnered with JFD in the development of an advanced combat diver navigation module: Shadow Nav. The company announced that this solution will bring a hands-free underwater navigation capability to the military market for the first time.

The Shadow NAV is fitted to a diver's standard half mask and provides a clear visual display of a combat diver's compass heading, depth, and time even in near-zero visibility conditions. Through using a maskmounted head-up display, combat divers are not restricted by the poor visibility mission environment and may not require carrying a tactical swim board.

www.jfdglobal.com

Naval Radar NX

(gwh) At Euronaval in Paris, Raytheon Anschütz will present the new Synapsis Naval Radar NX navigation radar software for the first time. The state-of-the-art software is based on an IMO radar display with optimised tracking characteristics and anti-clutter processing and is also equipped with tactical functions.

In addition, there is the video merging function, which integrates the video of several radar transceivers into a single, high-

quality radar video. The modular software design offers a high degree of flexibility for future upgrades to adapt to the respective mission requirements. To support specific naval requirements, Raytheon Anschütz has implemented tactical functions such as helicopter tracking, formation management, alarm and watch zones, and tactical target management in the radar software, giving it the new capabilities. This makes Naval Radar NX an effective and unique application for safe navigation and tactical tasks that can be performed within a single user interface.

www.raytheon-anschuetz.com

tkMS Modernizes Indian Submarines

(gwh) thyssenkrupp Marine Systems (tkMS) has received an order from Mazagon Dock Shipbuilders (MDL) for the general overhaul and modernisation of the Indian submarine INS Shishumar in the high double-digit million euro range. The contract covers the supply of new equipment, maintenance of systems and components, on-site technical support and logistics services in the form of documentation, training and spare parts. It also includes a so-called Life Certification. With this certificate, thyssenkrupp Marine Systems guarantees the functionality of the INS Shishumar pressure vessel for the next decade.

The overhaul of INS Shishumar at the MDL shipyard in Mumbai should be completed by 2021.

tkMS and its subsidiary ATLAS ELEKTRONIK have been modernising the INS Shalki and the INS Shalkul, two other submarines of the same class, since 2016.

The three submarines mentioned belong to a group of four that were put into ser-

vice between 1986 and 1994. The submarines based on the HDW Class 209 design were built half by HDW (Kiel) and half by MDL (Mumbai).

www.thyssenkrupp-marinesystems.com www.mazagondock.in

Industry & Trade

Sweden Submits Gripen Proposal to Bulgaria

(df) On October 1 the Swedish Defence Material Administration submitted the Swedish Gripen proposal to the Bulgarian Ministry of Defence. The Swedish offer consists of eight new fully NATO-interoperable Gripen C/D fighter aircraft to equip the Bulgarian Air Force. The Swedish offer consists of eight new NATO interoperable Gripen aircraft with the latest MS20 configuration, which can be delivered to the Bu-Igarian Air Force within a short time period, with the first aircraft delivered within 24 months of contract signature. Training of pilots and technicians is included and with the offer full QRA capability will be achieved within the budget framework. The development of the Gripen C/D is on-going

MASTHEAD

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and the system will remain operational for at least another 30 years.

"Gripen is an advanced multirole fighter at the start of its development life time. The Swedish offer meets the requirements of the Bulgarian government regarding budget, delivery schedule and capabilities of the new aircraft," says Joakim Wallin, Director Export and International Relations, Swedish Defence Material Administration. H. E. Louise Bergholm, Swedish Ambassador to Bulgaria, added: "Relations between Sweden and Bulgaria are excellent. The economic cooperation is sizeable, with a growth in bilateral trade and increasing investments by Swedish companies in Bulgaria, which are currently employing close to 9000 people in Bulgaria."

Gripen C/D is in operational service with the air forces of Sweden, South Africa, Hungary, Czech Republic and Thailand. The UK Empire Test Pilots' School (UK ETPS) uses Gripen as its fast jet platform for test pilots from all over the world. With Gripen, NATO member states Czech Republic and Hungary successfully participate in NATO missions and joint exercises with other NATO countries.

www.saabgroup.com

ARQUUS Develops Its Network Of Partners

(df) ARQUUS formerly RENAULT Trucks Defense) announced it has continued the development of its global network of partners. For this ARQUUS has selected a panel of suppliers, specialised in the manufacturing of high-technology subsets, which meet all ISO and AQAP quality standards. All these partner companies bring added value, constantly enriching the quality of ARQUUS' products, the company stated.

For this ARQUUS also signed a service provision agreement with French company NSE last June. Under this contract, NSE will provide pool management for all diagnosis tools and connected glasses, which are essential to ARQUUS' latest support offers, developed both for France and for international clients.

ARQUUS signed a partnership with American company AM General, a leading global mobility solutions provider. Under this agreement, AM General will build the Bastion in the United States and offer it under license from ARQUUS for U.S. Government-funded opportunities.

www.arquus-defense.com

Logistics Centre For Military Aircraft

(gwh) Airbus Defence and Space is centralising logistics for military aircraft in a new logistics centre (Military Air Spares Centre - MASC) in Manching. The construction of the €60 million centre has recently started with the ground-breaking ceremony. It shall be finished at the beginning of 2020. Around 100,000 parts and lubricants and operating materials required for production and operation are to be stored and managed on an area of over 26,000 m². In addition to the warehouses, the new logistics building will also house functional rooms such as incoming goods, areas for goods inspection and dispatch, as well as offices and lounges for warehouse employees.

www.airbusdefenceandspace.com

ISSUE 101 / 2018 **SPOTLIGHT**

NIAS'18

NATO's largest cyber conference, NIAS returns to Mons, Belgium. This year's theme: "NIAS'18: Securing NATO's Digital Endeavour" will focus on cross-domain applications of cyber security. On October 16-18, senior cyber experts and leaders will gather at NIAS'18 to discuss the critical role

cyber security plays in protecting the Alliance on both sides of the Atlantic. Register now to attend NATO's premier cyber conference! October 16-18, Mons, Belgium

FUTURE FORCES FORUM

International exhibition and expert events on the latest trends and technologies in defence and security. All events are focused on the presentation of needs of armed and security forces, state-of-the-art technologies, R&D programmes, and business

opportunities, with interactions between all participants due to the interconnected topics. Government, international organisations, industry, R&D institutions meet at one place. NATO and the European Defence Agency are involved in shaping the programme. October 17 - 19, Prague, Czech Republic

TechNet Europe 2018

The two-day conference organised by AFCEA Europe in cooperation with the AF-CEA Rome and Naples chapters, will be held under the patronage of the Ministry

of Defence, Italy. Representatives from some of the highest levels of the European and NATO institutional, academic and industrial world will discuss the current situation, challenges and the various prospects of Maritime Situational Awareness.

INTERNATIONAI

18 - 15 NOVEMBER 2018 | MELIA HOTEL, BERLIN, GERNANY

November 6-7, Sorrento, Italy

International Fighter 2018

Join International Fighter 2018 to hear about Canada's Future Fighter project, the RAF's ongoing integration of the F-35,

France's view of the multi-domain battlespace and the Spanish MoD's next generation weapons system. All that alongside an audience of 200+ air force commanders, senior operators, pilots, programme managers, policy leads and industry leaders, who will gather at the only fighter-specific air power conference - globally.

November 13-15, Berlin, Germany

NIDV-Symposium – 30th edition

During the NIDV-Symposium and exhibition, more than 130 companies show their potential. The top political level of the Ministries of Defence, Economic Affairs, Foreign Affairs and

Security & Justice are invited. A special programme for the military attachés accredited in the Netherlands is offered. Sister organizations of the NIDV from abroad are also invited. And last but not least, representatives of the armed forces, the police, the fire brigade, the ambulance dispatch center, the coast guard and other public security organizations are present.

November 15, Rotterdam, The Netherlands

I/ITSEC

The Interservice/Industry Training, Simulation and Education Conference (I/ITSEC) is the world's largest modeling, simulation and training conference. It consists of peer-reviewed paper presentations, tutorials, special events, professional workshops, a commercial exhibit hall, a serious games competition, and STEM events for teachers and secondary students. I/ITSEC is organized by the National Training and Simulation Association (NTSA). November 26-30, Orlando, USA

For a free subscription send an email to: esd.spotlight@mittler-report.de

International Platform

for Trends & Technologies in Defence & Security

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