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NORWEGIAN DEFENCE AND
SECURITY INDUSTRIES ASSOCIATION





INNOVASJONSKRAFT

– I LUFTEN OG I DYPET

Det er bare noen få selskap i verden som klarer å bygge komplekse systemer som luftbårne sensorer og ubåter. Saab er et av dem. Dette er mulig ved at vi gjør ting litt annerledes, at vi går foran, tenker i nye baner. Vi flytter grenser for hva som er teknisk og menneskelig mulig – på land, til sjøs og i luften.

Slik utviklet vi Erieye – vårt flygende multi-rolle overvåkningssystem. Og slik jobber vi når vi nå bygger

neste generasjons ubåt, utvikler "state of the art" radarer- og motmiddels system og intelligente ledelses-systemer for sivilt bruk.

I en verden som stadig endres pløyer vi i Saab kontinuerlig ny mark for å utvikle innovative og smarte løsninger som hjelper både mennesker og samfunn til å møte nåtidens og fremtidens utfordringer – så vel i luften som i dypet.

DATA ATTACKS SUBJECT TO SECRECY

Every single day, businesses, organisations and private individuals all over the world are subjected to cyber attacks. Aggressors aim to break into computer systems in order to steal information.

The image of a school kid in his boys' room is what many people picture when the subject of cyber invasion is raised. And this type of computer crime still goes on, while attacks of this calibre is barely rated as background noise in professional circles. The real threats to the cyber space comes from national security services. Many countries keep separate units, often associated with the clandestine services, whose sole purpose is to force entry into other nations' computing systems. These hackers are extremely educated, working in highly professional environments at orderly workplaces with day care, vacations and pension plans.

During a massive computer onslaught recently, it was noted that the attacks were carried out during business hours - between 8 in the morning up to 17 in the afternoon. This concluded the business day for the hackers, before they went home to have dinner with their families.

The victims of computer attacks only rarely make the headlines, even though it is clear they must be many, and losses can be substantial. Nevertheless, the victims will only in exceptional cases admit that they have been subjected to computer attacks, or victims of data theft. It is almost like it's a matter of shame for the concerned businesses or organisations to admit they had insufficient protection in the face of this threat. There is a close parallel to other types of victims, such as sexual assault or rape victims, where the aspect of shame is frequently a factor. The victim feels shamed, and will all too often keep close tabs on what has happened.

But just like assault or violence victims, it is necessary that victims of computer crime come forward in order to have matters investigated and prosecuted, to preclude and protect against future assaults. Only openness about the computer threat and specific attacks can ensure that firm attitudes regarding computer safety are developed, in businesses and organisations, and kept strong throughout society in general. This will be a first step in making life harder for the professional data hackers.

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Coverphoto:

The Norwegian Army's new
 CV9030N infantry fighting vehicle
 Photo: Ole Haugli/FMS



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NEW CV 90 MK III INFANTRY FIGHTING VEHICLES

The Norwegian Army has taken delivery of new CV90 infantry fighting vehicles (IFVs) from BAE Systems during a ceremony at the Setermoen Military Camp in northern Norway on September 2nd.

The 12 vehicles represent the first production batch of a total of 144 new and upgraded CV90s scheduled to be delivered to the army as part of a £500m con-

tract awarded by the Norwegian Defence Logistics Organisation in June 2012.

Under the contract, the company is required to deliver 41 new vehicles and

upgrade 103 of the army's existing fleet of CV9030s, with the addition of enhanced capabilities for both ballistic and mine protection, survivability, firepower, situational awareness, intelligence, and interoperability.

– I am pleased and proud that we can provide the Army with new CV-90 vehicles through this project, which represents the biggest single materiel investment the Army has made in many



decades, said Minister of Defence, Ms Ine Eriksen Søreide, in her speech when taking delivery.

The 144 vehicles are being supplied in five configurations, including 74 for infantry fighting, 21 for reconnaissance, 15 for command and control, 16 for engineering support, as well as 16 multi-role configurations and supplemented by two driver training vehicles.

BAE has partnered with Kongsberg Defence & Aerospace, Nammo Raufoss, CHSnor, Moelv, and Ritek AS Levanger to execute the IFV programme, which is said to be a key part of the Norwegian military's ongoing modernisation.

In addition to Norway, the neigh-

bouring Sweden, Denmark and Finland, as well as Switzerland and the Netherlands have selected the CV90, bringing the total number of vehicles already delivered and on order to 1280 units.

Better protection, more power

Compared to the previous Norwegian CV90 vehicles, the new vehicles offer the soldiers better protection, against both ballistic weapons and mines. But even though the armouring is more modern and "smarter" than on the old vehicles, the higher level of protection contributes to a weight increase from approximately 26 tonnes for the old vehicles to the new vehicles' 35 tonnes.

To cope with the increased weight, the power of the upgraded Scania engine is increased from 445 kW to 595 kW, giving the old vehicles and Mk III's the same power to weight ratio of some 17 kw per tonne.

Sensors networking

In short, the Mk III takes the CV90 vehicle into the integrated digital networking age. In the new vehicles, sensors as well as vehicles are connected, meaning that a number of vehicles can share sensor data and information. The sensors are also modernized, with for instance new infrared sensors and new cameras providing the crew with a 360 degree view around the vehicle. ■■



On the weapons side, the 30 mm Bushmaster cannon is still the main weapon, but the manual 7.62 machine gun next to the cannon has been replaced with an electrical, coaxial 7.62 mm machine gun.

On the exterior, the main addition is the Kongsberg Protector RWS (Remote controlled Weapons Stations) mounted on top of the vehicles. Integrated with the vehicles command control system, the RWS is equipped with a 12.7 mm machinegun. The RWS can also be fitted with optional weapons, like a 40 mm grenade launcher.

Photo: FMS/Haugli



First CV 90 Mk III on Rubber Tracks

Photo: FMS/Haugli

THE NEW NORWEGIAN CV 90 MK III ARMOURED VEHICLES WILL BE EQUIPPED WITH RUBBER TRACKS

Soucy International in Quebec, Canada and BAE Systems in Sweden have jointly developed the rubber track system.

The tracks reduce vehicle weight by more than one ton compared with conventional steel tracks. They also cut noise by a massive 10dB and vibration levels by 60 percent.

As of today, rubber tracks are more expensive than conventional steel tracks, but the reduced vibration levels are increasing the life expectancies of electronics, optronics and ammunition, which will significantly reduce vehicle running costs.

The rubber belts consist of steel cord and wires moulded into the rubber, and the tracks have shown themselves to offer superior traction in snow and wintry conditions in particular. It is also possible to attach chain links to the rubber tracks to provide even better grip on slippery surfaces. The rubber tracks also contribute to improved acceleration, reduced fuel consumption,

while also causing less wear and tear on road surfaces and off-road.

Testing has shown that the lifetime expectancy for modern rubber tracks, even on a 34 tons vehicle like the CV90 Mk III, is virtually the same as that of steel tracks.

Where the rubber tracks have a weakness, is in the event of a breakage. This will normally call for the replacement of the entire track, where repairs to a steel track can usually be made by replacement of one or several damaged links.

In Norway, rubber tracks have been in common use for going on ten years, both on upgraded M113's and a handful of CV90 units, and Norway will be the first nation to run their Mk III vehicles on rubber. Other nations are conducting rubber belt testing, however, and the various advantages can be expected to lead to more countries opting for this alternative over years to come.

CANDIDATES

FOR NEW 155 MILLIMETRE ARTILLERY FOR NORWAY

As Norway pulled out of the co-operation with Sweden on the Archer artillery project, the Norwegian armed forces are scanning the market for alternatives as replacements for their more than 40 years old M-109 artillery, with a grand total of 24 modern artillery units. As of today, the Norwegian armed forces have asked a quartet of candidates to submit their tenders. These four are the German PZ 2000, the French Caesar artillery system, the Korean Thunder and some versions of a Swiss upgraded version of M-109.

K9 Thunder, the South Korean contender

In 1998 the South Korean Government awarded a contract to Samsung Aerospace Industries TechWin for K9 Thunder, and the first batches were delivered in 1999.

But the K9 Thunder has also hit the NATO market with success. In late 2001 the Turkish armed forces contracted for the South Korean artillery system, and the Turkish army is expected to receive more than 350 units. The Turkish version, named T-155 Firtina, is being produced by the 1st Army maintenance Centre command, Adapazari in Turkey.

Of other NATO users, the Polish army will integrate a total of 120 K9 thunder chassis with AS-90M Braveheart torrens for the Polish designed AHS Krab artillery system.



Photo: French Army

K9 THUNDER

- ▲ Weight: 47 tonnes
- ▲ Length: 12 m
- ▲ Width: 3.4 m
- ▲ Crew: 5

MAIN ARMAMENT:

- ▲ 52 cal (155mm howitzer)

SECONDARY ARMAMENT:

- ▲ 12.7 mm (.50 calibre) K6 HMG
- Operational range: 480 km
- ▲ Speed: 67 km/h

FORCE PROTECTION IS OUR MISSION





Photo: French Army

Caesar, light weight and high mobility

Caesar is the only wheeled artillery system in the competition. The Caesar system is also significantly lighter than the other

systems. This is partly due to the fact that the Caesar gun is operated from personnel on the ground, meaning that the system

is not, unlike the other systems in the competition, offering an armoured cabin for the gun operators.

The lack of an armoured protected cabin for the gun operators has been mentioned as one of the main arguments against the Caesar. But without an operators' cabin, the overall weight of the system is reduced, and this again enhances the system's mobility. The system with the crew can be carried in a single load of a C-130 Hercules transport aircraft.

CAESAR

- ▲ Weight: 17.7 tonnes
- ▲ Length: 10 m
- ▲ Width: 2.55 m
- ▲ Crew: 5-6 (3, emergency)

MAIN ARMAMENT

- ▲ 155 mm/ 52-calibre

SECONDARY ARMAMENT:

- ▲ none
- ▲ Operational range: 600 km

SPEED:

- ▲ Road: 100 km/h
- ▲ Off-road: 50 km/h

- Logistic vehicles
- Tactical vehicles
- Air defence systems
- Weapons and ammunition
- Infantry systems
- Protection systems
- Command and control
- Electro-optical components
- Simulation and training

For more information: www.rheinmetall-defence.com

PzH2000

The PzH2000 (Panzerhaubitze 2000) has been more or less “in and out” as a candidate for Norway’s new artillery. Back in 2003 the Norwegian government withdrew from buying a number of 18 hardly used PzH2000s from the Dutch army.

Since that time, the PzH2000 has been one of most frequently mentioned candidates for the Norwegian artillery contract, until the Norwegian Ministry of Defence adopted the path of participating in the Swedish Archer projects.

Now, as Norway has pulled out of the Archer program, PzH2000 is back in the running.

PzH2000 has been a significant export success for the manufacturer Krauss-Maffei Wegmann, and besides the German armed forces, PzH2000 has been selected by the Dutch, Italian and Greek armies.

The PzH2000 system was also tested out by the Swedish armed forces in a coastal artillery role back in 1996.



Photo: KMW

PZH2000

- ▲ Weight: 55.8 t
- ▲ Length: 11.7 m
- ▲ Width: 3.6 m
- ▲ Crew: 5

MAIN ARMAMENT

- ▲ Rheinmetall 155 mm L52 Artillery Gun (60 rounds)
- ▲ Rate of fire: 3 rounds in 9.0 seconds (Burst)

SECONDARY ARMAMENT

- ▲ Rheinmetall MG3 7.62 mm machine gun
- ▲ Operational range: 420 km

SPEED

- ▲ Road: 67 km/h
- ▲ Off-road: 45 km/h

Swiss upgraded M109

Since 1995 the Swiss based RUAG Corporation (Swiss ordnance Enterprise Corporation, a part of RUAG) has developed a modular upgrade system of the US designed M109 series of self-propelled howitzers.

The main part of the upgrade is the replacement of the existing 155 mm 39 calibre barrel by a new, RUAG designed and built chrome-plated 155mm 47 calibre barrel.

With the new barrel, the firing range is increased by some 60%, and using a charge 10 and base bleed ammunition, a maximum range of up to 36000 meters can be achieved.

In addition to the new barrel, RUAG offers a number of alternative upgrades like a telescopic rammer that enables a maximum rate of fire of up to 8 rounds per minute, a charge standby magazine, navigation and positioning system, increased ammunition stowage capacity etc.

RUAG-designed upgrades of the M109, named the M109 KAWEST, have been ordered by Switzerland (348 units), Italy (260 units) and the United Arab Emirates (85 units). For Norway, if the RUAG upgrade alternative is chosen, a decision has not yet been made whether to upgrade the Norwegian Army’s existing M-109s or to look for alternatives as basis for upgrading.



Photo: Swiss Army

M109 KAWEST

- ▲ Weight: 27.5+ tons
- ▲ Length: 9.1 m
- ▲ Width: 3.15 m
- ▲ Crew: 6

MAIN ARMAMENT:

- ▲ 155 mm/ Calibre L45

SECONDARY ARMAMENT:

- ▲ 12.7 mm M2 machine gun

Operational range: 350km
Speed on-road: 56 km

LMV

Keep moving stay protected.



Iveco DV's range of Multirole Vehicles, Tactical and Logistic Trucks and Armoured Fighting Vehicles covers the full spectrum of on- and off-road military requirements and represents a well thought through, comprehensive and effective response to the needs of the military customer. Iveco recognises that this needs change in response to the evolving operational environment, developing doctrine and changing threat. As a part of the company's commitment to our

customers' needs, we aim to identify or anticipate at an early stage how requirements are likely to develop.

As a result, the whole product range is subjected to a continuous development process. Evolving needs are fed back to Engineering, who in turn develop a steady stream of enhancements in terms of payload, mobility and protection. Where necessary, complete new vehicle families are developed.



WHATEVER THE TARGET



Situations change, but your ammunition shouldn't have to. Designed specifically for the F-35 fighter, Nammo 25 mm APEX ammunition offers unequalled capability – allowing you to counter a wide range of threats and ensuring you are ready for anything, whatever the target.

Nammo

SECURING THE FUTURE



NORWEGIAN DEFENCE AND SECURITY INDUSTRIES ASSOCIATION (FSi)

THE LEADING ASSOCIATION IN NORWAY ADVOCATING THE INTERESTS OF ITS SECTOR, AND THE PRIMARY INTERLOCUTOR FOR THE GOVERNMENT IN MATTERS OF IMPORTANCE TO THE INDUSTRY. AFFILIATED WITH THE CONFEDERATION OF NORWEGIAN ENTERPRISE (NHO) AND REPRESENTING MORE THAN 100 COMPANIES

LEDEREN HAR ORDET:

FORSVARSINDUSTRIEN - EN STRATEGISK RESSURS FOR FORSVARET

Forsvarssjefen har akkurat presentert sitt fagmilitære råd. Ikke overraskende konkluderer han med at dersom Norge skal ha et Forsvar med nødvendig avskrekkende effekt i en uforutsigbar sikkerhetspolitisk situasjon må forsvarsbudsjettet økes betydelig. Dette er nødvendig for å kunne investere i moderne materiell som tilfører forsvaret nye kapasiteter som f.eks. kampluftvern til Hæren og ubemannede systemer. Det er også en forutsetning for å kunne fornye og oppdatere eksisterende kapasiteter som bl.a. kampfly, ubåter og artilleri.

Å tilføre mere penger er en forutsetning for å kunne finansiere strukturen FSJ foreslår. Han foreslår imidlertid også betydelige innsparinger på drift som virkemiddel. Videre legges det vekt på nødvendigheten av at Forsvaret i større grad nyttiggjør seg sivilsamfunnets ressurser der det er hensiktsmessig og kosteffektivt enn vi har sett tidligere.

I sitt råd til Forsvarsministeren sier FSJ bl.a. følgende:

«*Totalforsvaret og sivile leverandører vil i større grad bli benyttet. Logistikkonsepter som utnytter kapasiteten som finnes hos*

det sivile næringsliv skal videreutvikles. De logistikkressursene som operasjonene krever i fremtiden vil være en blanding av Forsvarets egne, og ressurser som skaffes til veie på kommersiell basis eller gjennom Totalforsvaret.»

Mer eksplisitt vises det bl.a. til at prestasjonsbaserte avtaler med sivile leverandører vil kunne redusere bemanningen innen materiellstyring, anskaffelse og lager, i tillegg til at lagerarealet kan reduseres betraktelig fordi flere av oppgavene flyttes til leverandør.

Det er en klar kobling mellom nasjonale sikkerhetsinteresser, Forsvarets evne og kapasitet til å ivareta disse interessene og nasjonal industris kompetanse og kapasitet til å understøtte Forsvaret. Med utgangspunkt i Forsvarets behov, har Stortinget sluttet seg til at Norge skal ha industriell kompetanse innenfor et lite antall teknologiske kompetanseområder for å kunne ivareta vesentlige nasjonale sikkerhetsinteresser.

Innenfor disse områdene er forsvarsindustrien i stand til å støtte Forsvaret i fred, krise og krig. Det forutsetter imidlertid at nødvendig kompetanse, infrastruktur, råvarer,

komponenter/reservedeler etc. er tilgjengelig når behovet oppstår. Industrien trenger forutsigbarhet for å gjøre de investeringer som er nødvendige. Det sikres best ved at industrien så langt det mulig integreres i fredsdriften gjennom strategiske kontrakter, der hovedregelen er at industrien i fredstid har de samme oppgaver i den daglige drift av Forsvaret som industrien er forutsatt å skulle ha i krise og krig.

Skal forsvarsindustrien forbli en kompetent samarbeidspartner må kompetanse og teknologi utvikles kontinuerlig. Høyteknologiske kompetansetiljør som ikke får nye oppgaver forvitret. Kostnaden forbundet med reetablering av kompetanse på det nivået norsk forsvarsindustri besitter er så omfattende at dersom den forvitret, vil det i praksis innebære at den er tapt. Derfor må norsk industri få levere når Forsvaret anskaffer materiell som faller innenfor de kompetanseområdene der norsk industri skal ha en strategisk rolle i forhold til å understøtte Forsvaret. Dette er en forutsetning for å opprettholde nasjonal kompetanse Forsvaret har behov for. Det betyr også at når Forsvaret anskaffer materiell fra utlandet som direkte

omfatter noen av kompetanseområdene, må det legges til rette for at norsk industri involveres slik at det kan bygges kompetanse som gjør det mulig å understøtte materiellet med nasjonale ressurser. Dette forutsetter systematisk bruk av mulighetene anskaffelsesregelverket gir for å påberope unntak fra bestemmelser som i utgangspunktet ikke tillater direkte anskaffelser og at tilstrekkelige langsiktige avtaler kan inngås, som f. eks. EØS-avtalens art. 123.

Regjeringen har varslet at den i høst vil legge frem en Stortingsmelding om samarbeidet mellom Forsvaret og forsvarsindustrien. Bl.a. i lys av ovenstående forventer vi at meldingen, og den påfølgende stortingsbehandlingen, vil sikre rammebetingelser som legger til rette for at industrien kan videreutvikle og styrke sin rolle som en strategisk ressurs for Forsvaret, som leverandør av moderne kosteffektive løsninger og som samarbeidspartner for drift, vedlikehold og oppgradering av materiell og systemer. Da kan forsvarsindustrien fortsette å bidra til forsvarsevnen og til de endringene som FSJ legger opp til.



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SUPPLIER SEMINAR AND FSI EXHIBITION AT AKERSHUS FORTRESS

This year's defence supplier seminar and the FSI exhibition was held on the 9th and 10th of September.

More than 70 companies were present with stands at the exhibition, and more than 350 pre-announced visitors attended the exhibits on the Open day, September 10th.

The exhibition and seminar was opened by Minister of Defence, Ms Ine Eriksen Søreide, who used her opening address to emphasise the disturbing developments affecting most European defence budgets through recent years.

- Minus 254 billion NOK – 26 billion euro, or some six times the Norwegian defence budget – is what separates a collective European defence budget of 2008 from today's.

While the economy is important, it is equally important to look at how the defence organisations spend this money.

This is something I have made a point of in the ongoing discussions around the NATO target of their member nations allocating 2 percent of their gross national product to defence. Today, we are over-performing on the NATO target of an investments share of 20 percent of our defence budget. We have also increased our defence budget by 3.3 percent for 2015, following ten years of flat budget development. We will also continue to propose increased allocations, Søreide underscored. ■



Not many businesses in Norway are exporting dinners to France, but the French Defence is currently a major customer for the Tromsø company Drytech. From the left, Jan Trondsen and Reidar Melheim. Photo: MilitærTeknikk



Minister of Defence, Ine Eriksen Søreide, opened this year's supplier seminar and FSI exhibition at Akershus. Photo: MilitærTeknikk



Major Lars Laudal from the Defence Logistics Organisation (FLO) showed the Army's new air defence. Photo: MilitærTeknikk



The French DCNS gave a presentation of their submarine concept. From the left, Frederic Raibaud, Guillaume Pateau and Xavier Mesnet.

Photo: MilitærTeknikk



Ivar Eie from the Aircontact Group represents the American helicopter manufacturer Sikorsky in Norway. Sikorsky hopes that their Black Hawk helicopter may be of interest for Norwegian Special Forces.

Photo: MilitærTeknikk



Saab is targeting Norway both regarding new submarines and new air space surveillance radars. From the left, Audun Noreng and Dag Wikøren.

Photo: MilitærTeknikk



General Manager Tore Havstein of Eidsvoll Electronics AS explains that the company holds export contracts for Crypto equipment, and is a supplier of electronics to the new Joint Strike Missile.

Photo: MilitærTeknikk



The development of the JSM is forging ahead, and the missile, to be launched from the F-35, will be ready in 2017 according to current plans. From left, Lars-Emil Fladeby and Lars Johan Fleisje of Kongsberg Gruppen

Photo: MilitærTeknikk



Radionor Communications is a supplier of tactical broadband data links, says Henrik Mejlaender-Larsen.

Photo: MilitærTeknikk

MSPO 2015, 23RD INTERNATIONAL DEFENCE INDUSTRY EXHIBITION 2015; NORWAY LEAD NATION

FSi has in co-operation with the Ministry of Defence and the Armed Forces presented a Norwegian pavilion at the 23rd MSPO exhibition, held in Kielce in Poland from the 1st to the 4th of September 2015.

The MoD, the FFi, and eleven FSi companies joined forces in a forceful statement to underscore Polish-Norwegian collaboration in the fields of defence and military materiel.

Norway's Minister of defence, Ms Ine Eriksen Søreide, participated in the official opening of the exhibition, visiting each of the exhibits on the Norwegian pavilion on the opening day. The Polish Minister of Defence, Mr. Tomasz Siemoniak, was another of the visitors to the pavilion.

In close relation to this exhibition, a number of arrangements are staged in order to reinforce co-operation between Norway and Poland. On the 2nd of September, the FSi held a seminar on Norwegian-Polish defence material and industry co-operation, where State Secretary Øystein Bø of the Ministry of Defence participated. The seminar attracted some 100 participants from Poland, Norway and other nations.

Poland and Norway maintains a close relationship in the



Norway's Minister of defence, Ms Ine Eriksen Søreide visited each of the exhibits on the Norwegian pavilion. Photo: FSi

field of security and defence. Being close allies in NATO, Poland and Norway share a number of defence interests. Both nations are contributing considerable forces to allied operations, and during recent years, the defence industry

collaboration has increased on several significant areas.

The MSPO 2015 covered an exhibit area of more than a quarter million square feet, attracting in excess of 500 exhibitors from all over the world. ■■

AIRBUS INDUSTRY DAY

More than 40 delegates from Norwegian industry met Airbus representatives at Airbus Industry Day, set in Oslo on October 1st.



Airbus as represented with seven delegates at the Airbus Industry day. From left: Philippe Kouame, Alfonso Garcia Lopez, Ramon Somoza, Maribel Monge Dominguez, Maria Diaz, Rocio Lopez and Hervé Daumas. Photo: MilitærTeknikk

The purpose of the Industry day is for Norwegian industry to present their capabilities and make connections for industrial cooperation with the European aircraft giant, numbering more than 138 000

employees and a total turnover of approximate 836 billion Euros.

Naturally the main focus was the Airbus Multi Role Tanker Transport (MRTT) program, where Norway together with The Netherlands, Poland, Luxem-

bourg and Belgium will fund and operate a number (expected to be three or four) of aircraft.

The Airbus MRTT aircraft is based on a standard civilian A330-200, modified for a tanker aircraft role with air-to-

air refuelling capabilities.

The Airbus representatives also emphasised that Airbus was open for making connections aimed at other Airbus projects than the MRTT, both civilian and military. ■■



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NORWAY'S FIRST F-35 ROLLED OUT

- Our new combat aircraft will strengthen all of the Armed Forces, says Norwegian Minister of Defence Ms. Ine Eriksen Søreide, who on 22 September participated in the formal roll-out of the first Norwegian F-35 at Lockheed Martin's production facilities in Fort Worth, Texas.

Norway is planning to acquire up to 52 F-35As in the years leading up to 2025. The aircraft delivered in 2015 and 2016 will be used to train Norwegian and partner pilots at the training center at Luke

Air Force Base. The first aircraft to arrive in Norway will be delivered in 2017, and will then begin preparations for Norway's initial operating capability with the F-35 in 2019.

The F-35 will replace Norway's current fleet of F-16 fighters which date back to the early 1980s, but the Minister stresses that the new aircraft are far more than simply a F-16-replacement.

- Our new combat aircraft will provide the Armed Forces with a number of new capabilities that we have never had before, Eriksen Søreide continued and added that the Norwegian cost estimate for the first aircraft have held firm, and the aircraft are being delivered at the right time and with the right capability.



The first Norwegian F-35 fighter aircraft will be used for pilot training at Luke Air Force Base in Arizona, USA. Photo: FMS

Providing industrial opportunities

After only a few hundred of the more than 3000 aircraft that are planned for users worldwide Norwegian industry has already secured contracts worth almost NOK three billion, something that is expected to grow as the annual production numbers increase. These deliveries particularly include composites from Kongsberg Defence and Aerospace, as well as other key components in the aircraft and the engine from companies such as GKN Aerospace and Kitron. Beyond this there is also a significant potential for subsequent deliveries of weapons and ammunition as the aircraft enter widespread operational service. ■■

NAMMO delivers ammunition to Norway's new fighter aircraft

-Norway gets its first new fighter aircrafts, and it will be equipped with high technology ammunition made at Raufoss, says Morten Brandtzæg, President and CEO of Nammo.

Nammo has developed a new type of ammunition over the past ten years called APEX (Armor Piercing Ammunition Explosive). APEX is tailored for multi-role functions on the F-35. This ammunition can be used for all types of missions, and against air, navy and ground targets. This is quite unique because competing types of ammunition are either specialized for one or the other target scenarios.

- APEX is the latest in aircraft am-

munition. Our technology ensures that the military is best equipped to meet tomorrow's challenges, and to support our defense capabilities through the use of high technology, continues Brandtzæg.

We expect that APEX can have a business potential of approximately 10 billion NOK over a 30-year period. APEX will also help to secure jobs we have at Raufoss today.

Our goal is that APEX will be a joint capacity for all partner countries to F-35. APEX technology has potential in other calibers of ammunition and this could be used by other platforms in the military in the future.

Northrop Grumman signs F-35 Long-Term Agreement with Kitron AS

Northrop Grumman Corporation has signed a long-term agreement with Norway-based Kitron AS to supply subassembly electronic modules for F-35 Lightning II aircraft avionics. The agreement is effective through June 30, 2036, and includes rights for future extensions.

Northrop Grumman developed the Communication, Navigation and Identification (CNI) avionics for the F-35.

Northrop Grumman's integrated CNI suite provides F-35 pilots with the capability of more than 27 avionics functions including voice and data communication.

Northrop Grumman also recently awarded Kitron a four-year, \$2.5 million contract to develop a test program set (TPS) for evaluating and troubleshooting F-35 avionics.

Norway and Australia sign JSM-agreement

On 15 September Norway and Australia signed an agreement where Australia will finance the development of a new capability for the seeker in the Joint Strike Missile (JSM), developed by Norwegian company Kongsberg Defence Systems (KDA). If Australia later decides to procure the JSM, then Norway and Australia will share the cost of integrating the JSM on the F-35. This formalises the initial agreement reached during the visit by Norwegian State Secretary of Defence, Mr. Øystein Bø to Australia in February 2015, and beyond providing Norway with a missile that is both more capable and more competitive on the international market, it also marks the first time another nation has opened for the possibility of covering some of the costs related to the JSM.

The Joint Strike Missile is a long-range precision guided missile that can be carried internally in the F-35. By using a combination of advanced materials, an ability to fly low, while following the terrain and an advanced passive seeker, the

missile will prove both extremely difficult to detect and stop even for advanced countermeasures and defence systems. The current seeker that is being developed for the JSM is based on a technology known as "imaging infra red" that enables the missile to detect and identify targets based on its heat signature. Under the terms of the newly signed agreement, BAE Australia will be tasked by the Australian Government to integrate a RF-seeking capability on the missile, which will enable to also locate targets on the basis of their electronic signature. This will further strengthen the ability of the missile to locate and identify targets on a modern battlefield.

The JSM is being developed by Kongsberg Defence & Aerospace (KDA) on behalf of the Norwegian Armed Forces, and will be integrated on the F-35 in its first phase of follow-on development during 2022-2024. It is estimated that the JSM through its lifetime could support value generation for Norwegian industry equalling around NOK 20-25 billion.



*Two Australian F/A-18F Super Hornet
In 2007 Australia bought 24 Boeing Super
Hornet aircraft after one of the fastest
decision processes ever seen in relation to
fighter jet procurements.*

Photo: Australian Air Force

WHEN AUSTRALIA NEEDED A GAP FILLER

Boeing's F-18 Super Hornet came up as the best solution when Australia urgently needed a gap filler between an old aircraft type with cracks and the delayed F-35.

By Andreas Krog

In 2007 Australia bought 24 Boeing F/A-18F Super Hornet aircraft after one of the fastest decision processes ever seen in relation to fighter jet procurements. In general, countries often use five, ten or more years to evaluate and decide what aircraft to choose. But not in Australia. At least not this time. Because if the country did not act quickly, they would for a number of years have less fighter capacity than desired.

Australia was caught with aging F-111 aircraft in need of faster retirement than expected, and continuous delays in the expected delivery of new F-35 fifth generation aircraft. With the security situation in the Southeast Asia Region and Australia's location far away from Western allies, a fighter gap with less capacity than normal was not a viable solution. The remaining 72 Boeing F/A-18E/F Hornet legacy aircraft was not enough capacity for approximately 10 years until the first F-35s would be fully operational.

Come to the rescue

The original F-111 was expected to fly until 2020, when the first squadrons of F-35 fighters should be fully operational. Major cracks in the wings of the F-111 forced Australia to revise that plan and come up with a bridging strategy. On March 6th 2007, then defence minister Brendan Nelson announced the acquisition of 24 F/A-18F Super Hornet aircraft, retirement of the last F-111 in 2010, and an unremitting 100 percent commitment to the F-35 program.

Prior to the announcement, Australia had been through an evaluation process, where the Australians looked at five different

options - all of them American. The philosophy was that in the case of an attack from the neighbouring Asian countries, the Europeans might come to the rescue while the Americans certainly would. Having the same aircraft as the Americans would therefore be preferable.

Green checkmarks

The candidates were F-18 F, F-15E and F-15K from Boeing and the F-22 and F-35 from Lockheed Martin. The case was, however, that only the Boeing F-18F could be delivered between 2010 and 2012. In addition, the evaluation of the aircraft showed green checkmarks within all 16 evaluation criteria.

Overall, it was about the availability, capacity and capabilities. The plane was in production and the US Navy had a plan to update and further develop the aircraft until 2030. It could quickly be produced and phased in. With this Australia would not have to phase in two types of aircraft, F-18 and F-35, at the same time. Moreover, it was a generation 4.5 multirole aircraft with "maritime strike" capabilities. Being completely surrounded by water, that was an important issue for Australia.

Interesting opportunities

Finally, the Australians saw some interesting opportunities having a sensor operator in the rear seat. It would make it easier to let the plane be part of a larger network with AWACS planes, helicopters, ships, submarines and land forces.

Australia has received its first two F-35 aircraft. They are at the moment based at Luke Air Force Base in Arizona in the US. Here the first Australian pilots train with US F-35 pilots. The country will make a decision on the future use of the F-18F Super Hornet aircraft between 2025 and 2030. Should it be retired when Australia have received the F-35s, or should the two aircraft types be operated side by side? Australia has also bought 12 Boeing F-18G Growler, which is tailored to electronic warfare. ■■

– BULLETIN BOARD FOR DEFENCE, INDUSTRY AND TRADE –

Canada training Ukrainian soldiers

Canadian Armed Force (CAF) personnel have arrived in Ukraine to provide military training and capacity building to Ukrainian soldiers at the International Security and Peace-keeping Centre in Yavoriv.

Deployed as part of Operation Unifier, the Canadian soldiers will focus on teaching vital skills in partnership with the Ukrainian Armed Forces personnel over the next few months.



Canadian soldiers step out from a CC-177 Globemaster aircraft at the Lviv International Airport in Ukraine. Photo: Canadian Armed Forces

Italy's first F-35A Lightning II aircraft conducts maiden flight

Italy's first F-35A Lightning II aircraft has flown for the first time, achieving a significant milestone in the country's air-space capabilities.

The latest development also marks the F-35 programme's first-ever F-35 flight outside the US.

Designated as AL-1, the aircraft was assembled in Cameri Final Assembly and Check Out (FACO) facility and is the first internationally assembled F-35.

The Cameri FACO is owned by the Italian Defence Ministry, and is jointly operated by Lock-

heed and Alenia Aermacchi with a current workforce of more than 750 personnel engaged in F-35 aircraft and wing production.

The FACO is scheduled to manufacture all Italian F-35A and F-35B aircraft. It is also programmed to build F-35As for the Royal Netherlands Air Force, while retaining the capacity to supply to other European partners in the future.

Seven more aircraft are currently being assembled at the facility.

Remanufacture of UK Apache helicopters

The US Defense Security Cooperation Agency (DSCA) has notified Congress of a potential foreign military sale (FMS) of AH-64E Apache Guardian attack helicopters and associated equipment to the UK.

Under the estimated \$3bn sale, the UK Government has requested the remanufacture of 50 WAH-64 Mk 1 attack helicopters to AH-64E Apaches with 110 T-700-GE-701D engines, and the refurbishment of 53 AN / ASQ-170 modernised target acquisition and designation sights, 53 AN / AAR-11 modernised pilot night-vision sensors, and 52 AN / APG-78 fire control radars.

The package also includes the upgrade of 55 radar electronics units (longbow component), 52 AN / APR-48B modernised radar frequency interferometers, 60 AAR-57(V) 3 / 5 common missile warning systems with 5th sensor and improved countermeasure dispenser, 120 embedded global positioning systems (GPS)

with inertial navigation, and 300 Apache aviator integrated helmets.

Approved by the US State Department, the sale also includes AN / AVR-2B laser detecting sets, AN / APR-39D(V)2 radar signal detecting sets, integrated helmet and display sight systems (IHDSS-21), manned-unmanned teaming international, KOR-24A Link 16 terminals, M206 infrared countermeasure flares, M211 and M212 advanced infrared countermeasure munitions flares, and identification friend or foe transponders.

The UK has also requested ammunition, communication equipment, tools and test equipment, training devices, simulators, spare and repair parts, support equipment, personnel training, and training equipment, as well as other related elements of logistics support.

"The WAH-64 Mk 1 upgrade and refurbishment provides the UK with assets vital to deter and defend against potential threats."

The WAH-64 Mk 1 upgrade and refurbishment provides the UK with assets vital to deter and defend against potential threats, while helping the country to become a more capable defensive force. It will also provide key elements required for interoperability with US

The Apache helicopters will be used by the country to conduct various missions, including counter-terrorism and counter-piracy operations.

The sale also contributes to

the foreign policy and national security of the US by helping to improve the security of a Nato ally, which has been, and continues to serve as an important force for political stability and economic progress worldwide.

Boeing, Lockheed Martin, General Electric, Lockheed Martin Mission Systems and Training, as well as Longbow Limited Liability have been named as prime contractors of the FMS programme.



A British WAH64 Apache attack helicopter. The AgustaWestland Apache (WAH-64) is a licence-built version of the AH-64 Apache Longbow attack helicopter for the British Army's Army Air Corps. Photo: British MOD

DCNS floats the sixth FREMM frigate

DCNS has floated the French Navy's FREMM multi-mission frigate Auvergne in Lorient. The achievement took place on 2 September and marks an important step in the construction of the most modern front-line ship of the 21st century.

The FREMM Auvergne is the sixth frigate in the programme and fourth of the series ordered by OCCAR on behalf of the DGA (the French defence procurement agency) for the French Navy.

With three FREMMs currently under construction in DCNS' Lorient site, DCNS is accelerating the production speed in order to deliver six FREMMs to the French Navy before mid-2019. Two additional frigates equipped with strengthened anti-aircraft capacities will be delivered before 2022. Two further units have also been sold to international clients; The Royal Moroccan Navy and the Egyptian Navy.



The FREMM Auvergne is the sixth frigate in the programme Photo: DCNS

US company Raytheon and Polish company PCO intends to cooperate

Raytheon Company's Missile Systems business signed a Letter of Intent with PCO S.A., Poland's leading manufacturer of optoelectronic devices and laser systems, to collaboratively develop soldier sensors.

Areas of cooperation will include: Design, development and production of an enhanced night vision goggle. Advanced reconnaissance, surveillance & targeting solutions. Concept design, development, production and systems test for optics, video processor elements and other hardware elements related to future electro-optical/infrared system solutions. Existing products and capabilities for

both parties via potential subcontracting relationships

Earlier this year, Raytheon Missile Systems signed an LOI with MESKO to pursue opportunities related to Poland's air defense architecture and advanced defense technologies. Included in that agreement were areas for partnership in such categories as: Patriot GEM-T missile sub-system production and qualification. Patriot GEM-T missile integration, assembly and production. System Level Integration and Engineering. Excalibur 155 mm precision artillery projectile. TALON laser guided rocket.

UAS for Polish Gryf programme

WB Electronics and Thales unveiled their exclusive tactical unmanned aircraft system for the Polish Gryf requirement. The WB Electronics/Thales solution offers a capability that fully meets the Gryf requirements for an armed unmanned aircraft system, and delivers the capability through full Polish industrial collaboration.

Based on the combat-proven unarmed Watchkeeper system delivered to the British Army, the WB Electronics/Thales solution will integrate its surveillance capability with a strike capability of the Thales FreeFall Lightweight Multi-role Missile (FFLMM) together on a single platform.

UK Royal Navy's future hi-tech warship design released

British scientists and engineers have released designs for a high-tech Royal Navy vessel, offering a glimpse of navy's advanced future warships.

The design was released by a group of naval electronic systems companies who worked with Startpoint, a group formed to promote the UK's approach to maritime mission systems procurement.

Dubbed Dreadnought 2050, the new vessel could be built from ultra-strong plastic and graphene, and equipped with weapons that fire at

the speed of light, architects claimed.

Dreadnought 2050 would require only 50 crews as it features remote control technology. Currently, warships need at least 200 crew members to operate a vessel.

In addition, the ship features an operation room that offers commanders with an enhanced focus on areas thousands of miles away. A 3D holographic command table in the operations room would allow the crew to rotate and zoom into the battlefield.



Art impression of the Dubbed Dreadnought 2050

Ill. Starpoint



F-22 Raptor and C-17 Globemaster III to Germany

The US Air Force has deployed four F-22 Raptors, one C-17 Globemaster III, and around 60 airmen to Spangdahlem Air Base, Germany.

The new European deployment is aimed at training allied air forces and US services through mid-September.

Funded by the European Reassurance Initiative, the first

F-22 training deployment to Europe is aimed to strengthen the security of the US NATO Allies and partners in Europe.

Recently, the USAF deployed eight A-10 Thunderbolt IIs and around 170 airmen to Ämari Air Base, Estonia, as part of the country's effort to support Operation Atlantic Resolve.



F-22 Raptor

Photo: US Air Force

Norwegian Avinor Selects WAM From Saab

Saab has been selected by Avinor Air Navigation Services (Avinor ANS), Norway's air navigation service provider, to deploy multilateration technology for air traffic surveillance coverage across all of Norway along with surface surveillance for Norwegian airports.

Avinor's NORWAM system will provide air traffic surveillance data to the ARTAS (advanced surveillance data system) tracker through a constellation of sensors installed throughout the country. The system will replace several existing radars which have reached their end-of-life dates. The surveillance data will be fully compliant with all applicable standards in the different airspaces such as Enroute, TMA, CTR and surface coverage volumes. The first phase of the project is to implement WAM

coverage for TMAs and CTRs within three regions of Norway. Over the coming years, Avinor plans to expand the coverage across the nation.

The multilateration system from Saab is operational at nearly 80 sites, including nine of the 10 busiest airports in the world as identified by Airports Council International.

Saab has deployed several operational WAM systems, to customers that include Sweden, Austria, Australia, Portugal, the United Kingdom and the United States. Saab has a long history of providing ATC systems in Norway, including: multilateration systems at Bergen and Stavanger Airports; A-SMGCS at Stavanger, Bergen and Oslo airports; an ADS-B system for the Ekofisk and Sleipner-Heimdal oil fields, and a regional WAM in southwestern Norway.

Court of Appeal dismisses all charges related to the Slovenian export project

In its judgement issued on 30 June 2015, the Turku Court of Appeal has dismissed all charges related to the Slovenian export project of 2005–2007. The State Prosecutor had accused four persons of aggravated bribery in relation to the Slovenian project and demanded that a corporate fine be imposed on Patria Land Services Oy. The District Court had previously dismissed all charges. The Court of Appeal raised the amount of legal ex-

penses ordered to be paid by the State of Finland for proceedings in the District Court and obliged the State to reimburse the legal fees of Patria Land Services Oy and other defendants also in the Court of Appeal.

“The Court of Appeal's decision was as expected. We consider the decision justified, both juridically and in light of the evidence,” says General Counsel and Chief Compliance Officer Hanna Kyrki.

Hungarian Air Force leads Nato's Baltic air policing mission

The Hungarian Air Force has taken the lead role in Baltic air policing mission, replacing the Royal Norwegian Air Force in the task to ensure Nato's airspace over the Baltic nations of Latvia, Estonia and Lithuania.

As part of the new development, Hungary will deploy four JAS-39 Gripen fighter aircraft and more than 100 personnel including pilots, maintenance personnel, logistics specialists to the mission.

Hungary is the 16th Nato Ally to assume this task. The new development marks the 39th rotation of Baltic air policing mission and will commence duties through the end of this year.

The four Hungarian JAS-39 Gripen fighters will be augmented by four German Air Force Eurofighter jets who assumed the task from the UK Royal Air Force (RAF).

The RAF's Typhoon detachment deployed to Amari air base in Estonia concluded its four month operation recently.

Nato allies started sending military personnel and aircraft to guard Baltic states' skies in March 2004. In spring 2014, the allies strengthened protection of the Nato airspace after the Russian annexation of Crimea.



JAS-39 Gripen fighter aircraft.

Photo: © Ministry of National Defence Republic of Lithuania

Contract for P-8A Poseidon aircraft

The US Navy has awarded a \$1.49bn contract to Boeing for the delivery of 13 P-8A Poseidon aircraft to Australia and the US Navy.

Under this contract, the company will be responsible for providing nine aircraft for the US Navy and four Poseidon aircraft for the Royal Australian Air Force (RAAF).

The new development marks the delivery of the first P-8A Poseidon to Australia and the construction of the US Navy's second lot of full-rate production aircraft.

Delivery of the first Australian P-8A is scheduled for next year.

The P-8A, based on Boeing's next-generation 737-800 commercial airplane, is a long-range anti-submarine warfare, anti-surface warfare, intelligence, surveillance and reconnaissance aircraft designed to ensure maximum interoperability in the future battle space.

The US Navy plans to use the P-8A to replace its ageing fleet of turbo-prop P-3 Orion aircraft. Approximately 117 P-8A MMA aircraft are expected to be purchased by the US Navy.



The P-8A Poseidon aircraft is designed to ensure maximum interoperability in the future battle space. Photo: Boeing/US Navy

Nammo strengthens its presence in Poland

Nammo is continuing its international expansion with the establishment of Nammo Polska Sp. z o.o. in Warsaw. The move means that the Group will now be present in 11 countries across 3 continents.

During the past 10 years, Nammo has worked closely with the Polish defense industry, helping it to support the armed forces with high-end medium caliber ammunition. As a result, Poland has become one of Nammo's most important markets in Europe.

Nammo has also been instrumental in supporting

the Polish defense industry in establishing a modern and environmentally friendly demilitarization capacity.

A Polish partner has been chosen to develop an important component to Nammo's 25 mm APEX ammunition for the F-35 program. The APEX ammunition is the most advanced next generation multi-role ammunition for fighter aircraft.

Following a decade of success in Poland, the establishment of Nammo Polska is a logical step to further develop the cooperation and growth in the country.

Use of cluster munitions

Human Rights Watch (HRW) has claimed that cluster munitions have been used in Libya, Sudan, Syria, Ukraine, and Yemen this year, causing unacceptable harm to civilians.

In a recently published report, 'Cluster Munition Monitor 2015', the watchdog noted that cluster munitions have been used in seven countries since 2010, including five this year.

Thailand and one or more members of a Saudi Arabia-led coalition bombing rebels in Yemen are accused of using the weapons in February 2011 and March this year, respectively.

However, the report does not document any new use of cluster munitions by any of the state parties to the 2008 Convention on Cluster Munitions, since it entered into force on 1 August 2010.

The Convention on Cluster Munitions bans use, production, transfer, and stockpiling of cluster munitions due to their widespread indiscriminate effect at the time of use, and the long-lasting danger to civilians.

A total of 95 states parties are legally bound to carry out all of the convention's provisions, while another 22 have signed but are yet to ratify the convention.

Fired by artillery and rocket systems or dropped by aircraft, the cluster munitions typically explode in the air and send dozens of smaller bomblets or submunitions over a large area, which often fail to explode on initial impact, leaving duds. The duds act like landmines and pose a threat until cleared and destroyed.

Presenting the Tiger in Poland

Airbus Helicopters Tiger gave its first dynamic presentation in Poland.

The Tiger combat helicopter that performed the flight demonstration is a Tiger HAD from the French Army.

It is equipped with an extremely accurate 30mm turret cannon and a range of wing-mounted missiles and rockets together with a highly efficient electronic warfare system giving it unrivaled versatility.

Tiger HAD is navalised and can be fully operated from sea.

Since July 2009, Tigers have been deployed continuously by the French Army in different areas, such as Afghanistan, Libya and Sahel.

To date, Airbus Helicopters has delivered more than 120 Tiger helicopters to France, Germany, Spain and Australia and the aircraft has accumulated more than 68,000 flying hours.



These recent theatres of operations have demonstrated that the Tiger has the lowest maintenance needs of its class Photo: Airbus Helicopters

Training Systems to the Ukrainian Army

Cubic Global Defense has announced the delivery of its specialized training systems to the Ukrainian Army worth \$1.7 million. The equipment is interoperable with their existing Multiple Integrated

Laser Engagement Simulation (MILES) and Joint Multi-national Readiness Center (JMRC) training systems allowing the Ukrainian Army to train at the brigade level.

Second Boeing RC-135 surveillance aircraft for UK

The UK Royal Air Force (RAF) has received a second Boeing RC-135 Rivet Joint signals intelligence (SIGINT) aircraft, enhancing the country's Airseeker programme.

The new Airseeker received more than 60 improvements after the delivery of the first aircraft last year.

The improvements ranged from upgrades to the aircraft's mission systems to engine enhancements to deliver increased fuel efficiency and durability.

According to the UK Ministry of Defence (MoD), the aircraft will be deployable on operations within a matter of weeks.

UK Defence Secretary Michael Fallon said: "The delivery of the second Airseeker provides our Armed Forces with another vital intelligence aircraft that will give valuable support to our fight against enemies such as ISIL.

"With a Defence budget that will rise in real terms over the

next five years and a £163bn equipment plan, we are able to give our Armed Forces the best equipment."

"With a Defence budget that will rise in real terms over the next five years and a £163bn equipment plan, we are able to give our Armed Forces the best equipment to meet the growing and complex threats we face today."

In addition to gathering data and vital intelligence using advanced sensor technology, the Airseeker is capable of carrying out onboard analysis and distributing the information for exploitation by the ground assets through its high-tech communications suite.

The UK MoD had ordered three RC-135s from the US Government for £650m, as part of the Airseeker programme.

The UK RAF started operating the first Airseeker in July 2014 and is currently employed alongside the other RAF units in supporting operations in Iraq and Syria to fight ISIL.



The UK's second RC-135 surveillance aircraft arrived at RAF Mildenhall in Suffolk. The photo displays the first British RC-135W arriving at RAF Waddington in November 2013
Photo: UK Ministry of Defence

New Patria AMV XP

Patria has introduced its of its new AMV XP model.

Whether a wheeled vehicle is used as a personnel carrier or a platform for weapon systems, the ability to maximise its payload is a key requirement. With a total weight of 30 tonnes, AMV XP can deliver a payload of 13 tonnes. The mass of the vehicle's protection, weapons, equipment and crew is taken into consideration when calculating the payload.

With regard to vehicles, engine power is also a consideration. The engine of AMV XP provides an output power of 450kW, representing an increase of ten per cent over the vehicle's predecessor.

The truly extreme environ-

ment for any ordinary land vehicle is water. However, AMV has an amphibious basic structure, enabling it – up to a weight of 28 tonnes – to swim through water, provided that it is fitted with an amphibious option.

To reconcile the conflicting features of on-road and off-road use, AMV XP will be equipped with an optional mechanism for adjusting the vehicle's ground clearance, enabling enhanced manoeuvrability in extreme conditions.

In addition to adding enhanced equipment, the suspension of XP has been optimised to a degree that surpasses that of the previous model, with the aim of maximising the vehicle's performance.



Patria AMV XP

Photo: Patria

The Royal Thai Air Force receives four EC725s

Airbus Helicopters has completed delivery of an initial four EC725s to the Royal Thai Air Force, providing highly-capable rotorcraft for this military service's search and rescue and troop transport duties.

The order of four EC725s was signed in 2012, with the deliveries having just been completed. They are expected to begin operations later this month. Two additional EC725s

were booked in 2014 for deliveries to the Royal Thai Air Force next year.



Thai Air Force EC725 helicopters
Photo: Airbus Helicopters

US Army Order for Camouflage Solutions

Saab has received an order for the production and delivery of camouflage equipment from the US Army. Deliveries will occur over the next six months.

Saab has global leadership in the design and manufacture of advanced camouflage solutions for the defence market and continues to attract new and existing customers around the globe. For decades in the US, Saab has been the leading supplier to the US Army within this product area.

Saab's advanced camouflage technology products have until now been exported to more than 50 countries. Saab offers a unique package of camouflage systems and force protection solutions with the purpose to decrease the enemy's ability to detect and engage. These solutions protect camps, vehicles and personnel against hostile sensors and enemy target acquisition.

Saab Receives UK Orders for Giraffe

Saab has received orders from the UK Ministry of Defence for additional Giraffe AMB radar systems plus upgrades of the existing systems and associated equipment. The order value is approximately SEK 610 million. Deliveries will start during the second half of 2015 and continue until 2018.

The Giraffe AMB radar provides a full 360° update of the air situation out to 120 km every second. It can operate in challenging environments such as mountains, complex coastal regions and wind farm areas.

The upgrade will take the UK's existing systems to the same production-build standard as the new Giraffe AMB, enhancing the primary radar's performance and capacity. It also keeps the UK's radars in line with the Giraffe product roadmap. This, in turn, will enable the addition of a unique capability to spot small UAS vehicles and the capacity to screen out difficult radar 'clutter', such as birds.

Development and production will take place in Gothenburg, Sweden.

Raytheon Company and KONGSBERG to extend NASAMS partnership

Dr. Tom Kennedy, Raytheon Chairman and CEO, and Harald Ånnestad, CEO Kongsberg Defence & Aerospace AS, signed the 10-year agreement to extend the partnership on the NASAMS medium-range

surface-to-air missile system.

Raytheon has partnered with Kongsberg for a decade to develop and produce the NASAMS.

In addition to the successful NASAMS system, the two

companies have recently teamed on the Naval Strike Missile and the Joint Strike Missile strike missiles.

The Raytheon and Kongsberg collaboration is focused on optimal system performance

and capabilities from sensor to effector for NASAMS users around the world, including incorporation of the new AMRAAM-ER (extended range) missile.



NASAMS successfully engaged and destroyed four-of-four in an airborne target live fire exercise conducted by the Royal Norwegian Air Force at the Andoya Rocket Range in Northern Norway.

Photo: FMS

Avinor and KONGSBERG enters into agreement on remote towers

Kongsberg Defence Systems (KONGSBERG) and Avinor Air Navigation Services have entered into an agreement for the supply of remote towers worth 400 MNOK. KONGSBERG is prime in close cooperation with its partner Indra Navia AS.

The scope contains a complete solution for remote control of tower services at a number of airports from one location. Avinor has earlier decided to introduce remote control and tower services at up to 15 airports, from one tower centre in Bodø. A further investment may include more Avinor airports. The agreement between Avinor and KONGSBERG is the most comprehensive commitment in remote towers ever launched in

international aviation.

KONGSBERG employs technology from defence projects and integrates them with Indra Navia's advanced and very modern solutions for tower management. This technology includes amongst others rugged and innovative sensors, secure and redundant network based solutions for remote control of towers, as well as control of real-time data and data storage solutions.

Indra Navia will deliver an integrated visualization systems based on their leading Nova Tower line supplied worldwide, amongst others to London Heathrow, Paris Charles de Gaulle, Dubai, Beijing and many more.



Remote towers contract

Ill: Kongsberg



NLAW for Finland

Photo: Saab

NLAW Order From Finnish Defence Forces

Defence and security company Saab has received an order from the Finnish Defence Forces for the NLAW anti-tank weapon. The contract value is approximately EUR32 million (approximately SEK295 million).

In 2007 Finland ordered the NLAW, becoming the second export customer for the short range anti-tank weapon. Finland has now ordered an additional number of NLAWs.

The contract includes weapons and training equipment plus an option for additional orders. The contract value is approximately EUR32 million (approximately SEK295 million)

and deliveries will take place during 2015.

Saab's NLAW (Next generation Light Anti-tank Weapon) is a shoulder-launched, anti-tank missile system that attacks the target from above. This makes it the most effective anti-tank weapon for dismounted light forces operating in any environment, including built-up areas. Originally developed for Sweden and Great Britain, it meets all requirements for a modern anti-tank weapon system for use during international operations as well as for national defence.

Patria and BAE Systems submit Australian Combat Reconnaissance Vehicle bid

Patria and BAE Systems have offered a highly protected armoured vehicle integrated with a combat proven turret as the solution that will best meet the Australian Army's mounted combat reconnaissance requirements. The companies offer the AMV35 Combat Reconnaissance Vehicle (CRV) under Phase 2 of the Land 400 Program.

The solution combines Pa-

tria's Armoured Modular Vehicle (AMV) and BAE Systems Hägglunds' E35 turret system. Both are qualified and in service with NATO nations.

The Patria AMV has been selected by seven nations with 1,400 contracted vehicles. The platform has attained a strong combat reputation, chiefly based on the strength of its operational performance e.g. in Afghanistan. The BAE Systems-

Hägglunds manned turret system is fitted to the successful CV90 family of infantry fighting vehicles operated by five nations. It has been used on crisis management and combat missions across the globe.

BAE Systems is the prime contractor in this offer and Patria will provide vehicle technology and platform. Patria and BAE Systems team will manufacture and support the AMV35

in Australia, securing and retaining in-country capability, and contributing significantly to the Australian economy throughout the expected 30+ year life of the vehicles. If selected, this project has also a high positive impact on the Patria operations in Finland. According to the public information shared by the Australian Department of Defence, the final decision will be made in the beginning of 2018.

Contract to Support Australian C-RAM Capability

Saab has signed a contract to supply the Australian Defence Force with Counter-Rocket, Artillery and Mortar System (C-RAM) support with a contract value of approximately \$AUD 26.4m (approximately SEK 168 million). The initial contract period includes the establishment period and three years of support services thereafter, with options of up to five 12-month extensions, that could take the contract period up to July 2024.

C-RAM is an essential capability to protect friendly forces from hostile fire. C-RAM sen-

sors provide detection and warning against small, mobile and hard-to-find threats such as rocket and mortar fire. The C-RAM capability components to be supported under this contract are Giraffe Agile Multi-Beam (AMB) radar, Giraffe Training Simulator and a Lightweight-Counter Mortar Radar. The contract follows the 2010 procurement of Saab's Giraffe AMB and Giraffe Training System Mission Systems to support Australian troops during Operation 'Slip- per' in Afghanistan.

Australian Airbus A330 MRTT refuels F-35 fighter

An Airbus A330 Multi Role Tanker Transport (A330 MRTT) of the Royal Australian Air Force has successfully refuelled a F-35A Joint Strike Fighter of the US Air Force. During a four-hour sortie from Edwards AFB, California, the tanker, known in RAAF service as the KC-30A, conducted 59 contacts includ-

ing five 'wet contacts' during which 19,600kg (43,200lb) of fuel were passed. All the refuelling was performed using the A330 MRTT's Airbus Airborne Refuelling Boom System (ARBS). The A330 MRTT is the only new generation tanker/transport certified to refuel the F-35A.

Joint Light Tactical Vehicle contract

Oshkosh Defense has received a \$6.7bn contract from the US Army Tank-Automotive and Armaments Command (TACOM) Life Cycle Management Command (LCMC) to manufacture the Joint Light Tactical Vehicle (JLTV).

Featuring both low-rate initial production (LRIP) and full-rate production (FRP), the firm, fixed-price production contract requires Oshkosh to deliver approximately 17,000 vehicles and sustainment services.

Also pursued by AM General and Lockheed Martin, the JLTV production contract includes a base contract award and eight option years covering three years of LRIP and five years of FRP.

The JLTV programme is a multi-service initiative aimed at replacing the US Army and Marine Corps' fleet of rapidly ageing high-mobility multipurpose wheeled vehicles, which have been in active service for more than 25 years.

Oshkosh has offered Light Combat Tactical All-Terrain Vehicle (L-ATV), which combines the latest in automotive technologies with the Oshkosh CORE1080 crew protection and TAK-4i independent suspension systems to offer next-generation performance.

Built on the Oshkosh's active manufacturing line, the JLTV prototypes include a four-seat multipurpose variant and two-seat utility vari-

Apache and Chinook Helicopters for India

The India Ministry of Defence has finalized its order with Boeing for production, training and support of Apache and Chinook helicopters that will greatly enhance India's capabilities across a range of military

and humanitarian missions.

India will receive 22 AH-64E Apache attack helicopters and 15 CH-47F Chinook heavy-lift helicopters. Both are the newest models of those aircraft.

France increases defense budget

France will increase its 2016 defense budget by \$671 million to \$32 billion according to a parliamentary, even as the country enacts corporate and income tax cuts worth more than \$12 billion.

The budget calls for an increase from roughly \$18.7 billion to over \$19 billion for

military equipment, covering a number of deliveries slated for next year, including nine Rafale fighters, three A400M transport aircraft, five Tiger combat helicopters, and six NH90 transport helicopters, along with a frigate, missiles for the frigate and a Barracuda attack submarine, and 25 heavy vehicles.

Training and simulation systems for Norway

The Norwegian Army's Combat Training Center is to receive advanced training and simulation systems and system support from Saab.

The order was issued by the Norwegian Defense Logistics Organization and is worth about \$16.8 million.

Delivery of the systems is expected begin next year and continue to 2020, and includes Saab's new generation sight simulator unit for vehicles.

The Norwegian Combat Training Center is a battalion-level training system for soldiers, vehicles, anti-tank weapons.

ant, each featuring common crew protection and advanced automotive systems, as well as optional ProPulse hybrid diesel-electric drive train with exportable power.

The two seat variant has one base vehicle platform, the Util-

ity, while the four seat variant has two base vehicle platforms, the General Purpose and the Close Combat Weapons Carrier.

Vehicle deliveries are scheduled to start approximately ten months after the contract award.



The L-ATV is expected to enable troops to travel over rugged terrain at speeds 70% faster than today's gold standard. Photo: Oshkosh Defense



Bjørn Are Johnsen and Tim Otter each gave speeches at the tenth CBRN seminar hosted by JosiTech
Photo: MilitærTeknikk

CBRN seminar

In September, JosiTech held its annual CBRN seminar for the tenth year running. The arrangement took place at the Oslo Military Society, where a number of different entities within preparedness and societal security were strongly represented.

FFI researcher Bjørn Are Johnsen has worked on the CBRN threat through many years, and based his address on the recurring incidence of the chemical threat as CBRN terror attacks are concerned.

The main problem from a terrorist viewpoint is the distribution of the chemical agents. The production or procurement of the chemicals has been shown to be the lesser of the terrorists' problems. During interrogations of terrorists who have produced chemical warfare substances, such as the group surrounding Chemical Ali from the former regime of Saddam Hussain in Iraq, it has been shown that the personnel has kept a disturbingly high level of knowledge and competence. The same has been noted in Syria, where for instance mobile mixing stations for chemi-

cal warfare agents have been developed.

Johnsen cited several incidents where chemical agents have been used or attempted used, including among others a planned Sarin attack against the European Parliament, fortunately thwarted.

Tim Otter from the UK is internationally renowned for his work in the CBRN field. Otter addressed the developing trends within the CBRN terror arena, and could report that even though the threat could and should feel frightening, a lot of positive developments are happening with regard to technology to contain the threat. For one thing, ever-improving equipment to detect and identify CBRN threats continues to appear on the market.

– But even if prime equipment is of importance, we cannot forget that the personnel charged with using the equipment needs careful and extensive education and regular exercise. The old military adage, "train hard, fight easy" applies equally to the fight against terror, said Otter in conclusion.

NorLens 40 years

The Norwegian company NorLens turned 40 years this year.

Around 1990 NorLens developed the high pressure technology for use in offshore oil booms, and based on this

technology Norlense developed a unique high pressure inflatable tent. The inflatable tents have been frequently used by the armed forces.

First in Norway; no. 6 in Scandinavia

Jak. J. Alveberg as is a small and specialised chemicals company, that has gained approval according to the quality standard AS 9120.

This is a very comprehensive standard, applicable to aircraft maintenance and the aircraft industry.

The company has already been approved to the rather more ordinary standard of ISO 9000:2008 for four years, and is well reputed for targeted quality work. It would still take two years of devoted efforts amidst much frustration before the new approval was in place.

AS 9120 is a 'Quality Management System – Aerospace', which in time will be established as a requirement of everyone supplying products and services to aircraft. "We are very pleased to be the first company in Norway to gain this approval, and it will have significant bearing on the future development of Jak. J. Alveberg in times ahead," says Einar Østli, who supervised the work on the standard, and will around this time be assuming the position of General Manager. "It will be interesting to observe the developments to come", says Østli in conclusion.

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SIAULIAI: NATO'S BALTIC FIGHTERTOWN

NATO'S BALTIC AIR POLICING COMMITMENT STILL GOING STRONG

May 2015, a small modern building on the south-eastern corner of Lithuania's sole but immense Siauliai-fighter base seemingly exposes a lay-down atmosphere. Abruptly 'all hell' (i.e. ear-deafening horn) breaks loose when two Norwegian NATO-pilots rush down the stairs and run to their flying gear. These adrenaline-rushed pilots dress-up in minutes before storming outside into a waiting minivan.

Text and photos by: Stefan DEGRAEF and Edwin BORREMANNS

Tires' blazing the minivan races a 200 meter dash to the QRA (Quick Reaction Area) 'drive through' aircraft-boxes to their Lockheed Martin F-16AM Fighting Falcon air-defence fighters. Using a well-trained and -controlled choreography, the pilots and ground crew fires up the powerful P&W F-100-PW-220 engines. All systems checked and running, both aircraft leave the alert-'barns' in quick succession before blasting off the runway to intercept, identify, escort and if necessary destroy 'unknown' air-targets... Welcome to NATO's 2015 Baltic Air Policing 38th rotational contingent.

On taxiing to the runway, both pilots will have received a summary of the 'job at hand' and will check in with "Galaxy" – Lithuania's fighter control centre close to Kaunas – within seconds. Immediately after take-off the AN/APG-66(V) 3 radar scans the Baltic aerospace allowing the pilots – using the Link 16 datalink – to quickly assess the overall aerial and tactical situation and start their intercepts. 'Target of Today' is a lone Russian Air Force Antonov An.22 Antei (NATO-coded Cock) transport aircraft flying in international airspace over the Baltic Sea southbound to the Russian enclave of Kaliningrad, but not responding to any civilian air traffic radio calls.

Using prevailing NATO procedures, the two Norwegian NATO pilots intercept, identify, escort and make photographs and/or video clips, using off-the-shelf purchased GoPro action cameras, of this massive Russian propeller aircraft. Once the intercept is over, both F-16AM

A Norwegian F-16 policing the airspace over the Baltic States.

Fighting Falcons return to Siauliai air base for an in-depth debriefing. Later on, all calm returns to the small modern building in the heavily guarded 'Quick Reaction Area'... ready to 'launch' for yet another quick reaction alert-mission.

SIAULIAI: NATO'S AIR ARMADA

At the start of the Nineties, Lithuania, Latvia and Estonia (aka the Baltic States) regained their independence from the Soviet Union and quickly looked westwards for its economic and military growth, support and resurrection. Despite Russian attempts to keep the Baltic States within the CIS (Commonwealth of Independent States) or/and retain a military presence in these three countries, by offering to sign bilateral security treaties on regional security, all three nations elected to look for European Union and NATO membership. In March 2004, Lithuania, Latvia and Estonia proudly joined NATO and the European Union, heavily boosting their future perspectives.

With no real air defence assets present in the Baltic States and forced to use its financial resources for economic and all-round national development, instead of defence spending, the three states turned to NATO for their air-policing.

Since 2004, NATO fighter aircraft and pilots are based at Siauliai in Western Lithuania on a four-month long rotational basis. This vast airbase was one of the largest air bases in the Soviet Union, housing a MiG-29 Fulcrum-Regiment and Sukhoi Su-24 Fencer overhaul facility and – in 2004 – the only Baltic airfield suitable to NATO's air policing armada. From the start of the Baltic Air Policing operations, vast modifications were made to this former Soviet Air Force-airbase, by resurfacing the main runway and taxi-tracks and building a vast aircraft apron and four (initially soft-skinned and later metal) aircraft shelters. Recently a fully equipped 'mission building' was taken into service given a lot of operational comfort to NATO air- and ground crew. Since 2014 a vast POL (Petrol, Oil & Lubricants) storage facility, two huge additional platforms are under construction, capable of handling NATO's and USAFE strategic airlift aircraft (incl. Boeing C-17 Globemaster III and Lockheed C-5B Galaxy airlifters). This includes the infrastructure (with new hardened shelters) to house a fighter squadron and helicopter unit, clearly illustrating Lithuania's and its neighbouring Baltic States of Latvia's and Estonia's political and financial willingness to bolster NATO's Baltic defence infrastructure.



Norwegian F-16 taking off from the Siauliai air base

On the ground two (Italian and US) C 130H Hercules transport aircraft and one Danish C 130J-30 super Hercules (the longest) are seen. In the background, two US Air Force V-22 Ospreys are visible.

Using NATO funding, two additional airbases are modernized (or in modernization) to house NATO aircraft: Amari (Estonia) and Lielvarde (Latvia). In response of Russia's annexation of Ukraine's Crimea and to boost the Baltic-defences, NATO fighter jets are deployed since mid-2014 on Siauliai-like rotational basis to Amari, located close to Estonia's capital Tallinn. Early May 2015 four Typhoon FGR4 Eurofighters of Royal Air Force's No.6 squadron, based at RAF Lossiemouth, manned the quick reaction area at Amari. A fourth Enhanced Baltic Air Policing-related contingent at Malbork Air Base in eastern Poland is since January 2015 staffed by four Lockheed F-16AM Fighting Falcons of the Belgian Air Force.

The Baltic desire for efficient air policing is also triggered by the Russian enclave of Kaliningrad, bordering on the Baltic Sea, Poland and Lithuania. Although small in size, the enclave houses some important Russian air and naval bases, being home to the Russian Baltic Fleet (Baltiiskii Flot). Two Naval Aviation Regiments are based at Chernyakhovsk (Su-24 Fencer and Su-27 Flanker) and Donskoye (transport and helicopters). Chkalovsk Airfield near Kaliningrad has been upgraded to a full military airbase. Further presence of the important Yantar-shipyard, having constructed some of Russian (and Indian) Navy frigates and destroyers, the Russian-speaking population and its geo-political location within NATO's Euro-sphere will for sure strengthen Russia's desire to maintain this enclave within its 'territory'. Recent events in Ukraine (i.e. Crimea crisis and uprising

by Russian-speaking minorities in Eastern Ukraine) immediately caused severe concern in the Baltic States, forcing NATO to keep its Baltic Air Policing mission 'top of mind'.

THE FIGHTING FALCON AND TYPHOON HAS LANDED

NATO's Baltic Air Policing 38th four monthly rotation, since its kick-off in January 2004, started on 30/04/2015 when four multirole Lockheed Martin F-16AM Fighting Falcon fighters of No.338 Squadron based at Ørland (Norway) landed at Siauliai. The Norwegian contingent, as BAP38 lead-nation, was joined by four Eurofighter F-2000A Typhoons of the Italian Aeronautica Militare. Instead of re-deploying to Italy, the Italian contingent – being previously BAP 37 lead nation and following a political decision from the Italian Government to extend its 'Operazione Frontiera Baltica' – shifted its accommodation to Siauliai's deployable 'rubber' shelters on one of the base's huge aprons, making Italy the first NATO nation to crew two 'back-to-back' BAP-contingents. Norwegian ground personnel and support hardware was airlifted to Lithuania by RNoAF C-130J Hercules, NATO C-17's and Lithuanian Air Force C-27J Spartans, having gained preliminary diplomatic approval from Sweden and Finland for flying-in their air-to-air missiles out of Norway. As usual, both the Norwegian F-16's and Italian F-2000A Typhoon Tranche 1 aircraft and its air/ground crew were drawn for the various squadrons of both air forces allowing smooth rotations of personnel to Lithuania.



Two Norwegian F-16s and (top and left) and two Italian Eurofighters (right and below) patrolling together.

At first all Norwegian pilots – all ‘first timers’ to Lithuania – flew familiarisation flights to become familiar with the Baltic operational area and the various available (technical and/or meteorologically induced) diversion airfields: Amari and Tallinn (Estonia), Riga International (Latvia) and finally Kaunas and Vilnius International (Lithuania).

The NATO enthusiasm of the Baltic population and less condensed Baltic airspace enabled the squadron to quickly settle in a well-oiled operational flying and ‘QRA’-routine. Two pilots traditionally stayed on a 15-minute stand-by to scramble (aka ‘Alpha-Scramble’). For QRA-purposes the RNoAF F-16AM-jets, all of the newest M6 Midlife Update-standard, are armed with two IRIS-T short-range heat-seeking infrared and two AIM-120-C5 radar guided missiles. For target identification, the Norwegian pilots use their ‘chin-mounted’ Sniper Advanced Targeting Pod. The four Italian F-2000A

Typhoon air-dominance fighters are armed with a mixed of two to four IRIS-T IR and six-eight AIM-120C AMRAAM radar guided missiles, completing their internal 150 round 27 mm Mauser cannon. Although some Italian Typhoon-fighter wings (4 Stormo/Grosseto, 36 Stormo/Gioia del Colle and 37 Stormo/Trapani) operate the more (extra-)modern F-2000A Typhoon Tranche 2 variants, all ‘Baltic’ Typhoons are of Tranche 1 standard allowing a larger number of Italian pilots to rotate through BAP38.

BAP DAILY OPS: ALPHA AND TANGO

For more than five decades the Baltic Sea and its small international airspace have been the active ‘playground’ (i.e. Theatre of interest) for military intelligence forces from the ‘East and West’ and the neutral Sweden. During the high days of the highly polarised NATO-Warsaw Pact Cold War, a vast number of spy ships and planes almost

continuously roamed the Baltic basin to gather military sensitive information as much and detailed as possible and intimidate ‘the other side’ by its aerial and seagoing activities. The collapse of the Warsaw Pact, the integration of various Baltic nations into NATO (Poland and the Baltic States) and a detente in East/West-relations in Europe almost pushed the Baltic-intelligence gathering community into a state of hibernation. Recent events in Europe (notably the Ukraine crisis) and their sentimental and political fallout on the Baltic States, being as Ukraine formerly part of the old Soviet Union, triggered a revival of this old ‘cat-and-mouse’ game. With Russian maritime sea and air operations vastly increasing, particularly transport and equipment-transfer flights to/from the Kaliningrad-enclave, since 2014, the number of incidents with Russian military aircraft has also increased substantially. These incidents range from Russian aircraft entering the internation-

al airspace over the Baltic Sea without a filed flight plan or an active transponder, which is in violation of standing ICAO-regulations, to military aircraft clipping the national airspace of the Baltic States for a few seconds and/or miles, especially close to the inhabited islands of Vaindloo and Hiiumaa located well away from the Estonian mainland in the Gulf of Finland.

Continuously monitoring the Baltic airspace, NATO's Combined Air Operation Centre at Uedem (Germany) has to decide whether or not to launch the Siauliai-based NATO-jets to intercept these 'unknown' aircraft over international waters. Main targets are of course aircraft flying over the Baltic Sea without flight plan, transponder and ATC-communication, jeopardizing overall (also civilian) flight safety over the basin. Occasionally, NATO jets just need to confirm the identity of 'suspect' aircraft. The Russian Air Force tends to file ICAO-conform flight plans for Ilyushin Il.18T/V Coot-A transport airplanes en route to/from Kaliningrad or to/from St.Petersburg for its frequent logistics flights to/from the enclave. In full radio contact with Air Traffic Control and with their transponders activated, these 'sterile' Il-18 transport aircraft sometimes appear to be Il-20M

Coot-B intelligence gathering surveillance and spy-aircraft on interception by NATO-fighters out of Siauliai, Amari or Malbork.

The minimum reaction time enforced by NATO's Uedem-based Combined Air Operation Centre ranges – dependent on operational requirements and threat-level – ranges from 2 minutes to 3 hours. Pilots on non-24/7 alert typically fly twice a day with the two 'spare' Fighting Falcons or Typhoons a 'Tango' (training) scramble, training their reaction time, various air-policing and superiority techniques and tactics while airborne with Lithuanian fighter intercept controllers and –not least important – 'showing their NATO-presence' to the Baltic population. 'Touting' their futuristic-looking JHMCS-helmets during daytime-QRA operations, pilots shift to NVG-mounted (Night Vision Goggles) standard flying helmets during night-time.

During training flights all available Baltic air assets are thrown against the Baltic military air controllers and Baltic NATO-pilots: Lithuanian C-27J Spartan and Let 410-light transports, Estonian/Lithuanian Air Force L-39 Albatross-jet trainers and even Lithuanian Air Force Mi-8 Hip-helicopters. All these 'adversary'

pilots will deliberately alter their initial flight plan in flight or loose communication with air traffic control and stray 'into the unknown'. Once this anomaly is detected, the military air traffic controller will have no option than to launch an 'Alpha-Scramble' to identify the intruding aircraft or helicopters. If already airborne as a 'Tango-Scramble', NATO jets can quickly be reordered into an 'Alpha' and guided to their targets.

During the first month of the joint Norwegian/Italian BAP38 mission four Alpha-Scrambles were flown, intercepting Russian Air Force transport aircraft (Antonov 22 and Ilyushin 76). In 2014, the Italian Typhoon contingent, as lead-nation of BAP37, flew 37 Alpha-Scrambles, intercepting a wide variety of Russian fighters, transport and intelligence aircraft and even bombers over the Baltic. None of these scrambles were in response to an incident perceived by NATO as an actual treat to the Baltic States and the Alliance.

For many years to come, front-line NATO-fighter squadrons will rotate to Siauliai and Amari to ensure the air policing of the Baltic States, since their integration within NATO as true and vivid ambassadors of the Alliance. ■■

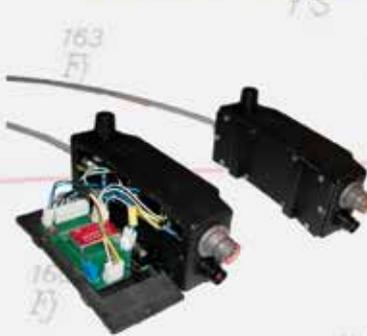
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FIRST STEEL CUT FOR SAAB KOCKUMS A26 SUBMARINE

Saab has begun construction on the first A26 submarine. In early September 2015, the first steel was cut for the first submarine's hull.

The construction phase for the Swedish Navy's A26 next-generation submarine has officially begun. On 4 September 2015 at the Saab Kockums shipyard in Karlskrona, the first steel for the new vessel was cut. This is a key milestone for the world's most modern submarine programme.

The A26 is a next-generation submarine with the ability to perform in all oceans and across a broad spectrum of conflict environments. Along with its traditional load of mines and torpedoes, the submarine can be equipped with missiles. Perhaps the most unique A26 design feature is its Multi Mission Portal, for the launch and retrieval of diverse mission payloads such as manned and unmanned vehicles. The A26 submarine will be a strong intelligence-gathering platform within the wider defence network.

"We have left the design phase behind and begun construction of the

A26, a pillar of Sweden's future naval defence. The A26 is a new standard bearer; a step forward in the Swedish tradition of modular design and building, it ensures maximum operational effectiveness with a lower lifecycle cost. With the A26 you can always adapt the submarine to the mission at hand. Now that production has started, it is a clear signal to other potential customers around the world that Saab is ready to deliver to them as well," says Gunnar Wieslander, head of Saab's business unit Saab Kockums.

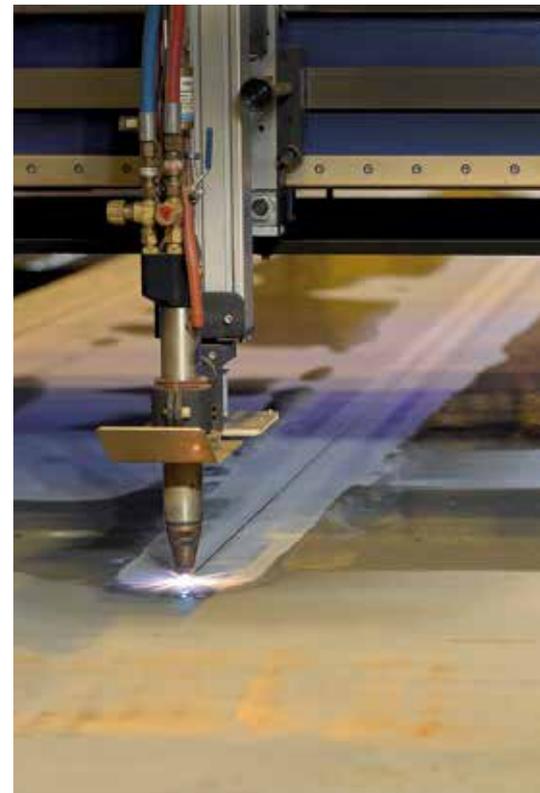
On 30 June 2015, Saab signed contracts with the Swedish Defence Materiel Administration to construct, verify and deliver two new Type A26 submarines to a total order value of SEK 7.6 billion. The first delivery will be 2022.

In addition to the delivery of the two new A26 submarines, Saab have also contracted for mid-life updates of the three Swedish Navy Gotland Class submarines. ■■

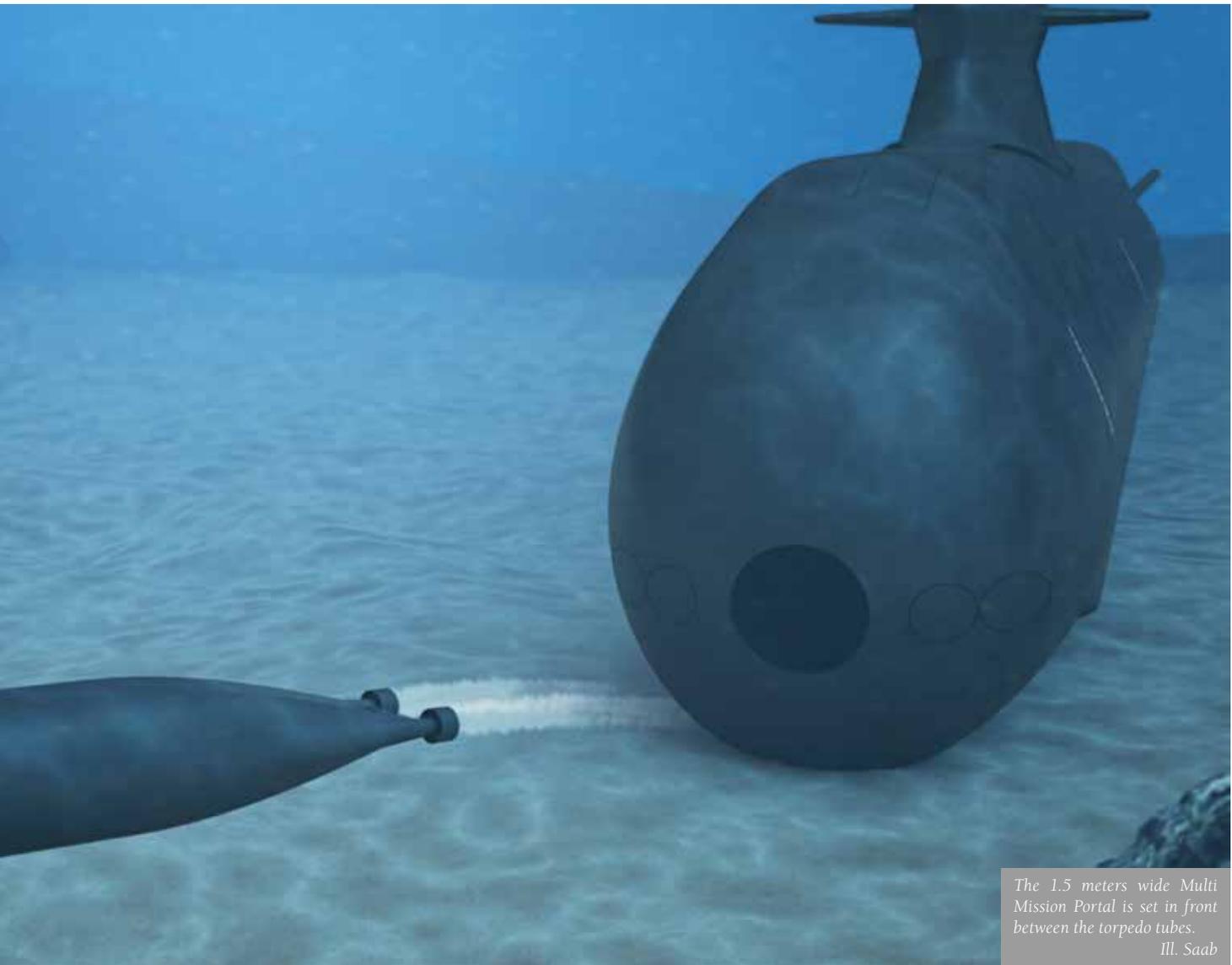


The A26 submarines will be powered by conventional diesel-electric propulsion machinery and equipped with the Kockums Stirling AIP (air-independent propulsion) system. The Stirling system makes the A26 very stealthy and difficult to detect. The A26 boosts all the traditional operational capabilities of a submarine and is also a strong intelligence-gathering platform within the wider defence network. Its proven modular design ensures availability, with efficient through-life upgrades and adaptations, and low life cycle costs. The A26 will be capable to operate in shallow and narrow waters along coastlines as well as in open sea areas. A26 has for a long time also been regarded as one of the candidates for replacement of the Norwegian Navy Ula class submarines.

Ill. Saab



The A-26 steel cutting ceremony



The 1.5 meters wide Multi Mission Portal is set in front between the torpedo tubes.

Ill. Saab



Photo: Stefan Kalm

NORWEGIAN SUBMARINE PROCUREMENT;

POSSIBLE SUBMARINE CO-OPERATION WITH OTHER NATIONS

Norwegian authorities have held talks with their counterparts in Poland with a view to possible co-operation on new submarines. The talks took place at the defence industry trade show MSPO 2015, held in Kielce in Poland.

Norge operates six submarines of the ULA class, currently around 25 years old. These are the only existing submarines of their kind in the world, and the already challenging sourcing of spare parts will in time deteriorate into impossible. The Government made a concept choice in 2014, with the decision to look into procurement of new submarines rather than performing a lifespan extension operation on the ULA class.

Upon a new procurement, Norway will base its buying decision on an existing submarine design. This will steer us clear of any extensive development project with the attendant uncertainties, costs and risks. The new subs will be built at a yard with proven experience from the building of conventional submarines.

Out-phasing the ULA class is planned for the middle of the 2020's. The delivery of new submarines before scrapping the old ones is contingent upon a contract for the new-buildings to be signed before the year of 2020.

Any procurement of new submarines will be costly. Norway is manoeuvring to reach an extensive co-operation agreement with other nations on new submarine procurement, in order to keep the costs no more massive than necessary. Achieving any such agreement requires a common foundation of several factors. Similarity in the requirement specs is one, along with the nations working to a similar time schedule. Additionally, the countries should be seeking joint solutions for logistics and lifespan support. Polen has a list of requirements quite similar to that of Norway, and there is some interest in evaluating the possibilities for collaboration on procurement, operational support and maintenance. Norge expects to intensify the Polish exploratory talks in the near future.

MORE COUNTRIES ENTERING THE SCENE?

During recent years, the Norwegian Ministry of Defence has been engaged in processes alongside various other nations, among which the Netherlands has been mentioned as a possible co-operating nation. Following the disclosure of the Polish-Norwegian talks, speculations have arisen into the possibility of Poland, the Netherlands, and Norway all joining in a submarine procurement project.

FREMM FRIGATE FOR EGYPT

In a ceremony on June 23rd, the Egyptian navy took command of their first French built FREMM frigate at the DCNS Lorient shipyard in Brittany at the French Atlantic coast.

The new Egyptian frigate was named Tahya Misr (meaning Long Live Egypt), but originally the frigate was named Normandie and was intended for the French Navy (the second Aquitaine class frigate for the French Navy). In February 2015, however, DCNS signed a contract with the Egyptian Ministry of Defence for the supply of the FREMM Normandie multi-mission frigate.

Due to export regulations, the former Normandie saw its second row of vertical launch system (SYLVER A70, used to launch MBDA's naval cruise missiles) and the two SIGEN R-ECM electronic warfare and jammer systems removed. The SATCOM antenna for the Syracuse system was also taken down because it can only be used by the French Navy.

All other weapons, systems and equipments remain similar to French Navy's Aquitaine class, including the two Nexter Narwhal 20B remote weapon stations.

The crew of the Tahya Misr will be around 126 sailors (compared to 108 in the French Navy). The DCNS has since March 2015 has been training the Egyptian crew.

For DCNS, the time frame from the contract signing in February 2015 until take-over in June the same year has been a major challenge. The Egyptian navy wanted their new Tahya Misr frigate to be present at the inauguration ceremony of the new Suez Canal on August 6th, and this caused a very tight time schedule for both refitting works on the vessel and the training of the Egyptian crew. But the Tahya Misr was delivered on time, and did participate in the Suez Canal on August 6th as planned. ■■



Tahya Misr at the DCNS Lorient Shipyard. The Egyptian Navy becomes the second FREMM frigate export customer. The first FREMM customer was Morocco which commissioned the Mohammed VI frigate in 2014. DCNS has also contracted supply of four Gowind 2500 corvettes for Egypt. Photo: MilitærTeknikk



The ceremony took place in presence of (from left) Admiral Osama Rabie, Commander in Chief of the Egyptian Navy, General Sedki Sobhy, the Egyptian Ministry of Defense, Jean-Yves Le Drian, the French Ministry of Defense and Hervé Guillou, Chairman & CEO of DCNS. Photo: MilitærTeknikk

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