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JE SUIS CHARLIE

Following the terror attack on the satirical magazine Charlie Hebdo in Paris, “Je suis Charlie” has become a widely adopted slogan for the freedom of speech.

The brutal attack attaches itself to the series of attacks on media and journalists over recent years, the latest incident being the shootings in Copenhagen in February.

Threats and persecution of media and its people are nothing new; this has been seen in practically all totalitarian regimes up through history. The more recent development is that it is happening in states where the freedom of speech is among the basic and constitutional freedoms, and the threats are followed by extremely vicious attacks.

In the public debate ensuing after the brutal acts, some have spoken up for limitations to the freedom of speech, and that it should at least be exercised in a responsible manner. In particular, it has been said that expression that violate religious beliefs and values, such as the caricature drawings of the Prophet Mohammed, should be avoided.

There have always been limits to the freedom of speech, both in legal and moral terms. The important issue is still not where do these limits apply, but rather who shall have the power to regulate the freedom of speech?

The situation in today’s Europe is that extremist groups are attempting to control and inhibit the freedom of speech. This is not a new situation for a number of European countries. Our history lists many examples of extremists, be they communists, Nazis or Islamic fundamentalists, attempting to curtail the freedom of speech using threats of violence and killing.

From the same annals of history, we should also have learnt that to give in to the demands of these extremists will only lead to the propagation of new and even more extreme demands. For other cultures to prohibit the publishing of drawings of the Prophet Mohammed, will by the Islamic communities be seen as an acknowledgement that “We are right”, and “Our acts of violence are provoked and justifiable”. This will serve to accelerate the extremist attitudes and the violent acts even further, and new demands and more violence will follow. If there is one thing our history should have taught us about extremists and extreme regimes, it is that negotiations and concessions have no positive effect. Because extremists never give up – until they are arrested by force.

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Coverphoto:

NORWEGIAN M109 self-propelled 155 mm in Mauken firing range in Troms, Northern Norway.

Photo: FMS/Ole-Sverre Haugli



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THE DECISION ON NEW ARTILLERY FOR THE ARMY IS DRAWING CLOSER

The Army spent a lot of time in 2014 looking for a replacement for its M109 artillery, now approaching the end of its service life expectancy, circa 2020. The problem turned acute when Norway last year broke off the agreement to procure the Swedish Archer, after this failed to meet the requirements. Nevertheless, the Army intends to hold on to Sweden as a close and steady artillery partner.

Text and photo: Tor Husby

In order to arrive at a decision point for the choice of a new artillery system, the Army Artillery inspector, Col. Lars Huse, is working his way back from 2020.

- Seeing that the sell-by-date of the M109A3GNM is coming up in five years' time, we need to start training personnel for its replacement no later than in 2019. The year before, that is 2018, work must be done on regulations and manuals. This means that in 2016/2017 we will probably

be in time-consuming negotiations with the chosen supplier. In other words, that decision will probably need to be made before 2015 is over, he says.

Market surveying

Having used last year reviewing the requirement specifications, where it transpired that the Army requirements had

not been changed since the time when the Archer contract was signed, extensive mapping of the global market has been done to identify potential manufacturers of new artillery equipment, and to check the supply situation for used artillery.

- The army is firmly opposed to a new and costly development project. We no longer have the luxury of time for



Norway's M109 artillery is rapidly approaching the end of its service life expectancy.

Photo: FMS



Artillery inspector, Colonel Lars Huse.

Photo: Tor Husby



K9 Thunder from Korea

Photo: Korean armed forces

this. Nor are we looking for “gold plated” solutions. We are sober realists, and not about to procure huge volumes, Col, Lars Huse emphasises.

According to the latest Parliamentary Proposition, the artillery project has around 2 billion NOK (some 250 million Euro) at its disposal.

The Norwegian team of experts have covered much of the world map in their travels. Still in the picture are different American *M109* varieties that can be upgraded, the German *Panzerhaubitze*, the French *Cesar*, as well as the South Korean *K9 Thunder* of which more than 1000 units

have been made. Poland has for example bought the vehicle, but not the turret. Turkey is making the *K9* under licence. The market seems not to be a limiting factor in the search. Both the *K9 Thunder* and the *Panzerhaubitze* originate from the early 2000 years. The Netherlands, who are using the German system, has been to army exercises in Norway with it. The USA is taking the *M109* across to the *Palladin* chassis.

No short-list

- Not all artillery systems are equally relevant, and to this date there has not been any short-listing or issuing of requests for

information. We are still at a stage where most of the activity concerns gathering of information. Before a choice is made, it makes sense to test the various systems under Norwegian operating conditions, says Huse.

The *M109* artillery is well-worn after getting on for fifty years of use. It is the most widely used artillery system in the West, but the different nations have been upgrading and uprating is in a variety of ways and directions, which has also been happening in the Norwegian Army. The full denomination of the Norwegian equipment is *M109A3GNM*, reflecting that the Army has a mixture of American, German and Norwegian variations. Our last upgrade was performed in 2008, but only for a small number of artillery units with a view to preserving competence. The ageing Norwegian system is demanding in terms of competence in operation and maintenance. Moreover, everything takes time, and costs are mounting. So does the Army need a new artillery? The answer is an unequivocal Yes. There is simply no substitute. Neither combat helicopters (which the Norwegian Defence does not have) nor aircraft can solve the tasks of the Army in the field. No airborne systems are as resilient nor as weather independent as an artillery system. An artillery system can also operate more freely than for example own aircraft can, if the opposition should field an air threat. Finding a replacement for artillery is accordingly no easy task. This is why it is important to select the appropriate artillery systems as soon as is practicable.



German *Panzerhaubitze*. The photo displays test firing with a Dutch *Panzerhaubitze*.

Photo: Dutch armed forces



The French *Cesar* system.

Photo: French armed forces

Classic triangle

The Army requirements are spread across the classic “triangle” of high fire-power, excellent mobility and crew protection. Inside the triangle are reasonable costs of operation. There is naturally a measure of understanding that newer solutions are both more technically advanced, and carry a bigger price tag. A further requirement is that the new artillery must be able to fire all types of NATO ammunition (Even the *Archer* had this capability). The most effective for the Army is the use of 155 millimetre ammunition.

The new artillery should be capable of firing upon remote targets at very long range, with superior firing rate (the *M109* has a range of some 30 kms). It should also be suited to close combat (fire support for manoeuvring units, such as the Telemark battalion), while being able to use various kinds of ammunition.

Where mobility is concerned, the requirement is that the artillery must be able to clear out of the road in order not to block it. When salvos are fired, it must be possible to move the unit away quickly so as not to be destroyed by enemy counter-fire.

A final requirement is for the crew to have high survivability in an artillery duel.

- The trick is to evaluate the available artillery on the market relative to our listed requirement specifications, says Col. Huse.

Needing Sweden

Norway is also dependent on having a co-operating artillery partner. This provides added value. Norway has been cooperating closely with Sweden in artillery matters, and this is intended to continue even after the Archer termination, even if Sweden were to choose a different system than Norway. Identical material is not a prerequisite for co-operation.

- We also have the advantages of relative proximity to each other's firing ranges, and we share a common language and culture, says the Colonel. ■■



The American M109 Paladin is a newer version of the old M109.

Photo: US Army

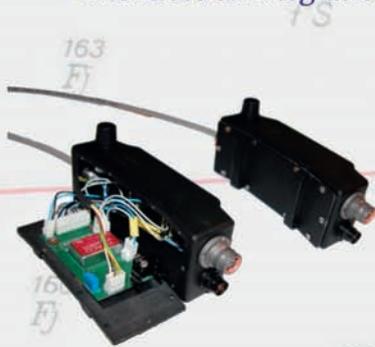
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UP CLOSE WITH THE DANISH APC CANDIDATES

Militær Teknikk has paid visits to the manufacturers of four of the five armoured personnel carriers participating in the competition for between 206 and 450 vehicles in six different versions to The Danish Army.

By Andreas Krog

The participants turned in their Best and Final Offer (BAFO) on the 8th of December last year. The program office at the Danish Defence Acquisition and Logistics Organization is now reviewing the offers and writing their final recommendation to the political system. A general election is however expected to be

held in Denmark during the spring. This means that a down selection of armoured personnel carriers will very likely have to wait until after the summer holidays. The Danish Prime Minister Helle Thorning Schmidt has sole decision over the election date. It just has to be no later than September 15th - four years since the last election. But everybody expects an election during spring.

BAE Systems Hägglunds CV90 Armadillo

The CV90 is widely considered to be one of the favorites in the Danish competition. First of all due to the fact that Denmark already has 45 CV90 Infantry Fighting Vehicles – a vehicle with 90 percent commonality to the CV90 Armadillo. It gives the same logistical footprint and both drivers and maintainers can work with both type of vehicles. Secondly due to the fact that Hägglunds in Sweden is in the middle of producing 144 CV90 vehicles for Denmark's close NATO partner Norway. Countries like Sweden, Finland, the Netherlands, Switzerland and as mentioned Denmark themselves are already among the users of the over 1100 CV90 produced up until now. Apart from the neutral Switzerland, these are all countries that Denmark may very well train and fight alongside in the years to come.

At the test area a few kilometres away from the production site in the small Swedish town of Örnsköldsvik, a Danish vehicle that has been rebuilt after hitting a roadside bomb in Afghanistan is getting ready to return to service. The Danish vehicle is equipped with traditional iron belts, while the CV90 Armadillo is equipped with rubber tracks, which are standard equipment on all new tracked vehicles from Hägglunds. It gives a good opportunity to compare iron belts with rubber tracks, and the difference is huge. The noise level is completely different with rubber tracks.

The CV90 already have 65,000 days of combat experience and have driven

a total of over three million kilometers. But Hägglunds is constantly developing upgrades on the vehicle to enable it to handle the future needs of the users. The manufacturer highlights how the electrical systems are prepared for the installation of more power-consuming equipment in the future. Just like the Piranha 5, the CV90 has a significant "payload reserve" making it possible to increase the weight without sacrificing the vehicle's performance and acceleration. It may become necessary if it is required in the future to mount more armor.

The hull will be welded in Örnsköldsvik. It has not yet been decided if the final assembly also will take place here or a Danish sub-supplier will take care of it. The Norwegian vehicles are being assembled in Sweden.

FACTS ABOUT BAE SYSTEMS HÄGGLUNDS CV90 ARMADILLO

- ▲ **Gross weight:** 35 tons
- ▲ **Crew:** 3 + 8 passengers
- ▲ **Max speed:** 70 km/h (44 mph)
- ▲ **Range:** 900 km (600 miles)
- ▲ **Length:** 6.55 m.
- ▲ **Width:** 3.1 m.
- ▲ **Height:** 2.1 m.



Nexter VBCI

The French VBCI vehicle from Nexter is considered to be the favourite if Denmark should choose a wheeled vehicle. Its main advantages is that the French Army within this year are going to receive the last of 630 VBCI vehicles, and that the Danish Defence Acquisition and Logistics Organization (DALO) has chosen US, UK and France as their strategic partners when it comes to major acquisitions. Secondly the vehicle is in production. This makes it an off-the-shelf solution that is being used by a strategic NATO-partner.

While competitors make their hulls in reinforced steel, Nexter has chosen to build them in aluminium. According to the French because it offers a good balance between

weight, price and protection. Aluminium is more costly than steel, but it reduces the weight of the vehicle. The saved weight can then be used for more armour or to provide a "payload reserve" for future upgrades and changes without making the vehicle heavier or damage its performance.

Nexter has a 24hr customer service centre where the French Army's maintenance facilities can call in and order spare parts. On a big screen in the centre Nexter can monitor the availability of VBCI's at all the France Army's units and dispatch the needed spare parts if needed. A service level agreement obligates Nexter to make sure that there is an availability rate of 95 percent for VBCI's used in international missions and 85 percent for VBCI's used for training within France.

FACTS ABOUT NEXTER VBCI:

- ▲ **Gross weight:** 28 tons
- ▲ **Crew:** 3 + 9 passengers
- ▲ **Max speed:** 100 km/h (62 mph)
- ▲ **Range:** 700+ km (434+ miles)
- ▲ **Length:** 7.6 m.
- ▲ **Width:** 3 m.
- ▲ **Height:** 2.3 m.

If Nexter's VBCI shall replace the aging M113s, then Nexter and the Danish defence company Hydrema will set up an assembly line at Hydrema in Støvring in Jutland. It will be similar to Nexters existing assembly line at its plant in Roanne west of Lyon in southeast France.

The hull will still be welded together in Roanne, but assembly of axles, wheels, armor, motor, cabin interior and electronic systems will be conducted by Hydrema. How many jobs it will create is yet unknown. Hydrema is thought to be a forward industrial base bringing Nexter closer to the customer, both during production of the vehicles and in relation to maintenance and overhaul when the vehicles are in service for the next many years.



Flensburger Fahrzeugbau APC G5

Flensburger Fahrzeugbau is already very well known in the Danish defence today. It is the German company who have been responsible for many of the upgrades of the M113s. However, they have never in the past built an armored personnel carrier from scratch on their own. Not until now with the APC G5 which is participating in the Danish competition. The only problem for Flensburger Fahrzeugbau is that no country has yet signed a contract for the procurement of the vehicle. Only two test vehicles have been built so far.

Denmark would therefore be the

only customer if we were to choose the vehicle. That would go directly against the overall strategy for Danish defence acquisitions, which is to buy off-the-shelf products used by or procured by other NATO countries.

The APC G5 has the highest cabin by far among the candidates as well as the easiest access from the cabin to the driver's seat. The design of the G5 is heavily inspired by the M113's that they could end up replacing.

Maintainers working on M113 can easily be schooled within hours to take

FACTS ABOUT FLENSBURGER FAHRZEUGBAU APC G5

- ▲ **Gross weight:** 26,5 tons
- ▲ **Crew:** 3 + 8 passengers
- ▲ **Max speed:** 74 km/h (46 mph)
- ▲ **Range:** 660 km (490 miles)
- ▲ **Length:** 7.0 m.
- ▲ **Width:** 3 m.
- ▲ **Height:** 2.4 m.

care of the G5 too. It's the same tools they will be using. It's also the same engine - just with more horsepower - and the belts on the vehicles are the same.

Flensburger Fahrzeugbau (FFG) bought the Danish sub supplier Dalsted Teknik in april 2013, primarily because Dalsted Teknik was close to bankruptcy and delivered essential parts for FFG's vehicles. Flensburger Fahrzeugbau has not yet revealed their plans for the final assembly process if they should win the contract. But the expectation is that they will either assemble everything at their existing facility just south of the Danish border, use Dalsted Tekniks facilities in Middelfart, or establish a whole new assembly line in Denmark.



General Dynamics European Land Systems - Santa Bárbara Sistemas ASCOD

The Spanish ASCOD vehicle is one of three tracked based vehicles in the competition. It is being produced by the company Santa Bárbara Sistemas, which is part of General Dynamics European Land Systems. In an alley by the company's factory outside Seville in southern Spain, we meet the vehicle that participated in the 18-week long test trials in Denmark in 2013.

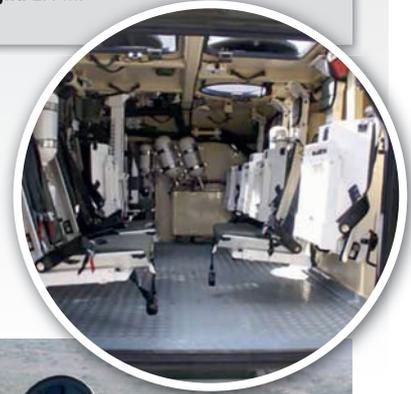
It is now back in Spain, and Santa Bárbara Sistemas is using it to test some of the modifications that the Danes have asked for. Most significantly, the vehicle roof has been raised six centimeters as compared to the normal ASCOD vehicle. This is a necessity when a vehicle designed for small Spanish soldiers must be able to accommodate tall Danish soldiers. The cabin is still small and narrow, but one of the ASCOD's main design advantages is the low entrance ramp just like in the The Danish Army's current M113 armored personnel carriers (APC). It is the over 50 years old M113 that the new APC's are going to replace. And on the outside the ASCOD actually looks very similar to the M113.

The last vehicles of a large order for the Spanish Army are being built in a dark and not very high tech production facility. The vehicle goes under the name of Pizarro in the Spanish armed forces. It was originally a Spanish-Austrian project, and the two countries are so far the only two users of the ASCOD.

But that is about to change. For just next door to the Spanish vehicles, the company's engineers are modifying a vehicle with great strategic importance for Santa Bárbara Sistemas. It is the first prototype of the Scout SV vehicle that Santa Barbara in the coming years are going to deliver more than 500 of to the British army. It is still unknown whether the vehicles will be built in Spain or in the UK. The Scout SV is very similar to the ASCOD except for the weight, where the SV is a few tons heavier. The Danes are being offered an updated version of the ASCOD with better survivability and better protection. But the SV-order for Britain keeps the production line open.

FACTS ABOUT GENERAL DYNAMICS EUROPEAN LAND SYSTEMS - SANTA BÁRBARA SISTEMAS ASCOD

- ▲ **Gross weight:** 31 tons
- ▲ **Crew:** 3 + 7 passengers
- ▲ **Max speed:** 62 km/h (38 mph)
- ▲ **Range:** 550 km (342 miles)
- ▲ **Length:** 6.8 m.
- ▲ **Width:** 3.6 m.
- ▲ **Height:** 2.4 m.



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General Dynamics European Land Systems - MOWAG Piranha 5

General Dynamics have two opportunities to win the Danish competition and are in play no matter whether Denmark choose tracks or wheels. For Santa Bárbara Sistemas' sister company in Switzerland, MOWAG, is also participating in the Danish Tender. They are offering their new Piranha 5 wheel vehicle. It is a heavier and larger successor to the Piranha 3, which Denmark is already using. Australia and Kuwait are possible future users of the Piranha 5, but so far no vehicles have been sold yet to any country.

Compared to the Piranha 3 the gross weight in the Piranha 5 has increased by almost 10 tons to 35 tons. This is partly due to better armor, better mine protection and stronger components and larger wheels. In addition, the vehicle has a bigger engine to cope with the extra tons. Finally the vehicle has a large "payload reserve", meaning that there is room for installation of several tons of additional equipment and/or armor without sacrificing the vehicles' performance.

Piranha 5 is equipped with a so-called kinetic energy collection system, in which power is stored in the batteries of the vehicle during driving. It gives the ability to get an extra boost of power to the engine if the need arises.

The inside of the large vehicle is surprisingly small. A console in the middle of the ceiling does not make things better. In return, the seats are soft and there is plenty of storage space behind the seats for

backpacks, weapons and other equipment. However, the back door into the vehicle sits very high up.

Both the ASCOD and the Piranha 5 are going to be assembled at the Danish company Falck-Schmidt Defence Systems in Odense. The hull will be welded in Spain and Switzerland, but the rest of the production of the between 206 and 450 vehicles will take place at the Danish factory. Jan Falck-Schmidt, CEO of Falck-Schmidt Defence Systems, estimates that the work will create at least 200 new jobs. Falck-Schmidt Defence Systems has a strong relationship with General Dynamics European Land Systems and also completely manufactured 90 Piranha 3 for the Danish Army.

FACTS ABOUT GENERAL DYNAMICS EUROPEAN LAND SYSTEMS - MOWAG PIRANHA 5

- ▲ **Gross weight:** 30 tons
- ▲ **Crew:** 3 + 7 passengers
- ▲ **Max speed:** 100 km/h (62 mph)
- ▲ **Range:** 550 km (340 miles).
- ▲ **Length:** 8.0 m.
- ▲ **Width:** 3.0 m.
- ▲ **Height:** 2.3 m.

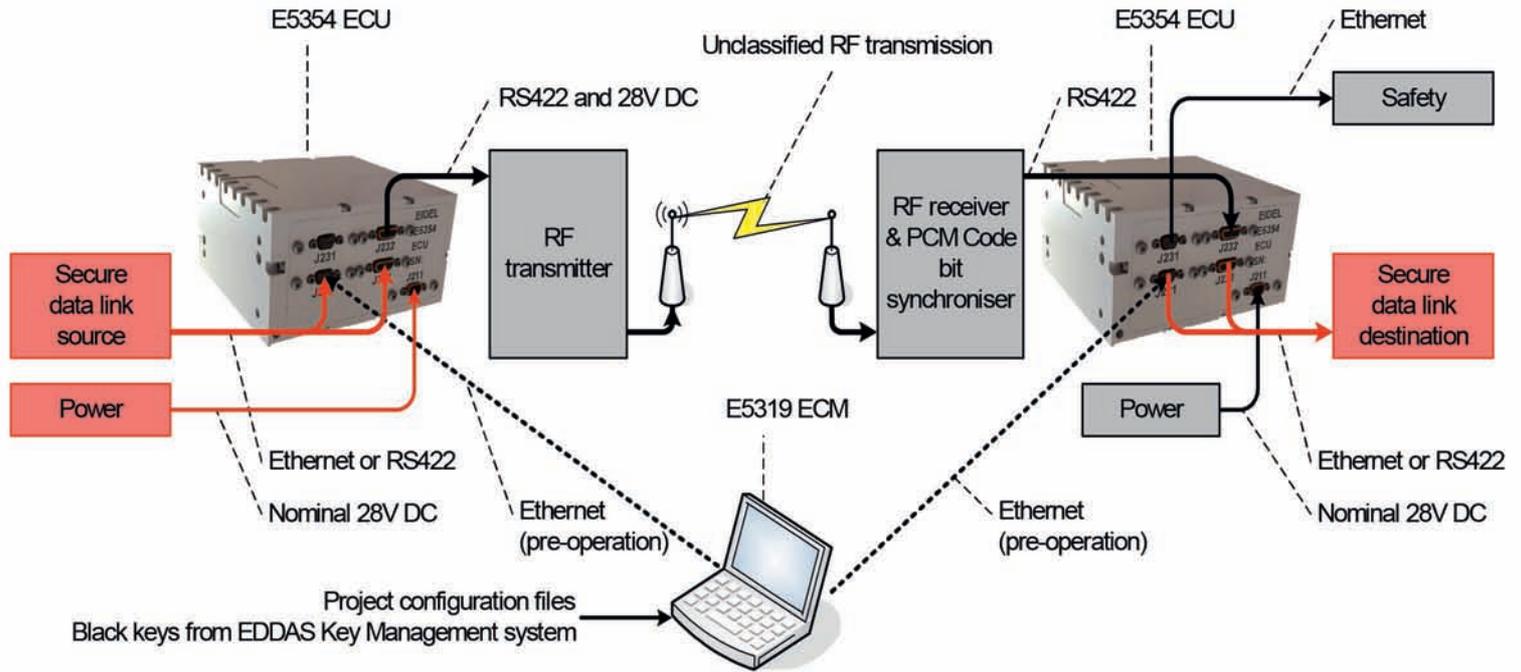


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FORSVARSINDUSTRIEN – EN BIDRAGSYTER TIL OMSTILLING

“Vi har en ambisjon om at Norge skal ha verdens beste velferdssamfunn. Det vil bli utfordret hvis vi ikke får til omstilling” sa statsministeren ved åpningen av regjeringens budsjettkonferanse 9 mars. Videre sa hun bl.a.: **“Samtidig som vi skal omstille skal vi finne rom for viktige satsinger som alle de fire partiene er opptatt av. Det betyr at vi fortsetter vår kraftsatsing på kunnskap, forskning og innovasjon.”**

Forsvarsindustrien er et eksempel på en høyteknologisk kunnskapsbasert fastlandsindustri som gjennom de siste 10-15 år har omstilt seg fra primært å levere til Forsvaret, til å bli en internasjonalt konkurransedyktig industri der de største aktørene henter mer enn 80% av sine inntekter fra utenlandske kunder. Nettopp Forsvarets investeringer i kunnskap, forskning og innovasjon i norsk forsvarsindustri, internasjonalt samarbeid og målrettet bruk av Forsvarets anskaffelser fra utlandet til å sikre markedsadgang og posisjonering av norsk forsvarsindustri, har vært avgjørende for å oppnå dette. I dag er forsvarsindustrien en netto bidragsyter til offentlige budsjetter. Skatter, avgifter og utbytte til Staten fra de store norske forsvarsbedriftenes virksomhet overstiger det Forsvaret anskaffer for fra de samme bedriftene. Inn-

tekter generert fra forsvarsindustriens virksomhet overstiger kostnadene forbundet med utvikling og leveranser av materiell og systemer fra norsk forsvarsindustri til Forsvaret. I tillegg til dette er det store ringvirkningseffekter lokalt, regionalt og nasjonalt av forsvarsindustriens virksomhet. Forsvarsindustrien er et glimrende eksempel på hvordan samarbeid mellom myndigheter og næringsliv kan føre til vellykket omstilling.

Det er ingen grunn til at ikke denne positive utviklingen skal kunne videreføres. Innenfor sine nisjer har norsk forsvarsindustri en portefølje av moderne kosteffektivt forsvarsmateriell med kapasiteter som er ettertraktet i det internasjonale markedet. Vi har også flere utviklingsprosjekter på gang som sikrer at vi fortsatt vil kunne holde forspranget til konkurrentene slik at industrien kan fortsette å levere materiell som møter Forsvarets behov samtidig som eksporten sikrer store inntekter for AS Norge.

Regjeringen har gitt tydelige signaler om at den ønsker å legge til rette for en slik utvikling. I Sundvollen plattformen står det at Regjeringen vil “bidra til å opprettholde og videreutvikle en internasjonalt konkurransedyktig norsk forsvarsindustri.” Høyres stortingsvalgprogram for inneværende periode slår fast at

partiet vil gi de høyteknologiske forsvarsbedriftene konkurransekraft gjennom robuste gjenkjøpsavtaler. Da forsvarsministeren på slutten av fjoråret annonserte at regjeringen vil utarbeide en ny stortingsmelding om forholdet mellom forsvarssektoren og forsvarsindustrien sa hun at: “Det er viktig at vår forsvarsindustri beholder sin kompetanse, kunnskap og konkurransekraft for å sikre at Forsvaret får nødvendig tilgang på materiell og kompetanse.”

Dette gir grunn til optimisme i forsvarsindustrien og høye forventninger om at den bebudede stortingsmeldingen inneholder en robust strategi med et tydelig ambisjonsnivå og konkrete tiltak og virkemidler som gir nødvendig forutsigbarhet. Strategien må sikre norsk forsvarsindustri minst like gode rammebetingelser som våre konkurrenter har i sine hjemmemarkeder og bidra til å sikre markedsadgang i et internasjonalt marked som i økende grad preges av proteksjonisme og politiserte beslutningsprosesser.

En fremtidsrettet forsvarsindustristrategi må derfor bl.a legge til rette for at:

- Forsvaret bruker norsk industri når det anskaffes materiell og systemer der vi har produkter og kompetanse

innenfor prioriterte teknologi-områder.

- Norge krever industrisamarbeidsavtaler (gjenkjøp) for alle større anskaffelser fra utlandet, inkl. fra EU/EØS, på samme måte som bl.a. Danmark nå gjør etter en metodikk som er avklart med EU-kommisjonen.
- Forsvaret fortsatt satser på FOU i samarbeid med norsk industri for å ta frem løsninger det norske forsvaret har behov for innenfor rammer som gjør det mulig for norsk forsvarsindustri å eksportere løsningene i et krevende internasjonalt marked

En industri- og teknologistrategi for Forsvaret som viderefører et strategisk partnerskap mellom Forsvaret og industrien i tråd med regjeringens uttalte intensjon og med klare føringer som nevnt ovenfor, vil gjøre det mulig å videreføre og styrke en internasjonalt konkurransedyktig norsk forsvarsindustri.

En slik industri vil også kunne fortsette å bidra til Statens inntekter og til den omstillingen som er nødvendig for å realisere ambisjonen om at Norge skal ha verdens beste velferdssamfunn også i fremtiden.



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Program Conference for Land, Logistics and Soldier Systems

The program conference for land systems was originally planned for December last year, and then postponed to January this year. Attendance appeared not to suffer from the change, with more than 60 delegates.

Army Col. Øyvind Kvalvik presented an outline of the Army's investment plans for the next few years, and started his presentation by emphasising the importance of ground-based military forces: - In recent statement, US military officials has said that despite the coalition air forces having used more than 1000 precision weapons against the IS in Syria and Iraq, they still haven't been able to reclaim more than 1% of the IS-controlled areas.

- The challenge facing the Army on the materiel front is of course that the quantities we are buying are limited. This sends the costs per unit comparatively high, in terms of procurement as well as operation. - For costs to come down, we must be on the lookout for alternative solutions, explains Kvalvik, and he mentions international collaboration, increased use of standard products and the possibility of using unmanned and automatic systems as examples of alternative thinking. In addition, training and exercise are important, and a cost-cutting initiative here might be for the various weapons systems, such as armoured combat vehicles, could have a training simulator integrated in the vehicle.

- A further challenge for Army materiel is that while we on the one side want the systems we use to be robust, give the soldiers optimum protection and carry the same firepower as our present systems, we on the other side want a greater degree of mobility, and for new systems to be lighter than what we have today. This may call for other forms of protection, such as enhanced situation perception. In the future, the protection of the soldiers against incoming fire will probably not just be steel, but also something else.

Haldor Husby from Datarespons AS presented his views on how the development of electronics for the consumer market is influencing the development of electronics for military purposes.

- Electronic products for consumers have kept dropping in price over recent years, and today, the major product cost of consumer electronics is software development, said Husby in his opening. At the same time, the military community is finding that electronics and computing systems are demanding a steadily increasing slice of materiel investments.



Chief of the Army Staff/Organisation and Materiel unit, Colonel Øyvind Kvalvik.

Photo: MilitærTeknikk



Haldor Husby from Datarespons AS. Datarespons is an independent technology company. The company is well established in a spectrum of defined areas, and has a leading position in the embedded solutions market. The company's turnover was approximately 800 million NOK (100 MEUR) in 2013.

Photo: MilitærTeknikk

- Looking for instance at a current Leopard II battle tank and comparing it to a Leopard I tank of 20 years ago, the crew of the Leo II of today must be able to receive target data, such as through the Nor BMS system. On the Leo I, distance to target was up to the judgement of the crew. The capacity of the Leo II is of course considerably greater, but one might ponder whether things are really simpler today?

Brigadier Steinar Olstad is the chief of the newly established National Logistics Command (NLK), which was formed on the 1st of August last year.

The NLK exercises tactical command over joint operative logistics resources, and is subordinated to the Defence Logistics Operation on a day-to-day basis. In a crisis or a war situation, however, the NLK will be

scaled up to full strength, and subordinated to the Armed Force's operative headquarters.

Olstad offered an insight into the experiences gained from the logistics work in connection with the exercises Cold Response and Noble Ledger in 2014. Not least during the Noble Ledger, the NLK was assigned heavy tasks in the so-called Host Nation Support to the foreign forces that came to Norway to participate in the exercise.

Olstad concluded his presentation by showing how civilian companies contributed to the logistics effort during these exercises. ■■

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Program Conference on Information Structure (INI) and Air Systems

The program conference for Air and INI took place on the 10th of February in Oslo. About 45 representatives for the industry had shown up, in addition to more than 20 delegates from the Defence community and the Ministry of Defence.

The Ministry of Defence presented the planning of the Defence in the short and longer term, placing special emphasis on long-term plans and materiel plans. A key message in the presentations was how the security scene has been changing in recent times.

From the Ministry's side, an insight was provided into the work on a revision of Parliamentary Report no. 38, with the comment that this report has by and large functioned as was intended, and the central elements from the report will be carried through in its revision. The most important message may have been that the new report will be based on the recent security political trends as a starting point, and that the new EU directive on defence procurement will to a greater extent be reflected in the new report.

MAJIIC 2

Under NATO's Multi-sensor Aerospace-ground Joint Intelligence, Surveillance and Reconnaissance Interoperability Coalition 2 (MAJIIC 2) program, nine nations will continue to improve sharing of intelligence, surveillance and reconnaissance assets. In close cooperation with



From the left; Geir Morten Flytør (Teleplan), Major Ole Furuseth (NOR NPO MAJIIC) and Stein Rune Hognes (Kongsberg)
Photo: MilitærTeknikk

industry, the nations participating in MAJIIC 2 are Canada, France, Germany, Italy, the Netherlands, Norway, Spain, UK and the USA.

In 2014, various tools and systems being used in the MAJIIC 2 project were subject to testing during the exercise Unified Vision 2014 (UV 14). Major Ole Furuseth from the Norwegian side of the MAJIIC 2 programme summarised the experiences from UV 14, and concluded by noting how important it is to test the tools.

- We are also seeing that Joint Intelligence, Surveillance and Reconnaissance, the so-called JISIR tools, make operations more efficient and strengthen the management processes. But the exercise also showed that we still have a ways to go, such as in the education and training of personnel for the effective implementation and use of the JISIR tools.

Looking towards the next JISIR exercise, Bold Quest 2015, it is hoped that the tools may be developed further based on lessons learned during Unified Vision 2014.

MAJIIC also entails co-operation with industry, and the co-operating partners in Norway include Teleplan, Kongsberg, IBM and DNV (Det norske Veritas). In the earlier stages, SAAB has also been an important co-operating partner.

Geir Morten Flytør from Teleplan and Stein Rune Hognes from Kongsberg were present to explain how exercises like UV 14 provides industry with direct insights into the Defence's operative processes, which is essential for the industry striving to develop systems in support of these processes. At the same time, industry gets access to operational competence that can contribute greatly to the trials and evaluation of the systems while they are still in development. From the industry side, it was emphasised that the good level of co-operation between the industry and the Norwegian operative group in MAJIIC has contributed to Norwegian solutions developed through the MAJIIC participation having been sold to NATO.

Concluding the seminar part, Camilla B. Roark of Com-



Camilla B. Roark discussed the Defence's INI architecture.
Photo: MilitærTeknikk

bitech presented a "Slanted view of the Defence's INI architecture".

Roark noted that architecture is important to promote a unified picture and a common understanding, while the architecture itself may often be a very complex issue.

From an industry viewpoint, a key message is therefore that the architecture must be anchored and accepted in the organisation, and it must be communicated and made accessible in clear and distinct manner. Also, architecture must be concretely specified, said Roark in conclusion. ■■

Sanctions against Russia give rise to new rules for export

The Russian actions on the Crimea and the involvement of Russia in developments in the Ukraine has led to sanctions; among others, nations such as the EU and the USA have enforced trade restrictions versus the Russian federation. Norway has to a great extent introduced the same trade restrictions as the EU. In December, the FSI held a seminar to provide information on the new export regime.

Deputy Director Siv Kaspersen from the Foreign Ministry opened by underscoring that even if the defence industry and exports of defence material to Russia are potential victims of the new export restrictions, the effects to the defence industry are in reality

quite limited, since Norwegian exports of defence material to Russia were already quite insignificant in the first place.

- The sanctions that have now been introduced, have created more notable challenges to the oil and energy sector, as they are primarily affecting Norwegian oil and gas industry, Kaspersen explained.

Regarding sanctions against Russia, Norway follows the practice of the EU, with the basic premise that Norwegian businesses must not end up with a result at a disadvantage to similar businesses in the EU.

Stein Ove Solberg and Ronny Rosenvold from the law firm of Arntzen de Besche provided a review of the



Deputy Director Siv Kaspersen from the Foreign Ministry and the lawyers Stein Ove Solberg and Ronny Rosenvold from the law firm of Arntzen de Besche gave presentations on the new sanctions against Russia. Photo: MilitærTeknikk

current regulations for export of military material, and of the implications caused by the new sanctions against Russia.

The new sanctions against Russia have been signed off by a total of 19 countries; the USA and Canada, countries in Western Europe as well as Japan and Australia. In addition to the general sanctions against Russia, both EU with Norway and the USA have made lists of persons and companies or organisations that are subject to special sanctions.

Breaches of the sanction regulations can lead to liability for penalties, so the lawyers Solberg and Rosenvold recommended to the suppliers to check carefully who their contracting partners really are, notably checking into the background and ownership behind the contractors. In addition, the suppliers should have a clear understanding of which future exports may be subject to licence requirements, and make allowances for a shifting sanction regime in any agreements entered into. ■



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Program Conference: Sea Systems

With more than 36 delegates from the industry and 27 representatives from the Defence community and the Ministry of Defence, this year's Program Conference for Sea Systems was the biggest so far.

The program conference was held on March 10th in Bergen, and made it clear that even within the Navy and coastal defence there are major projects in the works, of potentially huge interest to Norwegian industry.

MMCM (Maritime Mine counter Measures)

Norway currently has six MMCM vessels at her disposal: Three minesweepers of the Alta class, and three mine-hunting vessels of the Oksøy class. By the year 2020, the vessels will have reached a service life of 25 years, and work is already proceeding with conceptual studies into the Norwegian MMCM capabilities required for the future.

Trends in the MMCM field are heading in the direction of

more use of unmanned systems, not least due to the increasing demands for personnel safety, along with the desire for mine clearance at sea to be done more quickly than what is possible today.

Exactly what the future Norwegian MMCM capacity will be like, is far too early to tell, but three possible alternatives were outlined:

- 1) Crewed vessels operating inside the mine field. This alternative corresponds in many respects to what Norway comprises of today.
- 2) Crewed purpose-built MMCM vessels operating from outside the mine field, sending unmanned craft into the mine field. In this case, the demands of the vessels may be reduced, for example when it comes to noise

signatures and resilience to shock waves from an exploding mine.

- 3) No dedicated MMCM vessels as such, but MMCM modules, possibly loaded in containers, deployed and operated from other naval vessel types, or even from civilian vessels. The MMCM modules will naturally be based on manned units, and it will be possible to transport the modules quickly all over the world by air.

New Coast Guard vessels

The Navy is also working on a new fleet of Coast Guard ships to replace the ageing Nordkapp class, and Commander Erik Pettersen provided an insight into the main aspects of this project.

- The three vessels of the Nordkapp class are now pushing the age of 34 years. With from 270 to 300 days at sea for every one of these years, these old warriors have really been faithful servants to the Norwegian Navy, said Pettersen

in opening. - In our current deliberations with a view to replacements for the Nordkapp class, we have said at the outset that we need vessels of similar or better capacities as the outgoing vessels, but in modern clothing anno 2020. The main difference is that the new vessels should be equipped with oil spill containment capabilities.

Pettersen presented a preliminary design study for the vessels, and emphasised the need for modest investment costs along with the no less important low running costs.

Frame Agreements on Life-long Support

Mr Tom Frihagen Dahl presented the frame agreement between Kongsberg and Navy as regards the operation and maintenance of equipment supplied by Kongsberg to the frigates of the Fridtjof Nansen class.

- The way I see it, we have done a solid piece of work with the agreement itself, in that when we are now in the process of supplying Sea Protector to the Navy, we can easily enter



During the conference, a broad view of the Norwegian MMCM capabilities for the future was presented, both from the Navy, from the Norwegian Defence Research Establishment (FFD), and from the industry. From the left: Lars Magnus Torp (Kongsberg Maritime), Lt. Col. Jon Peder Engan (Ministry of Defence) Roger Skogmo (Kongsberg Defence & Aerospace), Morten Nakjem (FFD), and Commander Brynjar Grimholt (Navy Defence Staff) Photo: MilitærTeknikk

the operation and maintenance of this new system into the same agreement, Pettersen explained, adding that there is on principle nothing to stop the inclusion of other systems into the same agreement as well, such as the Kongsberg CV 90 trainer at Rena.

The agreement also represents a simplification for the Navy, with a single point of contact to relate to, while at the same time the operation and maintenance tasks will be carried out by personnel who have actually taken part in the development of the systems.

This frame agreement has already proven its worth, and represents a very good model to build on. The way we see it, agreements of this kind should be used more, and expanded and extended further, said Frihagen Dahl in conclusion. ■■



The first new Cost Guard vessel to replace the old Nordkapp class will probably be built around 2020, said Commander Erik Pettersen from the Navy Defence staff.
Photo: MilitærTeknikk



Tom Frihagen Dahl from Kongsberg Maritime.
Photo: MilitærTeknikk

Successful Australian - Norwegian Defense Industry Cooperation Seminar attended by HM King Harald V

On 23 February The Norwegian Defence and Security Industries Association (FSi), in cooperation with its Australian counterpart, Ai Group, organized a defence industry cooperation seminar in Canberra. King Harald V participated to the event and gave the closing remarks. The event was an integral part of the program for the Business delegation organized by Innovation Norway on the occasion of the state visit of the Norwegian royal couple to Australia 23-27 February.

More than 70 participants from both nations attended. Attendees included representatives of 10 FSi member companies and a delegation from the Norwegian Ministry of Defence, headed by the Deputy Minister of Defence, Mr. Øystein Bø, accompanied by the

Deputy National Armament Director, Mr. John Laugerud and The chief of The Navy, Rear Admiral Lars Saunes and others.

The seminar addressed procurement and defence industrial plans and policy of both nations and opportunities for

future cooperation between Norwegian industry and the Australian armed forces and industry. ■■



Left to Right: Walter Qvam, CEO Kongsberg ASA, Tord Lien, Minister of Petroleum and Energy, Per Otto Dyb, Chairman of the Board, Innovation Norway, Hon. Stuart Robert, MP, Assistant Minister for Defence, HM King Harald V, Øystein Bø, Deputy Minister of Defence.
Photo: Innovation Norway/Tom Hansen



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NORWAY AND AUSTRALIA TO COOPERATE ON JSM-DEVELOPMENT

The Norwegian Ministry of Defence and the Australian Department of Defence have agreed to cooperate on the development of the Joint Strike Missile (JSM), following talks between Norwegian State Secretary Mr. Øystein Bø and his Australian colleague Mr. Stuart Robert during the Norwegian State visit to Australia this week. The agreement seeks to support the introduction of an advanced maritime strike weapon on the F-35 in the early 2020's time frame.



Norway teams up with Australia on Joint Strike Missile development

Ill. Kongsberg

- Although far apart geographically, Norway and Australia share many of the same challenges. We are both maritime nations on the periphery of our immediate regions, with a large land mass and even larger maritime territories, yet relatively limited populations. This means that we have to maximize the effects of the capabilities that we invest in to ensure that they cover as much of the spectrum of operations as possible, said Norwegian Minister of Defence, Ms. Ine Eriksen Søreide.

Norway and Australia have maintained a close dialogue for several years regarding the JSM within the framework of the multinational F-35-partnership. This agreement takes the process one step further, with Australia agreeing to provide expertise in missile control and guidance systems.

The cooperation between Norway and Australia on the JSM was announced at Avalon Air Show earlier today. From the left, Deputy Chief of the Royal Australian Air Force, Air Vice Marshal Leo Davies, Norwegian State Secretary of Defence Mr. Øystein Bø, and Executive Vice President

of Kongsberg Defence Systems, Mr. Pål Bratlie

- The JSM is already a very capable missile, but with the support of Australia, we hope to make it even better. Though Australia is still a few years away from making any final decisions on its future maritime strike capability, we are encouraged by the interest they have shown for both the missile and for the capabilities of Norwegian industry. We should now continue talks between our two governments, and aim to formalize this agreement in the near future, said Norwegian Minister of Defence, Ms. Ine Eriksen Søreide.

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Australian Minister for Defence, Mr Kevin Andrews, in a statement from the Australian Ministry of Defence said Australian cooperation on the Norwegian Joint Strike Missile would ensure the weapon capability would be available for the Australian Air Force's future fleet of F-35A Fighters.

"This agreement acknowledges the importance of a robust maritime strike capability to Norway and Australia."

"Participating now in a cooperative JSM development program with Norway will maximise the cost effectiveness of Australia's contribution, and ensure the weapon capability is developed and integrated onto the F-35A in the timeline required by Australia, should the Joint Strike Missile be ultimately considered for acquisition by Government later this decade."

"Australian industry will participate in the development of the JSM by providing specialist expertise in missile guidance and control technology," he said in the statement.

The Joint Strike Missile is an advanced long range precision strike missile, tailor made to fit the internal weapons bay of the F-35. The F-35,



Pictured, from left: Deputy Chief of Royal Australian Air Force Air Vice Marshal Leo Davies, Deputy Defence Minister of Norway Øystein Bø, Executive Vice President Kongsberg Pål Bratlie, General Manager QinetiQ Australia Dirk Nordewier, Director BAE Systems Australia Graeme Bent.

Photo: Norwegian MOD

combined with the JSM, provide the ability to both locate and defeat heavily defended targets, both on land and at sea, at extended ranges, significantly enhancing the strategic capabilities of the aircraft. The missile utilizes advanced navigation, a passive infrared seeker, low signature and superior manoeuvrability to ensure mission effectiveness, thereby providing user nations with significantly enhanced combat capabilities.

Norway intends to procure up to 52 F-35A aircraft to enhance the ability of its Armed Forces to meet future security challenges, with first delivery planned for late 2015. Norway's first four aircraft will be based at the F-35 International Pilot Training Centre at Luke Air Force Base Arizona, while the first F-35 will arrive in Norway in 2017. Australia has so far committed to procuring 72 F-35A, out of a planned 100, with the first two aircraft delivered in 2014. ■■



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– BULLETIN BOARD FOR DEFENCE, INDUSTRY AND TRADE –

Radar Components for the US Marine Corps

Saab's U.S. based company, Saab Defense and Security USA, LLC., has been awarded a contract from Northrop Grumman Corporation for components and subsystems of the U.S. Marine Corps AN/TPS-80 Ground/Air Task Oriented Radar (G/ATOR) system. The order value of the contract is MSEK 247 (\$32 Million).

G/ATOR will provide the U.S. Marine Corps with a single radar type that performs air surveillance, air defence, ground weapon locating and air traffic control missions. It is the first ground-based multi-mission active electronically scanned array (AESA) radar to be developed by the U.S. Department of Defense.

USAF deploys A-10 Thunderbolt II aircraft in Europe

The US Air Force (USAF) has deployed 12 A-10 Thunderbolt II aircraft to Spangdahlem Air Base, Germany, to improve interoperability with its Nato allies.

A total of 300 airmen and support equipment will accompany the A-10. Its deployment represents first of the several theatre security package (TSP)

that the US is scheduled to position in Europe as part of its support to the Operation Atlantic Resolve (OAR).

OAR is a demonstration of continued US commitment to the collective security of Nato and to enduring peace and stability in the region, in wake of Russia's role in the ongoing crisis in Ukraine.

Ukrainian Army receives out-of-service British Saxon armoured vehicles

The Ukrainian Armed Forces has received 20 out-of-service UK military Saxon armoured vehicles from an undisclosed British company, the Ukraine's National Security and Defense Council Secretary Oleksandr Turchynov has revealed.

Turchynov said: "These Saxon came without armaments; we will equip them with combat unit[s] to provide effective fire cover for the National Guard or other units, in which these armoured vehicles will be supplied."

According to reports, a further 55 will be supplied in the near future.

A UK Ministry of Defence (MoD) spokesperson was quoted by BBC News as saying that the sale does not represent an escalation of British involvement in Ukraine.

Manufactured by GKN Sankey, the Saxon 4x4 armoured personnel carrier was adopted by the UK Army for Infantry Battalions in 1983 and were taken out of the service between 2005 and 2006.



A-10 Thunderbolt II

Photo: US Air Force

Avon Protection launching CBRN solutions

Avon Protection has developed a new range of comprehensive end-to-end CBRN solutions with its strategic partner, SecureBio Ltd.

Avon Protection, part of the Avon Rubber p.l.c. company, and SecureBio Ltd., a specialist CBRN consultancy, came together in 2014 to offer specialist CBRN consultancy and training services together with market leading respiratory protection products.

New PPE kits

Avon's new PPE (Personal Protection Equipment) kit is based around the tried and tested NH15 escape hood.

These packs provide equipment for comprehensive personal protection and decontamination. With a range of options to procure the kits, including options to lease or hire, this new offering from Avon provides an all-inclusive solution.

Avon is also launching its new support packages for major global events. This Major Event Support Portfolio gives comprehensive CBRN and HAZMAT support for political, cultural, religious and sporting events worldwide.

Avon has also developed a range of world class respirators including the FM50, with 3.2 million sold to the US military.



A Saxon Recovery vehicle at the REME Museum in West Berkshire

Photo: REME Museum

Belarusian Air Force looks to replace L-39 aircraft with Yak-130 trainer

The Belarusian Air Force and Air Defense Command is reportedly close to completing the procurement of Yak-130 advanced jet trainers for replacement of its fleet of L-39 Albatros aircraft.

Around 12 L-39ZA aircraft are operated by the Belarusian Air Force

The Yak-130 is designed by Yakovlev and built by Irkut. It is a subsonic two-seat advanced jet trainer / light attack aircraft designed to train pilots in flying advanced fourth and

fifth-generation fighter aircraft, including the Sukhoi T-50.

The twin engine is capable of operating from unpaved runways and airfields. It can also conduct light-attack and reconnaissance missions at subsonic speeds of 600mph, in all weather conditions.

The aircraft is currently operational with the Russian and Algerian Air Forces, and has also been ordered by Bangladesh, Libya, and Vietnam.

Oshkosh L-ATV

Oshkosh Defense and AM General have submitted final proposals for the US Department of Defense's (DoD) joint light tactical vehicle (JLTV) programme.

Oshkosh has offered its light-combat tactical all-terrain vehicle (L-ATV) in response to the DoD's request for proposal for JLTV low-rate initial production (LRIP) and full-rate production (FRP) contracts, while AM General is competing with its blast-resistant off-road vehicle (BRV-O).

Oshkosh's JLTV family of vehicles includes a four-door multipurpose variant and two-

door utility variant, which are designed to execute a full spectrum of missions in any climate or terrain.

Both versions feature common crew protection and advanced automotive systems, as well as the patented Oshkosh TAK-4i intelligent independent suspension system, which provides enhanced levels of protection and off-road performance in a light vehicle.

Lockheed Martin is also bidding for the contract, which seeks to replace the US Army and Marine Corps' ageing high-mobility multipurpose wheeled vehicles fleet.



Oshkosh has offered its L-ATV for the JLTV programme.

Photo: Oshkosh Defense



Dassault will supply 24 Rafale multi-role fighters to the Egyptian Air Force.

Photo: A. Jeuland, Armée de l'air

Rafale fighters and FREMM frigate for Egypt

France signed two contracts with Egypt, one for the purchase of 24 Rafale fighter aircraft and one for the supply of a FREMM multi-mission frigate.

Dassault Aviation has been selected by the Egyptian Government to supply Rafale multi-role combat aircraft to the national air force.

French President Francois Hollande said in a statement: "The Rafale fighter jet has won its first export contract.

"The signing will take place in Cairo on February 16. I have asked the defence minister, Jean-Yves Le Drian, to sign on behalf of France."

Valued at more than 5bn EURO, the contract covers the supply of a total of 24 Rafale fighters, a Fremm multipurpose frigate, as well as undisclosed number of MBDA air-to-air missiles to the Egyptian Air Force.

Hollande was quoted by The New York Times as saying that Egypt was looking to buy 'aircraft quickly, due to the threats that it faces.'

"I believe that, given the current context, it's very important that Egypt is able to act to uphold stability and to be in security, not only stability on its own territory, but stability in the region."

Powered by two SNECMA M88 engines, the Rafale is a delta-wing multi-role jet fighter designed to conduct air-to-air combat, reconnaissance flights and nuclear bombing missions and can also carry anti-ship, air-to-air and air-to-ground missiles.

Representing the first aircraft to operate from a land base and an aircraft carrier, the aircraft can also attack land and naval targets and provide close air support to ground troops.

The aircraft entered service with the French Navy and Air Force in 2004 and 2006, respectively, and has also been selected for the Indian Air Force's medium multi-role combat aircraft (MMRCA) project that covers supply of 126 aircraft.

Dassault has been attempting to export the plane, which has been deployed for operations in Afghanistan, Libya, Mali, and in Iraq, for more than a decade.

In addition, the company is in talks with Qatar to supply the fighters to its air force.

On the same date DCNS signed a contract with the Ministry of Defence of the Arab Republic of Egypt for the supply of a FREMM multi-mission frigate. On the occasion Mr. Hervé Guillou, Chairman and Chief Executive Officer of DCNS, declared: "I would like to thank the Egyptian authorities for the trust they have once again placed on us, for the participation in the modernization of their defence system. DCNS will be keen to demonstrate that this trust is justified. The Group will do its utmost to ensure that this program is completed successfully."

The FREMM delivered to the Egyptian Navy will be taken from the series currently under construction for the French Navy.

French DGA conducts first flight test of MMP missile

The French Defence Procurement Agency (DGA) has conducted the first flight test of the medium-range missile (MMP) at its Techniques Terrestres site in Bourges, France.

Supported by the French Army and MBDA France, the trial successfully confirmed the missile's enhanced accuracy in locking onto a target that was hidden from view at launch at a distance of more than 4,000m.

Developed under a MBDA-funded programme since 2009, the MMP is a lightweight, next-

generation surface-attack missile designed for destruction of both stationary and moving ground targets, including tanks, armoured and non-armoured vehicles and infrastructures with minimum collateral damage.

The MMP is scheduled to replace the French Army's existing MILAN wire-guided anti-tank system.

MBDA is set to supply 400 launchers and 2,850 MMP missiles to the army as part of a contract awarded by the DGA in December 2013.



The MMP can be fired from portable firing posts, battlefield vehicles and army aviation platforms, and features fire-and-forget and man-in-the-loop capabilities, allowing operators to immediately move to another position after firing and accurately neutralise various types of targets.

Photo: MBDA

North-Korea reportedly test-fires missiles

North Korea has reportedly test-fired five short-range missiles in to the sea from an undisclosed coastal town in the country, which if confirmed would be its second such testing this year.

A South Korean Defence Ministry official was quoted as saying that the missiles flew approximately 200km on 8 February, before landing in waters off the country's east coast.

Reports also emerged that North Korea tested its new ultra-precision sophisticated anti-ship missile from a small naval vessel from its East Sea Fleet on 6 February.

The missile is claimed to be similar to Russia's high-speed anti-ship KH-35 missile, which can fly just metres above the sea.

Last November, North Korea tested an ejection launcher for submarine-launched ballistic missiles (SLBM) on a land-based vertical launch tube in Sinpo, South Hamgyong Province.

The SLBM is expected to be either a new anti-ship cruise missile offering a 130km range or a new short-range ballistic missile with a 240km range.



The first flight successfully evaluated flying qualities and performance of the KC-390 military transport aircraft.

Photo: Embraer

First test flight of KC-390 military transport aircraft

Embraer has conducted the maiden test flight of its KC-390 military transport and aerial refuelling aircraft at an undisclosed location.

Jointly developed by Embraer and the Brazilian Air Force (FAB), the KC-390 is designed for cargo and troop delivery, aerial refuelling and search and rescue, as well as

combating forest fires, among other missions.

Embraer is currently manufacturing 28 KC-390 aircraft under a R\$7.2bn (\$3.25bn) contract awarded by the FAB in May 2014, with deliveries planned to begin in 2016.

Approximately 32 medium-lift aircraft are also expected to be purchased by military forces worldwide.

Tiger simulation training

Crews of the Franco-German Tiger multi-purpose attack helicopter will continue in future to train with tried-and-tested simulation technology from Rheinmetall. The Düsseldorf-based Group recently booked an order to this effect

worth several tens of millions EURO.

The contract encompasses the upgrade of existing simulators, which will be updated to match the latest configuration of the original aircraft.



Tiger attack helicopter

Photo: VolkerShubert/Airbus

UK defence spending rises

After constant budget cuts, a new report by Strategic Defence Intelligence (SDI) forecasts a rise in defence expenditure in the UK until 2020, due to the difficult political situations in Ukraine, Iraq and Syria.

Although the UK pulled out its troops from Afghanistan in late 2014, the defence budget is expected to increase at a CAGR of 1.13%, reaching US\$58.1 billion by 2020. The UK defence expenditure has experienced constant cuts during the last four years, declining from US\$59.6 billion in 2011 to US\$54.9 billion in 2015. The

report expects the UK to put the majority of investment in submarines, C2C4ISR, multi-role aircraft, police modernisation and counter terrorism, IT networking and infantry fighting vehicles.

The UK military has bases in nations like Poland, Estonia and Lithuania and has deployed troops in the wake of recent political and military developments in Ukraine.

The country has also recently started training Kurdish forces and is providing them with weapons to fight the terror group IS.

Precision rifles to Lithuanian Army

FN Herstal has delivered FN special operations forces combat assault rifle-heavy (SCAR-H) precision rifles to the Lithuanian Armed Forces.

The semi-automatic rifles have been delivered as part of a 2.7m EURO contract.

The semi-automatic rifles use Schmidt & Bender rifle scopes and are expected to increase combat capacity of the land force.

A modified version of the SCAR-H battle rifle, it features a 20in heavy barrel and an improved two-stage trigger module, and is designed for use as a sniper support rifle.

The 7.62mm rifle is fitted with mechanical precision sights with a range of up to 600m, as well as an extended top rail that can accept the in-line assembly of night and day sights.

A length-adjustable folding buttstock and height-adjustable soft cheek rest are included for user comfort.

Originally developed for the US Special Operations Command, FN SCAR-H rifles are also used by Belgium, Chile, Croatia, France, Germany, Georgia, Kenya, Malaysia, Mexico, New Zealand, Peru, the Philippines, Poland, Pakistan, Serbia, South Korea and Turkey.



FN SCAR-H precision rifles will be used by the Lithuanian Land Force.

Photo: Ministry of Defense, Lithuania

Missile qualification of IRIS-T SL system

Diehl Defence has successfully completed guided missile qualification of its new infrared imaging system-tail / thrust vector controlled surface-launched (IRIS-T SL) missile system.

The three guided firings were undertaken at the Overberg Test Range in South Africa. They were executed in different short- to medium-range and very low- to high-altitude scenarios, and successfully demonstrated IRIS-T SLs full performance as the most advanced short- to medium-range surface-to-air missile.

All of the firings resulted in direct hits of the jet target drones of different sizes that performed a broad spectrum of realistic evasive manoeuvres.

During first trial, the missile reached an altitude of more than 12km within one minute of launch. It scored a direct hit against the target despite an evasive manoeuvre, involving changing direction and altitude, proving its medium range capabilities.

The second test was conducted at very close range to the launch point to prove the

missile's short range engagement capabilities. It saw the missile jettison its aerodynamic cover shortly after launch, immediately initiating a hard turn-over manoeuvre towards the low flying target.

The entire engagement lasted less than ten seconds and ended with a direct hit of the target drone.

IRIS-T SL scored a direct hit against a very small, fast and agile target drone in the third firing. It featured high agility and extreme manoeuvring capability at 12.5km range and 1.5km altitude, even though the drone performed aggressive dive / pull-up evasive manoeuvres.

The IRIS-T SL has already been ordered to serve as a component of the future German air and missile defence system (TLVS).

The missile is effective against all types of aircraft, helicopters, cruise missiles, guided weapons, air-to-surface missiles, and anti-ship missiles. It also has a high probability of kill against unmanned aerial vehicles, and other small manoeuvring threats, at very-short and medium-range distances.



IRIS-T missile is planned to serve as a component of the future German air and missile defence system.

Photo: Diehl



The T-X contract covers production of 350 new two-seat jet trainers for replacement of USAF's ageing T-38 Talon fleet. (Photo: SGT Jeffrey Allen, USAF).

Northrop designs new aircraft for USAF's T-X programme

Northrop Grumman has reportedly designed a new aircraft for the US Air Force's (USAF) T-X trainer replacement programme.

The company had initially planned to offer BAE System's Hawk advanced trainer aircraft for the multi-billion dollar T-X contract that covers production of 350 new two-seat jet trainers for replacement of the USAF's ageing T-38 Talon fleet.

Northrop Grumman T-X programme director Marc Lindley was quoted by Defense-

News as saying that the decision to switch from a proven system to a new design was taken two years ago, after USAF made the T-X more requirements more clear to industry.

The latest design is currently at the assembly stage and is expected to conduct first flight sometime this year.

Apart from Northrop, Boeing, Lockheed Martin, Textron AirLand, General Dynamics and the Finmeccanica team, intend to submit bids for the T-X contract.

Synthetic Guidance Technology with Tomahawk Missile

A synthetically guided Tomahawk cruise missile successfully hit its first moving maritime target Jan. 27 after being launched from the USS Kidd (DDG-100) near San Nicolas Island in California.

The Tomahawk Block IV flight test demonstrated guidance capability when the missile in flight altered its course toward the moving target after receiving position updates from surveillance aircraft.

"This is a significant accomplishment," said Capt. Joe Mauser, Tomahawk Weapons System (PMA-280) program manager. "It demonstrates the

viability of long-range communications for position updates of moving targets. This success further demonstrates the existing capability of Tomahawk as a netted weapon, and in doing so, extends its reach beyond fixed and re-locatable points to moving targets."

The Tomahawk weapons system is the U.S. Navy's precision strike standoff weapon for long and medium range attack of tactical targets. The Navy is currently fielding Tomahawk Block IV weapons on surface and subsurface platforms across the globe.

MBDA delivers the first PCP and IMCP command and control systems

At the beginning of December 2014, MBDA delivered the first PCP (Platoon Command Post) and IMCP (Improved Missile Control Post) air defence command and control (C2) systems destined for an export customer. Production of the remaining systems currently under order will be spread over the next two years.

These PCP and IMCP systems will form the first air defence sections enabling the operation and coordination of Mistral and/or VL MICA systems. The PCP module is used for the command and control of multi-layered surface to air units. It provides the interface with systems or other sources responsible for coordinating the air space as well with other PCP modules deployed in neigh-

bouring zones. Equipped with the latest 3D radar capable of detecting and identifying aerial targets at ranges of up to 80km, the IMCP module provides the detection, identification and target tracking functions for PCP.

At the heart of the range of surface to air C2 systems offered by MBDA, the combination of the new PCP and IMCP systems will allow a greater flexibility in adapting the number and kind of effectors to meet the requirements posed by the particular threat and the mission.

With 70,000 surface to air missiles, more than 4,000 firing units and around 2,000 C2 systems sold over the last 50 years, MBDA covers all the elements of an air defence system.

Global Hawks to Republic of Korea's Air Force

Northrop Grumman has been awarded a contract to deliver RQ-4 Global Hawk unmanned aircraft systems (UAS) to the Republic of Korea's Air Force (ROKAF).

Awarded by the US Air Force Life Cycle Management Center, the \$657.4m contract requires Northrop to supply four enhanced integrated sensor suite-equipped RQ-4B Block 30 Global Hawk air vehicles with two spare engines and applicable ground control environment elements.

Powered by an Allison Rolls-Royce AE3007H turbofan engine, the RQ-4 Global Hawk is a high-altitude, long-endurance UAS designed to provide field commanders with high-resolution, near real-time imagery of large geographic areas to support military, humanitarian and environmental missions.

Contractual work will be performed at the company's facility in California, US, with deliveries scheduled to start in 2018.



A US RQ-4 Global Hawk

Photo: US Air Force

Indonesian Air Force may purchase Su-35 to replace its ageing F-5 fleet

The Indonesian Air Force (TNI-AU) is reportedly favouring the Russian-built Su-35 Flanker multi-role fighter aircraft to replace its ageing F-5 Tiger fighter fleet.

The Indonesian Air Force has listed the US F-16 Block 52+ Fighting Falcon, Eurofighter Typhoon, Swedish JAS 39 Gripen fighters, in addition to the Su-35 as the potential candidates for the F-5 replacement programme.

Russia has already signalled its readiness to supply Su-35 fighters, if they are selected by the Indonesian Government.

Meanwhile, the Indonesian Government is still considering whether new fighter jets should be procured for replacement of the old Northrop Grumman-built F-5 E Tigers.

Around 11 F-5E/F fighters are currently flown by the Indonesian Air Force.

Protector RWS for UK Army's Scout SV platforms

Kongsberg has been awarded a contract for the supply of Protector remote weapon stations (RWS) for the UK Army's Scout Specialist Vehicle (SV) programme.

Awarded by General Dynamics (GD) UK, the £61m agreement requires the company to manufacture and deliver Protector Stations for integration into advanced electronic architecture inside all Scout SV variants.

In September, GD received a £3.5bn contract to supply 589 SVs in six variants for the armoured cavalry within the Army 2020 structure.

The Protector systems are likely to replace the primary sight on the Scout reconnaissance variant.

The Scout SV variants supplied to the UK Army include scout reconnaissance, equipment support repair, equipment and support recovery, command and control, protected mobility reconnaissance support and engineer reconnaissance.

Designed to replace the army's existing combat reconnaissance tracked vehicle fleet, they will enhance intelligence, surveillance, protection, target acquisition and reconnaissance capabilities, and provide a highly effective 40mm cannon for future combat operations.

Protector systems will be manufactured in Kongsberg, Norway, and deliveries are scheduled to begin in the autumn of 2016.



Protector Stations will be integrated into advanced electronic architecture inside all Scout SV platform variants. Photo: KONGSBERG

Latest Galileo Satellites Reach Launch Site

Another two Galileo satellites have touched down in French Guiana ready to take their place in Europe's satellite navigation constellation.

The pair, safely cocooned inside their air-conditioned containers inside an Air France Boeing 747, landed at Cayenne-Félix Eboué Airport yesterday.

The seventh and eighth Galileo satellites will be launched together by Soyuz in late March, re-

suming the interrupted building of the satnav constellation.

Arrival in French Guiana is the final stop in a complex production and test line that snakes back across Europe. The satellites are built by OHB in Bremen, Germany, with their navigation payloads coming from Surrey Satellite Technology Ltd in Guildford, UK, both companies being supplied in turn by subcontractors across much of the continent.

US Navy launches new SAFFiR fire-fighting robot prototype

The US Navy's Office of Naval Research (ONR) has launched a fire-fighting robot prototype, called the Shipboard Autonomous Fire-fighting Robot (SAFFiR), at the Naval Future Force Science and Technology EXPO in Washington, US.

Built in collaboration with researchers at Virginia Tech, the two-legged, or bipedal, humanoid robot is designed to move on a ship, control doors and fire hoses, and help sailors with damage control and inspection missions.

The ONR is currently assessing the applications of unmanned systems in damage control and inspections on naval vessels, further supporting the navy's science and technology strategy.

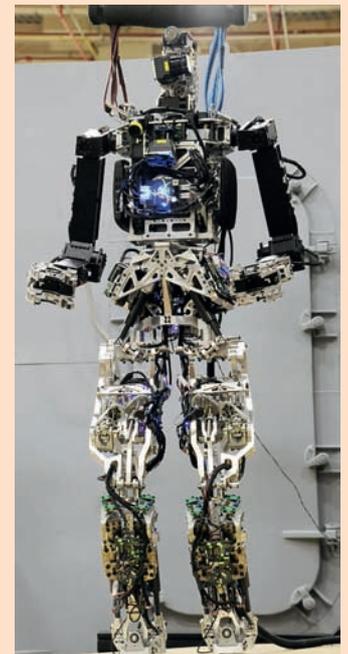
The 5ft 10in-high, 143lb humanoid robot is equipped with a super-human range of motion to manoeuvre in complex spaces.

Infrared stereovision and rotating laser for light detection and ranging sensors allow it to see through dense smoke.

Virginia Tech mechanical engineering associate professor Brian Lattimer said: "The robot has the ability to do autonomous tasks but we have a human in the loop to allow an operator to intervene in any type of task that the robot's doing."

"For instance, a bipedal robot could be configured to take shipboard measurements, scan for corrosion and leaks, and identify changes to the shape of the room from its original configuration.

A more advanced design is being planned as part of the long-term investigational research programme, which involves using better intelligence, communications capabilities, speed, computing power and battery life for extended applications.



The ONR-backed SAFFiR being tested on USS Shadwell. Photo: US Navy/John F. Williams

Upgraded M-ATVs to US Army

Oshkosh Defense is delivering upgraded mine-resistant ambush-protected (MRAP) all-terrain vehicles (M-ATVs) to the US Army.

A total of 800 M-ATVs are being modernised by the company as part of a base contract and three additional contract options, which have a combined value of more than \$77m.

The upgrades include underbody improvement kits and modernised automatic fire extinguishing systems, as well as several safety-related improvements, among others.

Oshkosh has been manufacturing M-ATVs since June 2009 and has produced more than 8,700 units.

Deliveries of the modernised M-ATVs are scheduled to continue until September.

Based on the Oshkosh medium tactical vehicle replacement platform, the M-ATV offers the same levels of protection as the larger and heavier MRAPs with improved mobility and is expected to replace the M1114 Humvee fleet.



The M-ATV reset programme aims to help the US Army achieve its goal of standardising the M-ATV fleet configuration. Photo: US Army

First Launch of Ground Launched Small Diameter Bomb

Saab and Boeing have proven that Boeing's Small Diameter Bomb I, originally developed for use by aircraft, can be adapted for launch from a ground artillery system.

The companies recently tested the Ground Launched Small Diameter Bomb (GLSDB), integrating the SDB I and M26 rocket motor technologies for the Multiple Launch Rocket System. The testing showed that the bomb can withstand a rocket artillery launch without

its performance being compromised. The rocket motor in the test was provided by Nammo.

GLSDB allows the artillery system to reach targets from significantly longer distances, and engage hard-to-reach targets, while maintaining the Small Diameter Bomb's flight maneuverability and accuracy.

Under a teaming agreement signed last year, Boeing and Saab will offer GLSDB to current and future rocket artillery users.

Deliveries to F35 worth 560 MNOK

KONGSBERG has won an order for deliveries to F-35 Joint Strike Fighter worth 560 MNOK

Kongsberg Defence Systems (KONGSBERG) has won an order from Lockheed Martin valued at 560 MNOK for deliveries of rudders and vertical leading edges for production lots 9 and

10 (LRIP 9-10) for F-35 Joint Strike Fighter.

The contract is a continuation of deliveries from previous production lots (LRIP 3-8) and supports the continued business relationship between KONGSBERG and Lockheed Martin.

USAF uses new binding material to protect CV-22 Osprey engines

The US Air Force's (USAF) 58th Special Operations Wing is planning to use a biodegradable binding material at practice landing zones to limit damage caused to CV-22 Osprey engines during training missions.

TerraLOC binds together the dirt in a landing zone to ensure that it does not stir up when a CV-22 Osprey lands.

58th Operations Group commander colonel Dwight Davis said: "Any dust mitigation extends the life of the engine and the prop-rotors.

"Starting at about 50ft or 60ft, it is like having two Category 5 hurricanes coming down."

Enriched with abrasive minerals, including quartz and pumice, New Mexico dirt causes more damage to Osprey engines and prop-rotors than the dirt and sand present in places such as Afghanistan.

58th Operations Support Squadron commander lieutenant colonel Christina Willard said a CV-22 engine replacement costs approximately \$1.2m. The application of TerraLOC costs \$70,000 for the initial treatment and less for subsequent applications, lowering both cost and maintenance time.

The binding material is expected to save the 58th SOW nine engine replacements a year and should be reapplied every six to eight months to ensure its effectiveness.

The material will initially be used at two drop zones, with plans to add more in the future.

The CV-22 Osprey is powered by two Rolls-Royce AE 1107 new-generation 6,000 shp-class turboshaft engines and is used to conduct long-range infiltration, exfiltration and resupply missions for special operations forces.



The New Mexico dirt causes damage to CV-22 Osprey engines and prop-rotors. Photo: US Air Force

Saab and Damen Team for Walrus Future Submarine Replacement

Saab is teaming with Dutch shipbuilder Damen Shipyards Group to explore future opportunities in the international submarine market. The companies have signed an exclusive teaming agreement to work together in pursuit of the potential Walrus-class submarine replacement programme for the Netherlands. In addition to this project, Saab and Damen will also explore ways in which they might bid jointly on other submarine procurement programmes.

Through the acquisition of Kockums Saab has extensive experience in the design and manufacture of submarines and surface vessels for a global customer base, integrating advanced systems and using a range of ultra-modern materials

and construction techniques. Key technology includes Saab's unique Air Independent Propulsion System based on the Stirling engine. In addition, Saab delivers many complex defence programmes in cooperation with governmental and commercial partners in customer nations worldwide.

Damen delivers about 160 vessels annually and is known for its unique ship-design concepts, due to its sharp focus on research and development, standardisation and modularisation. Its defence and security portfolio includes vessels ranging in size from 7 m to over 200 m. Damen Schelde Naval Shipbuilding (established in 1875) supplies major surface vessels to navies worldwide.



Three out of a total of four Dutch submarines of the Walrus-class

Photo: Dutch Navy

Scandinavian Avionics to support potential F/A-18 fleet

Super Hornet program holds significant potential gains for Danish industry.

Boeing signed an agreement today with Scandinavian Avionics that outlines potential support and sustainment work should Denmark choose the Boeing F/A-18E/F Super Hornet as its next fighter jet.

Boeing and Scandinavian Avionics will explore integrating that company's expertise in component maintenance and repair into a broader sustainment plan for Danish Super

Hornets. They also would collaborate on any training necessary for Scandinavian Avionics to help maintain avionics for the fleet.

Scandinavian Avionics joins two other companies – Danish Aerotech and IFAD – on the Danish Super Hornet sustainment team. Boeing and its industry team members would collaborate with the Royal Danish Air Force and the U.S. Navy on support options providing cost-effective readiness for a Danish Super Hornet fleet.

Contract for Underwater Systems

Saab has received orders from the Swedish Defence Materiel Administration (FMV) for continued development of the New Lightweight Torpedo plus maintenance agreements for underwater weapon systems and the Hydra sonar system. The total order value amounts to approximately SEK 175 million.

“Based on the proven Torpedo 45 with its outstanding shallow-water anti-submarine warfare capability, the New Lightweight Torpedo will deliver significant performance improvements to deal with evolving threats in international scenarios,” says Görgen Johansson, head of Saab business area Dynamics.

AT4 to the French armed forces

Saab has been awarded a contract by the French Ministry of Defence procurement branch, the DGA (Direction Générale de l'Armement), to supply the Roquette Nouvelle Generation, (Roquette NG) next-generation shoulder-launched weapon system for the French armed forces. The first fixed contract is for SEK 295 million. The total programme, including all options, is valued at approx. MSEK 2 050.

The Roquette NG is a general purpose weapon system which will be employed by all three branches of the French armed forces (Army, Air Force and Navy). The contract is a multi-stage agreement with one fixed element and eight consecutive options over the period 2015-2024.

The new weapons are part of the proven AT4CS family

and build upon Saab Dynamics' modular 84-mm product range including the renowned Carl-Gustaf multi-purpose reloadable weapon system and the AT4 family of disposable weapons. Three AT4 variants are included in the contract: AT4CS ER (anti-armour extended range), AT4CS AST (anti-structure and breaching), and AT4CS HE (high-explosive anti-personnel). These weapons provide multi-purpose direct fire support with confined space capabilities. The contract also incorporates an integrated logistics and support package with an extensive training suite, including deliveries of outdoor training simulators from Saab.

Saab has teamed with NEXTER Munitions in Bourges, France, for engineering and logistics support throughout the programme.



A US soldier firing an AT4

Photo: US Army

NSM COASTAL DEFENCE CONTRACT VALUED AT NOK 1,3 BILLIONS WITH POLAND

Kongsberg Defence & Aerospace (KONGSBERG) has signed a contract with the Polish Ministry of National Defence for an NSM (Naval Strike Missile) Coastal Defence System valued at NOK 1.3 Billion. The scope of delivery is a Squadron-size unit similar to the contract won with Poland in 2008.

After a successful delivery and acceptance of the first Squadron, this second Squadron will increase the cooperation with the Polish Government and industry and further enhance security of supply by establishing the capability to maintain the system in Poland in an alliance with WZE (Wojskowe Zakłady Elektroniczne S.A).

The system uses NSM in conjunction with a command and weapon control system similar to the renowned NASAMS



NSM missiles launched from trucks will be an important part of the Polish coastal defence.

Photo: Kongsberg/ Polish armed forces

air defence system in use by four NATO countries, including the US. The radar system, communications system and trucks carrying launch ramps are provided by Polish subcontractors.

The NSM is a fifth generation Strike Missile, developed by KONGSBERG for

the Norwegian Navy. NSM reached Initial Operational Capability on the new Norwegian Fridtjof Nansen Class frigates and the new Norwegian Skjold Class corvettes in 2012. NSM was also recently tested by the US Navy on LCS (Littoral Combat Ship) 4 Coronado. ■

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PUTIN WILL NEVER GET VLADIVOSTOK OR SEVASTOPOL

Nobody was really surprised when President Hollande just before Christmas stopped delivery of the newly built helicopter carrier *Vladivostok* just as it was about to sail to Russia. For several months, resistance had been growing both in France internally and in the NATO against letting Russia take delivery of the ship in a time of toughening sanctions against the Russian Ukraine politics.

Text: Tor Husby

This kind of military present to a hostile-minded Russia would not have been politically feasible the way the Ukraine crisis developed throughout 2014. The United States has expressed growing concerns, and the Baltic countries were outraged, at the prospect of the Russian navy getting hold of two modern helicopter carriers of 21,300 tons with the attendant offensive capability. It is sufficient to remember what the commander in chief of the Russian navy once said: "If I had a ship like this (in 2008), we could have done the job in Georgia in just 24 hours".

Waiting patiently

After the announcement from President Hollande, the Deputy Minister of Defence Jurij Borisov said: "We will wait patiently until we get them. But Moscow is expecting the contract to be fulfilled". Minister of Finance Michel Sapin said on the same day that an absolute prerequisite for delivery of the *Vladivostok* to Russia would be that the situation in the Ukraine gets normalized, with Russia playing an active role to this end.

It was in January of 2011 that Deputy Prime Minister Igor Sechin, a member of Mr. Putin's most intimate circle, and Minister of Defence Alain Juppé with president Sarkozy in attendance signed the contract in Paris for the purchase of two helicopter-carrying warships of the *Mistral* class, valued at some 1400 million euro. The *Vladivostok* was destined for the Pacific fleet, while the *Sevastopol* was earmarked for the Northern fleet at the Kola base.

The agreement also comprised of transference of French technology to Russia, and the later building of two similar vessels at a new shipyard by Saint Petersburg (this yard has not yet been built).

Russia has through United Shipbuilding Corporation (OSK) contributed some 20 percent of the construction costs for the building of the *Vladivostok* at the DCN yards in Brest and St. Nazaire. The ship's design has been modified to operate the Russian helicopters of the Kamov Ka 52 and Ka 27 types. Since the summer of 2014, Russian navy cadets and officers have been on board the *Vladivostok* for several months in order to get acquainted with the vessel and install Russian equipment. At time of writing, nobody knows what will be the final fate of these vessels, or who will end up as the final proprietors of the *Vladivostok* and its sister ship *Sevastopol*, due for completion in a year or so. Where the matter ends politically and financially is an equally interesting issue. The format is going to be massive either way.

As sharp as can be

There is no doubt that the *Mistral* class packs a considerable offensive punch. They are a lightning-sharp mix of command vessel, helicopter platform and amphibious vessel, and were planned to be the extended arm of the French defence outside coasts in crisis, and be a part of the French standing NATO forces, as well as being a part of the UM peacekeeping operations. Equipped with the French Navy's SIC 21 Command system (developed by Thales) and the Thales *Syracuse IV* satellite system, they have considerable capability as a



fleet-command ship. Completing the equipment array is a DCN *Senit 8* combat data system. They also have MMR-3D air warning radar, and assisting the helicopter landings is the navigation radar DRBN-38A Decca Bridgemaster E250. Their military capability includes 16 helicopters. Two elevators take the helicopters down to the helicopter deck, where there are also workshop bays. All the helicopters that are in use by the French defence can operate from the vessel. The main helicopters of the vessel, however, will be the NH90 and the Eurocopter Tiger combat helicopters. For self-defence, the main armament is made up of twin SIMBAD systems for the *Mistral* SAM.

The *Mistral* class will accommodate four landing craft built into a dock at the rear of the ship. Inside, there is room for 59 vehicles, or a full armoured vehicle battalion with 40 vehicles and 450 soldiers. For a short period, the ship will accommodate a staff of 150 persons and 900 soldiers. Each vessel can house an infirmary with



BPC Dixmude (L9015) in Jounieh bay, Lebanon 2012. The French navy's Dixmude is the third vessel in the Mistral class. Photo: French Navy

69 beds. This is about the size that can be expected in a city of 25,000 people. Propelled by three Wärtsilä diesel generators and an auxiliary engine from the same manufacturer, the ship can turn a speed of 18.8 knots over a range of close to 20,000 nautical miles. The endurance at sea is 45 days with a crew of 160 people. France operates three vessels of this class: *Mistral*, serving the navy since 2006, the *Tonnerre*, from 2007, and the *Dixmude*, flying the Tricolor since 2012. In the French Navy, their size is exceeded only by the aircraft carrier *Charles de Gaulle*. The Polish shipyard Stoczynia Remontowa in Gdansk was responsible for a part of the construction of the French vessels.

Entente cordial

For Russia to turn abroad for the construction of ships of this magnitude is unprecedented, and must be seen in light of the weakening of the shipyards and other defence industries after the demise of the Soviet Union in 1991. The mili-

tary executives realised that it would take upwards of ten years to develop a concept of similar capabilities to the *Mistral* in Russia. This was a longer delay that anyone was prepared for.

Looking at the French-Russian connection from a historical perspective, it is no surprise that France was the nation of choice when Russia decided to go abroad to secure this military capability. For more than a hundred years, with a few notable exceptions, France has had a firm tradition of keeping close ties to Moscow, perhaps to counter-balance its ties to Germany and eventually also the USA. In 1966, as the Cold War was raging, the French president Charles de Gaulle went to Moscow in an attempt to realise the dream of a future European order where France and the Soviet Union should play the leading roles, with the importance of the USA and Great Britain similarly diminished. In the years up to 1986, 14 summit meetings were held between French and Soviet leaders. After the demise of the Soviet Union, French

presidents continued to nurture relations with Moscow. Of great significance was the meeting in February of 2003 between Chirac, Schröder and Putin, which concluded in opposition to the American plans of invading the Iraq of Saddam Hussein. The agreement between these three effectively stopped George W. Bush from getting the sought-after resolution from the Security Council, which would have given the green light to an invasion led by the UN. When Russia invaded Georgia in 2008, president Sarkozy promoted a cease-fire between the two, rather than insisting on the withdrawal of Russian troops from Georgia. Soon after, he spoke out in favour of relations between Russia and France and the European Union being normalised.

Professor Nikolas Gvosdev claims in *"Russian Foreign Policy"* (2014) that the indulgence of Sarkozy towards Putin at least partly was due to the trebling of French-Russian trade, to 30 billion dollars between 2005 and 2012. Sarkozy promoted France as a better alternative than Germany for Russia, and French investments in Russia are valued at some 10 billion dollars. Automobile industry and high-tech energy equipment are important sectors alongside French-Russian collaboration on energy projects (North Stream, South Stream, Shtokman, Gazprom/Total), aerospace (not least the Russian deliveries to the French-German EADS, manufacturers of sensitive military high technology) and finally the French-Russian joint development of rocket technology. The *Mistral* agreement was a high point in this flourishing collaboration.

New direction

However, after the *Mistral* agreement went sour, indicators are pointing steeply downwards. The turnaround high point was already passed a few years ago. Sarkozy was working intensively for intervention in the Syrian civil war, and in favour of toppling Gaddafi in Libya. Strong bodies of opinion in France spoke out in critical tones about the development of human rights in Russia. All of this was quite annoying to Moscow, while Sarkozy disliked Putin's expressed wish to give the BRICS countries (Brazil, Russia, India, China and South Africa) greater influence on world politics at the detriment of the leading European nations.

The crisis in the Ukraine, however, has become the greatest stumbling block in French-Russian relations, and is likely to remain so for quite some time. ■■



S-97 RAIDER HELICOPTER PROTOTYPE

Sikorsky Aircraft has started bladed ground testing of the first S-97 Raider prototype helicopter, which is being offered for the US Army's armed aerial scout (AAS) programme.

Taking place at an undisclosed location, the ground phase will see the S-97 Raider team evaluate the first of two prototypes as a completed system for the first time.

Under development since October 2010, the S-97 Raider is based on Sikorsky's rigid X2 rotor coaxial design and is designed to surpass legacy military helicopters in manoeuvrability, payload, speed, range and high / hot environmental conditions.

The 100% industry-funded helicopter has coaxial counter-rotating main rotors and a pusher propeller.

In addition to ground tests, Sikorsky is preparing for the final assembly of the second prototype at its Development Flight Centre in West Palm Beach, Florida, US.

The AAS programme aims to replace the US Army's ageing fleet of OH-58D Kiowa Warrior multi-mission helicopters. ■■

FACTS

- ▲ Crew: 0-2 pilots
- ▲ Capacity: 6 troops
- ▲ Length: 35 ft (11 m)
- ▲ Gross weight: 8,945 lb (4,057 kg)
- ▲ Max takeoff weight: 11,000 lb (4,990 kg)
- ▲ Powerplant: 1 × General Electric YT706, 2,600hp /1,900 kW (the same engine used on the UH-60M Black Hawk, however a more powerful engine is being developed)
- ▲ Main rotor diameter: 1 (2 coaxial) × 34 ft (10 m)

PERFORMANCE

- ▲ Cruising speed: 253 mph/407 km/h (with external weapons)
- ▲ Range: 354 mi (570 km)
- ▲ Endurance: 2hr40min
- ▲ Service ceiling: 10,000 ft (3,048 m) 95°F (35 degrees Celsius)

ARMAMENT

- ▲ Guns: .50 cal gun w/500 rounds
- ▲ Rockets: 7 shot rockets pod

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