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## A330 MRTT A Versatile Solution



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**France launches €1 billion Rafale upgrade** PAGE 16

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## Fast patrol vessel ICGS Abhinav commissioned

The Indian Coast Guard Ship Abhinav, the third in the series of 20 fast patrol vessels (FPVs), designed and built by the Cochin Shipyard Limited, was commissioned on January 16 at Kochi by the Director General of Coast Guard, Vice Admiral Anurag G. Thapliyal.

The 50-metre indigenous FPV displaces 290 tonnes and can achieve a maximum speed of 33 knots with an endurance of 1,500 nautical miles at economical speed of 13 knots, equipped with state-of-the-art weaponry and advanced communication and navigational equipment. She makes an ideal platform for undertaking multifarious close-coast missions such as surveillance, interdiction, search and rescue and medical evacuation. The special features of the ship include an integrated bridge management system (IBMS), integrated machinery control system (IMCS) and an integrated



gun mount with indigenous fire control system (FCS).

In his address during the commissioning ceremony, Vice Admiral Anurag G. Thapliyal termed the FPVs as the workhorses of Coast Guard. The Flag Officer also dwelt upon the fast paced development of the Indian Coast Guard and acknowledged the support of Government for the Coast Guard's plan to increase force levels substantially to face the emerging security challenges in the maritime domain. He emphasised the importance Government of India accords to coastal security in view of the asymmetric threats from the sea. Indian Coast Guard will be a 150 ships/boats and 100 aircraft maritime force in next five years. In addition to these operational assets, a Coastal Surveillance Network is being established with 46 stations to ensure real time coastal surveillance.

The ship has been named ICGS Abhinav, literally meaning modern, and will be based at Kochi under the administrative and operational control of the Commander, Coast Guard Region (West). The ship is commanded by Commandant (JG) Raman Kumar and has complement of five officers and 34 other ranks. 



### Cover:

The A330 MRTT is the only new-generation Multi-Role Tanker Transport aircraft flying, and fully certified today, after having demonstrated its capability during an extensive flight test campaign.

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## Enhancing combat capability

**N**ot just in the light of regular incursions on both the western and eastern borders, but also in view of the growing asymmetric threats, the need for the armed forces to enhance their combat capabilities and fulfilling the vision of national security assumes importance. In a press conference on the eve of the Army Day, the Army Chief, General Bikram Singh reiterated that the Indian Army was enhancing its combat capability and assured that there would be no repeat of the 1962 war with China.

While agreeing that there have been regular intrusions from Pakistan and small arms firing, the Army Chief was emphatic that the India commanders and the soldiers on the line of control were doing a great job in difficult circumstances, terrain, etc. India reserves the right to retaliate to any incursions.

Without being border-specific, the Army Chief emphatically stated there was no complacency on the part of the Army and that capabilities were being created in a systematic manner. The approval for the Mountain Strike Corps by the government is also an indication of the government's understanding of the need to strengthen our combat power. The Indian Army has outlined a roadmap, accordingly it is in the process of intense modernisation and that nearly 40 contracts for acquisitions are in different stages of execution.

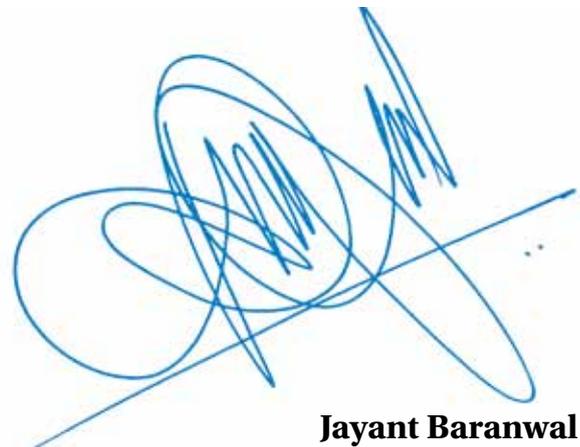
As we are all aware, all the three services have stepped up modernisation plans. The Indian Navy has just got a big boost with the arrival of INS Vikramaditya, an aircraft carrier, based at its homeport of Karwar Naval base in Karnataka. The 44,500 tonne ship is expected to set sail on operational training exercises in the Arabian Sea soon with ships from the Western fleet. While that is good news, the bad news is that at the time of going to print, INS Sindhughosh submarine has been reportedly grounded, coming close on the heels of the major fire accident on INS Sindhurakshak. Meanwhile, the already delayed Project 751 request for proposal for six new conventional attack submarines continues to hang fire. This has upset a wee bit the Navy's operational capability. There is an offer from the French shipyard DCNS to provide six Scorpene class submarines.

In his fortnightly viewpoint, Lt General (Retd) P.C. Katoch has underscored the importance of stealth and the technological progress made in terms of camouflage. A Canadian company has come up with camouflage fabric which is lightweight and inexpensive, which, he avers, could unleash a far more deadly wave of terrorism at the global level.

In this issue, we have a feature on the Airbus A330 multi-role tanker transport (MRTT) and how it performs simultaneously three different types of missions – aerial refuelling; freight transport and medical evacuation.

In this Golden Jubilee Year of our group – SP Guide Publications – we at *SP's M.A.I* rededicate ourselves to giving the best to the growing base of readers. We look forward to your valuable feedback which will help us in advancing further.

Happy reading!


 A blue ink signature of Jayant Baranwal, consisting of several overlapping loops and a long horizontal stroke at the end.

**Jayant Baranwal**  
 Publisher & Editor-in-Chief

INS Vikramaditya and INS Viraat



## INS Vikramaditya to sail to Mumbai and Visakhapatnam

**W**ith INS Vikramaditya settling in at homeport Karwar Naval Base in Karnataka, it will soon be time for the crew, led by Commodore Suraj Berry, to set out to sea again. If sources are to be believed, the 44,500-tonne ship will up anchor and commence on a routine of operational training exercises in the Arabian Sea from January 16 with ships from the Western Fleet. The exercise will carry on for at least a fortnight, after which, the vessel is likely to sail to Mumbai for a formal reception that could see even Prime Minister Manmohan Singh in attendance. The ship will also sail to Visakhapatnam from Mumbai after planned ceremonials.

On its voyage to India, the Vikramaditya conducted basic exer-

cises at sea with the Indian destroyers, frigates and tanker that escorted it across the Arabian Sea. So far unweaponised, the ship still has a long way to go before it is the operational platform it is intended to be. According to top Indian Navy sources, apprehensions about the platform's performance in tropical waters—its first time ever—have been belied by the smooth passage of the ship into much warmer waters than it is used to. Over the next three-four months, the crew of INS Vikramaditya, along with the 75-strong Russian guarantee team, will put the ship through the paces through the searing Indian summer to confirm all performance parameters at forbidding temperatures out at sea. **SP**

PHOTOGRAPHS: Indian Navy

# France offers India two stop-gap Scorpene submarines

As the already delayed Project 75I request for proposal for six new conventional attack submarines continues to hang fire, the Indian Navy is studying a list of emergency measures to possibly shore up force levels in the interim. French shipyard DCNS, partially owned by the French Government, designers and manufacturers of the Scorpene class submarine, have put forth an offer offering two Scorpene submarines off the shelf as a stop-gap supply to mitigate rapidly reducing force levels in the Indian Navy, made worse by the recent tragedy aboard INS Sindhurakshak, one of the Navy's 10 Kilo class attack submarines. DCNS, with authorisation from the French Government to make the offer to the Indian Government, has assured the Indian Navy that it can build two Scorpene submarines and deliver them in a time period that coincides with the induction of the first of the original six Scorpene submarines being built at the Mazagon Dock Limited (MDL) in Mumbai.

DCNS officials confirm that the Scorpene build programme is now fully on track after major hiccups between 2009 and 2013. A comprehensive review meeting held last month took stock of progress, and involved persons from the French DGA, DCNS and French industry.

In a related development, DCNS, currently in an MoU with the Indian Defence Research and Development Organisation (DRDO) to help facilitate the integration of the indigenous in-development air independent propulsion (AIP) system has placed its anxiety on the table before the Indian Navy about the absence of an official backup plan in the event that the DRDO project doesn't result in a workable AIP module for the final two submarines in the production line. DCNS, which has for long tried to convince the Indian Navy to commit to the French MESMA (Module d'Energie Sous-Marine Autonome) AIP system, has formally suggested to the Indian Navy that the Indian Government formalise a contingency plan without further delay. The MESMA being proposed will be a second-generation system where the steam generator involved will be replaced with fuel cell technology, according to sources. DCNS has also suggested that the DRDO system, being devel-

oped by the Naval Materials Research Laboratory (NMRL) in Mumbai, is quite unlikely to meet deadlines given that it will need to be ready (developed fully and then tested in dock, at sea and at depth after integration with the submarine) by 2015—an unrealistic proposition by any measure. DRDO officials contest this, and insist that the programme is on track and will meet timelines. DCNS plans to recommend to the Indian Navy that the Plan-B be invoked if the DRDO doesn't meet a specified timeline (beyond which, delays would impact the submarine build itself) on the indigenous AIP. It also plans to suggest that the DRDO AIP then be retrofitted on the first four submarines, if the Indian Navy so desires.



On December 17 last year, Defence Minister A.K. Antony informed the Parliament, "Based upon the Naval HQ proposal, Defence Acquisition Council has taken a decision that P-75 I project will have four submarines (out of six) built within the country (three at the Mazagon Dock Limited, Mumbai, and one at the Hindustan Shipyard Limited, Visakhapatnam, on transfer of technology, and two to be built in collaborator's yard abroad."

The Project 75I competition will be a fierce one, though the Indian Navy's priority at this time is to see the RFP go out. Apart from DCNS with the Scorpene, contenders for the \$11-billion deal include Russia's Rubin with the Amur 1650, Navantia for the S-80 and HDW for the Class-214. DCNS, which is already steeped in the Indian licence build programme will be hoping it is a lead

contender for the contract from Europe. DCNS will be pinning its hopes on the P75I competition being a two-horse race against the Russians. It will be pinning its hopes for this on the fact that the HDW Class 214 submarines have had technical problems in the South Korean and Greek navies (though the HDW 209s in service, the Shishumar class, have acquitted themselves operationally, are in line for a capability upgrade through a combat system and new torpedoes), and that the S-80 has been hit with a serious weight imbalance issue that has prompted Navantia to enlist the help of US firm General Dynamics Electric Boat, pushing the prospective delivery schedule of the first boat to the Spanish Navy till at least 2017.

The submarines that the Indian Navy is looking for should be capable of operating in open ocean and littoral/shallow waters in dense ASW and EW environments and capable of undertaking the following missions: anti-surface and anti-submarine warfare, supporting operations ashore, ISR missions and special forces and mining operations, according to the original information request.

As has been set down by the Indian Navy in a report to the MoD in 2010 regarding submarine force levels, "It is a matter of deep concern that in the next few years, India will have its lowest submarine capability in the history of the submarine arm, as a result of retirements, obsolescence, critical delays in shipbuilding/procurement, despite all requirements being catered for adequately in financial and/or perspective plans. As this critical capability is constantly eroded, there is an inverse increase in both capability and strength by the PN, PLAN and other navies operating in the IOR. A prioritised action plan is urgently required to stem dwindling operational availability and strength of the submarine arm if the Indian Navy is to control its area of immediate responsibility, i.e. the IOR."

While the Indian Navy awaits clarity on the tragedy aboard INS Sindhurakshak, it has an offer from Russia for a second refit and life-extension of the remaining nine Project 877EKM Kilo-class submarines, which the Rubin Design Bureau and Zvezdochka Shipyard say will give the submarines an additional 10 years of operational life—something that would help the Navy tide over dwindling force levels. **SP**

## Glimmer of hope for I97 RSH competition

Indicating possible positive movement in the interminably stalled reconnaissance and surveillance helicopter (RSH) acquisition programme, the two finalist vendors Eurocopter (now Airbus Helicopter) and Kamov have extended the validity of their commercial bids till June 2014. Both companies have confirmed that the Ministry of Defence (MoD) formally requested the validity extension, pointing out that a decision could be afoot.

It has been three years since the Army and IAF submitted field evaluation trial reports to the MoD in January 2011. Since then, the MoD has ordered Technical Oversight Committee (TOC) to validate the General Staff Evaluation report, a Special Technical Oversight Committee (STOC) to validate the TOC report, a report has been with the Defence Secretary since June 2012. The fallout of the Finmeccanica investigations, which resulted in the registration of a case against a serving Brigadier of the Indian Army for possible malfeasance during the first iteration of the RSH effort, is said to have slowed a decision on the competition, with reports even suggesting that it could be aborted for a second time. With the two companies now confirming indications of forward movement from the MoD, there may be reason to believe the deal isn't canned just yet. **SP**



## Indian Navy hydrographers want new AUV



The Indian Navy's Hydrography Department has decided to upgrade its surveying capabilities by acquiring a new autonomous underwater vehicle (AUV) that can be deployed off its existing and new hydrography survey vessels. The AUV will be used to undertake hydrographic surveys at medium and deep depths away from the operating ship using hydrographic payloads.

The Navy has set down that the AUV needs to be capable of hydrographic and oceanographic surveys and reconnaissance, collection of bathymetric data, specialised mapping, conduct of route surveys, collection of high-resolution, high precision seabed and sub-bottom data and collection of tactical intelligence. The system needs to also come equipped with various hydrographic sensor payloads capable of mapping the seabed through swath bathymetry

and seabed imagery by means of continuous acquisition of seafloor sonar images. The Navy wants an AUV with a complete inertial navigation system capable of guiding the vehicle in autonomous, semi-autonomous and supervised mode of operation. The AUV unit needs to be not more than seven-metres long and weighing no more than 1,000 kg, with a maximum operating depth of 1,000 metres and a speed of seven knots in upto Sea State 3. It also needs to be capable of 24-hour endurance with payloads on at nominal power. The DRDO is currently sea-testing its own flatfish configuration AUV in the Bay of Bengal, though this is unlikely to meet the performance requirements of the Hydrographic Department in terms of depth and endurance. The Indian Navy in 2010 also floated a requirement for an unspecified number of AUVs, though it had specified that it wanted only an Indian-built system. The Indian Navy is now working closely with DRDO. **SP**

## Five years grounded, Saras revs up to fly again

The Indian Air Force's premier testing facility, the Aircraft & Systems Testing Establishment (ASTE) has begun ground trials of the PT1N modified and souped-up first prototype. Top sources inform **SP's** that the PT1N will be put through an extensive series of ground handling, turning and taxi trials, including static systems trials before it is cleared for a first flight.



The IAF has already appointed a pilot crew for the flight, likely to take place in February. The platform has remained on ground since the crash of the second prototype in March 2009, killing all three test personnel on board. As earlier reported by **SP's**, the modifications to the first prototype include changes to the rear fuselage, increased area rudder, modified stub wings, new engine nacelles and a crucial autopilot. A third prototype, incorporating full weight optimisation and an expanded ratio of composites in the build, is slated for a first flight later this year, after the PT1N clocks at least 25 flights. According to sources associated with the modification of the Saras, the aircraft had grave problems that have since been addressed. Even the ground trials could have commenced earlier, but for NAL's insistence that all simulated tests be corroborated on station before the platform was handed over to the ASTE for operational-level ground and flight testing. **SP**

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# Military camouflage towards invisibility

**M**ilitary camouflage originated with origin of war itself albeit some say it was around late 17th or early 18th century. Putting it simply, the intent of military camouflage is to deceive the enemy to the extent possible with respect to observation of personnel and equipment, thereby providing protection to both in the process either concealing them or making them appear as something else.

The advent of air in World War I necessitated the concept of visual deception an essential part of military tactics; long-range artillery and observation from the air combined to expand the field of fire, and camouflage was widely used to decrease the danger of being targeted or to enable surprise. Hence, military camouflage became a part of the art of military deception. At the same time, advancements in technology have revolutionised military camouflage as well. Many modern camouflage textiles address visibility not only to visible light but also near infrared (IR), for concealment from night vision devices (NVDs).

Camouflage is not only visual; heat, sound, magnetism and even smell can be used to target weapons, and may be intentionally concealed. Though multiple options are available in military camouflage, costs and other considerations like time and effort needed for implementation are factors that dictate the degree of camouflage that a military may adopt. No single camouflage pattern is effective in all types of terrain. The effectiveness of a pattern depends on contrast and colour tones. Strong contrasts that disrupt outlines are better suited for a setting like forests where the play of light and shade is prominent, while low contrasts are better suited to open terrain with little shading structure.

Military camouflage is designed to work in a range of environments. With the cost of uniforms in particular being substantial, most armies including the Indian Army operating in varied terrain have two separate patterns of camouflage uniforms; one for the jungle and one for desert and other dry terrain. There is also a requirement of snow camouflage, either by having reversible uniforms or simple over garments. Such simple over-garments can be used for other terrains too.

The Austrian and Israeli armies use solid colour field uniforms, relying on simple over-garments for camouflage. The purpose of vehicle and equipment camouflage differs from personal camouflage in that the primary threat is from the aerial recognition. The

goal is to disrupt the characteristic shape of the vehicle, to reduce shine, and to make the vehicle difficult to identify even if it is spotted. Many state-of-the-art military camouflage products are available off the shelf like the ultra-lightweight camouflage net system (ULCANS), developed at the Saab Barracuda LLC facility in North Carolina, which provides multi-spectral protection against visual, near IR, thermal IR and broadband radar detection.

The ULCANS is fielded with the US Army and other US Department of Defense (DoD) organisations and is available in both woodland and desert versions. A host of iPAT camouflage wraps are available off the shelf for multiple applications. However, in a development that would have far-reaching consequences throughout the spectrum of conflict, the US military is reported to be strongly backing the development of 'Quantum Stealth' camouflage material that is aimed at making soldiers completely invisible by bending the light waves around them and to also fool night vision devices. Selected groups of the US and Canadian armies have reportedly seen the fabric, developed by the Hyperstealth Biotechnology Corporation of Canada. More significantly, it works against military IR scopes and thermal optics.

Invisibility undoubtedly has a halo whether it is achieved using a shield or a piece of fabric. Research in invisibility is undoubtedly ongoing world over. In 2012, it was reported that researchers at Japan's Keio University are developing a system that may transform our cars into invisible objects. In order to create this invisible car, the team used a Toyota Prius car and used inverted optical-camouflage technology so that the inside of the car looks transparent. This was demonstrated using multiple tiny cameras and projections enabling thousands of small lights to shine in a specific direction with astonishing success. Numerous examples are there to see wherein science has made yesterday's fiction realities.

It may therefore be a matter of time when armies build up to the invisible on a brick-by-brick or a mission need basis. What should also be a matter of concern is the claim by Hyperstealth Biotechnology Corporation of Canada that the 'Quantum Stealth' camouflage fabric is lightweight and inexpensive. This can unleash of a far more deadly wave of terrorism at the global level. **SP**

*The views expressed herein are the personal views of the author.*



**Though multiple options are available in military camouflage, costs and other considerations like time and effort needed for implementation are factors that dictate the degree of camouflage that a military may adopt. No single camouflage pattern is effective in all types of terrain.**



The Chief of Army Staff General Bikram Singh, the Chief of Naval Staff Admiral D.K. Joshi and the Chief of the Air Staff Air Chief Marshal Arup Raha laid wreath at Amar Jawan Jyoti on the occasion of the Army Day 2014 in New Delhi

# Army Chief dispels notion that India has defence capability gap with China

[ By Staff Correspondent ]

**T**he Indian Army Chief General Bikram Singh has emphatically stated that India is in the process of building its defence capability, without being border-specific, and it was in accordance with national security.

Responding to a question by Jayant Baranwal, Editor-in-Chief of SP Guide Publications, whether 1962 (when India-China went into a war) would be repeated, the Army Chief affirmed at the annual press conference that “there would not be a situation like 1962.” He said “No, it shall not happen again. It is a professional army and efforts have been taken to enhance its combat power. By no means I am speaking of any border... but of capabilities that will safeguard our national interests and which will enable the Indian Army to fulfil its constitutional obligation.”

**Jayant Baranwal (SP Guide Publications):** How do you see the capability gap, if it is widening or not, of the Chinese and our army in terms of quality, if not in terms of numbers? Are we ensuring that we are not complacent on this front?

**General Bikram Singh (General):** Let me answer your last part of the

question first on being complacent. Let me state we are not complacent. We are moving ahead as per our road map. We are looking at all areas and we are creating capabilities and it is not border-specific. While creating this capability, there are gestation periods of two to three years, it cannot be done overnight. It takes minimum two to three years time. When you raise formations, it requires training of personnel. The capabilities we are creating, as far as our neighbours or borders are concerned...we are proceeding in a systematic manner...there is no complacency. The approval which has come for the Mountain Strike Corps is an indication of the kind of stance the government has taken in enhancing our combat power. There are delays and cost overruns and these are being addressed.

The excerpts of the press conference are:

In his opening statement, the Army Chief said that he had identified a vision, keeping in mind the ground realities and where the Army needs to go over the next five years. The vision was to enhance the operational effectiveness of the army, to ensure it remains a potent, accountable, disciplined and ready instrument of national power. Keeping this in mind, certain focus areas were identified as to ensure that the vision is accomplished.

First of course being operational readiness. The endeavour was

to ensure that we acquire capability, hone and augment our capability to be able to fulfil our constitutional obligations, both in the internal and external security dimensions. As far as the external security is concerned, we are in the process of augmentation of our combat power and we have got sanctions for the Mountain Strike Force, additional division that is being raised. We are in the process of converting our combat power into quick reaction force capability, the attack helicopters are with us. We have taken up a large-scale modernisation of our forces and we have systems or acquisitions to revitalise/revamp the same and within timelines. All stakeholders operate under the Vice Chief wherein various schemes are taken to the logical conclusion as per the stipulated timelines.

In the current financial year 17 contracts have been signed amounting to about ₹11,777 crore. We have another 23 contracts in the pipeline valued at about ₹12,000 crore and we are hoping that it would be signed this current financial year, taking the total contracts to 40, totalling about ₹24,000 crore. The endeavour is to enhance our capability of our acquisitions mechanism to 60 to 70 a year, from the present 40-50. Since our items are not big-ticket deals like the Air



The President Pranab Mukherjee, the Vice President Mohd. Hamid Ansari, the Chairperson of National Advisory Council Sonia Gandhi and the Chief of Army Staff General Bikram Singh at the Army Day reception

Force, the cash outflows would be ₹3,000-3,500 crore a year...it is an upward trend, marked by transparency, accountability.

Our focus is on force modernisation and augmentation of combat potential. We have a road map which has been sanctioned by the Defence Minister. The road map is pragmatic which is going to cost the exchequer ₹19,252 crore. This will be realised over a period of time. By 2015, we would have 50 per cent war wastage reserve (WWR) training and by 2018-19, making the entire 100 per cent WWR. There is a focused effort to enhancing the combat power in a pragmatic and systematic manner as per laid down timelines.

As regards human capital development the focus has been to address the aspirations of all ranks of officers, specifically women officers. We are looking at enhancing their opportunities, the avenues in the Army. We are strengthening our work culture, strengthening our secular fabric. They are the core values in terms of integrity, loyalty, duty, responsibility, selfless service, courage, etc.

We are enhancing security consciousness in our forces, ensuring cyber security aspects are looked into and is put into place. We are focusing on jointness of the armed forces. It is to optimise our com-

bat power on the battlefield and is being looked into a focused manner. And also the welfare of ex-servicemen, valuable resource of ours.

**Q. After signing of the agreement with China, has there been a decrease of Chinese incursions?**

**General:** Somehow the incidents got hyped. Our soldiers are carrying out patrols to our perception of LaC...so also they have been patrolling according to their perception of LaC. Since October 2013, there is improvement in the situation. The agreement of 2013 hinges on the 1993 and 1996 agreements and the 2005 protocol. The Initiative is to engage at regional level. Engagement is very important and with this positive engagement, we create a better climate.

**Q: There have been continuous ceasefire violations by Pakistan and the people in general feel that Indian Army has not taken adequate measures. What measures have been taken to counter the Pakistani aggression?**

**General:** This assertion is not correct. We reserve the right to retaliate. We have given powers to the commanders to take action on the ground as they deem appropriate. It is a localised situation at the LoC and your soldiers, commanders have done well. The endeavour is not to escalate tensions, but to give appropriate response. If rules are broken, then obviously we cannot stick to rules. Action has been taken. We need to give the soldiers their due, they are in a difficult terrain and any ceasefire violation, it is a mini war, and the soldiers and commanders have responded well. If you can see the media reports in Pakistan wherein it mentions killing of nine of their soldiers, this is a credit to our soldiers. Soldiers are doing a stupendous job...suffice to tell you that the soldiers have reacted well.

**Q: The beheading of our soldier has been making the rounds. Has the matter being raised with Pakistan?**

**General:** We are authenticating the video. My humble request to the media is to keep in mind the sensitiveness of the family. A jawan gives his life in the cause of the nation. A soldier makes a non-negotiable commitment to the nation. Therefore gives his life for a cause. Let them perceive him as a hero... we show inhumane manner it has been done and this affects the family. The act is no doubt a barbaric, despicable act...

**Q: The Aam Aadmi Party leader Prashant Bhusan has asked for a referendum in Kashmir Valley and Hafiz Sayid is asking for the Indian Army to leave Kashmir, what do you have to say?**

**General:** As a matter of principle, I don't comment on political statements. From a military perspective, we need to be there till the situation improves. Considering the ground situation, we will have to be present in the valley. It is a part of our national strategy. Jammu and Kashmir is our State and there is no doubt whatsoever. We are implementing national strategy. The army is doing the task accordingly.

**Q: Is there enough capital for the Mountain Strike Force? Has the government provided assurance of financial support?**

**General:** 100 per cent. The proposal was taken up by the Cabinet Committee on Security. The Defence Minister has assured all budgetary support. I am hopeful that money will come. Ours is a long border, porous and high and difficult terrain. The Defence Minister has been monitoring regularly the expenditure...I have been promised every time money will be made available. It has not impacted capital acquisitions. **SP**

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## India and Japan hold defence talks

The Defence Minister of Japan, Itsunori Onodera, who visited India from January 5-8, 2014, as a follow-up to the India-Japan Defence Ministerial meeting held in November 2011, met with the Indian Defence Minister A.K. Antony, in New Delhi.

At the meeting, the two Ministers extensively and frankly exchanged ideas regarding regional and global security challenges, as well as bilateral defence cooperation and exchanges between India and Japan. They shared views on issues relating to peace, stability and prosperity of the region. Onodera briefed on Japan's National Security Strategy and the National Defence Programme Guidelines, which were adopted in December 2013.

The two Ministers appreciated the progress on India-Japan bilateral defence cooperation and exchanges that had been achieved in a variety of fields and at various levels, including the holding of the third Defence Policy Dialogue which was decided during the 2011 Defence Ministerial meeting, the second "2 plus 2" dialogue and the second bilateral training between the Japan Maritime Self-Defence Force and the Indian Navy which was held from December 19-22, 2013.

They also shared views on the necessity to conduct high-level and working-level regular consultations and exchanges, deepening services exchanges and education/academic research exchanges and making other efforts, in order to further strengthen mutual trust and mutual understanding. They also decided to strengthen India-Japan defence consultation and cooperation, including those related to maritime security to further consolidate and strengthen strategic and global partnership between Japan and India.

The key highlights of the meeting included:

- Continue to carry out high-level mutual visits on annual basis. The Defence Minister of India will visit Japan in 2014.
- Hold the third "2 plus 2" dialogue and the fourth Defence Policy Dialogue (Administrative Vice-Minister/Secretary of Defence level) in Delhi in 2014.
- Promote exchanges on UN Peacekeeping Operations between



The Defence Minister of Japan Itsunori Onodera calling on the Prime Minister Dr Manmohan Singh in New Delhi on January 6, 2014

Japan Peacekeeping Training and Research Centre, Joint Staff College (JPC), Central Readiness Force of Japan Ground Self-Defence Force (JGSDF) and Centre for UN Peacekeeping (CUNPK) of the Indian Army.

- Conduct bilateral exercises between Japan Maritime Self-Defence Force and Indian Navy on a regular basis. In 2014, the Indian Navy will visit Japan to conduct joint exercises.
- Conduct Expert exchanges in Humanitarian Assistance/Disaster Relief and Counter Terrorism between both Indian Army and Japan Ground Self Defence Force (JGSDF); and
- Continue to conduct staff exchanges and discuss possibility of conducting staff talks between Japan Air Self-Defence Force and Indian Air Force and professional exchanges of test-pilots, professional exchanges in the field of flight safety and between their transport squadrons. **SP**

## India keen on peace in the Indian Ocean Region: President

The President of India, Pranab Mukherjee, held discussions with Abdulla Yameen Abdul Gayoom, the President of Maldives, and hosted a banquet in his honour recently at Rashtrapati Bhavan.

Welcoming President Gayoom, the President said in coming to India on his first state visit abroad, the President of the Maldives has reflected the priority attached to the bilateral relationship with India and the same is fully reciprocated.

The President said recent Presidential elections and the smooth transition of power in Maldives is testimony to the strengthening of democracy in Maldives. India appreciates the efforts of the political leadership in the Maldives in ensuring

a free and fair electoral process and a constructive outcome.

The President said among the areas of close cooperation between India and Maldives is our excellent defence and security relationship. India, like Maldives, would like to see uninterrupted peace and security prevail in the Indian Ocean region. Both countries have had to address the challenges of



piracy, smuggling, extremism and religious fundamentalism. India remains fully cognizant of the needs of Maldives in dealing with these issues and is committed to assist in achieving the defence and security objectives of the Government of Maldives.

The President said India wishes to work with Maldives and other like-minded nations to ensure peace in the Indian Ocean region. India and Maldives are natural partners in this enterprise. At a regional level, the two countries can do much more to enhance cooperation among the States to achieve better maritime domain awareness and increase coordination and surveillance by them. India has always been happy to extend support and assistance, as and when required, to Maldives. India shall be happy to continue to do so in the years to come. India would like to see Maldives continue to be stable, peaceful and prosperous, fulfilling the aspirations of its citizens. **SP**

## Successful Prithvi launch

A missile unit of the elite Strategic Forces Command (SFC) recently launched a Prithvi missile from the test range at Chandipur, off the Odisha coast as part of a scenario based live launch training exercise. The launch was flawless and achieved all its targeting and technical parameters set out for the training exercise.

"The launch was conducted as a culmination to a strategic training exercise. The aim of this exercise was to validate our readiness by undertaking launches in various contingencies," said an SFC spokesperson.

Prithvi missiles are indigenously produced and are equipped with improved high accuracy navigation and manoeuvring system. **SP**

## Harris Corporation bags orders for Falcon radios from NATO country

Harris Corporation, an international communications and information technology company, has received



\$21 million in orders from a NATO country for Falcon multiband tactical radios.

The nation is acquiring Falcon III AN/PRC-117G manpack and AN/PRC-152A handheld radios that will provide special forces and Army soldiers with wideband networking capabilities, as well line-of-sight, ground-to-air and tactical satellite voice and data communications.

"Harris radios provide leading-edge capabilities in wireless tactical communications for unprecedented situational awareness on the battlefield," said Brendan O'Connell, President, International Business, Harris RF Communications. "Falcon III enables high-bandwidth applications

such as streaming video, simultaneous voice and data feeds, collaborative chat, connectivity to secure networks and interoperable combat net radio." **SP**

## Damen cuts steel for first Indonesian frigate

In June 2012, the Ministry of Defence of Indonesia and Damen Schelde Naval Shipbuilding (DSNS) signed the contract for the first SIGMA 10514 PKR Frigate. In accordance with the agreed planning for the construction of this frigate, the steel cutting ceremony took place simultaneously on January 15, 2014 at PT PAL (Persero) Shipyard in Surabaya (Indonesia) and DSNS in Vlissingen (the Netherlands).

DSNS will build two modules and subsequently ship them to the yard in Surabaya. The simultaneous construction and testing of the modules at two different locations signifies the unique modular building strategy of Damen Schelde Naval Shipbuilding, a method unparalleled in the naval shipbuilding industry. **SP**

PHOTOGRAPH: Harris



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# A330 Multi-Role Tanker Transport (MRTT)

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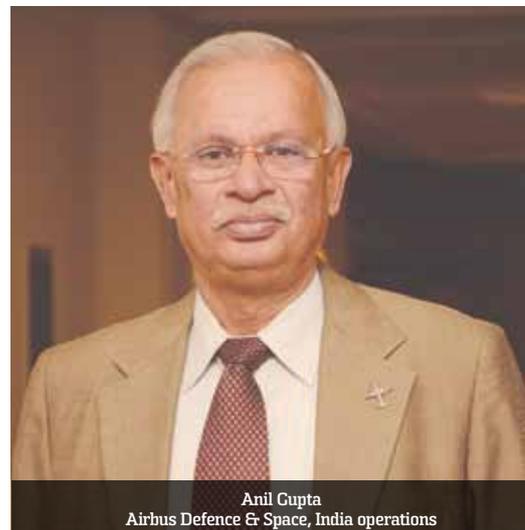
[ By **SP's Correspondent** ]

**A**330 MRTT is not only a Tanker but it's a multi-role machine, claims Anil Gupta of Airbus Defence & Space, India operations. Airbus Defence & Space is the new brand which has been created out of the merger of Casidian, Airbus Military and Astrium.

It is further claimed that the A330 MRTT is the most capable Tanker/Transporter currently available as of today. A330 can perform simultaneously three different types of missions:

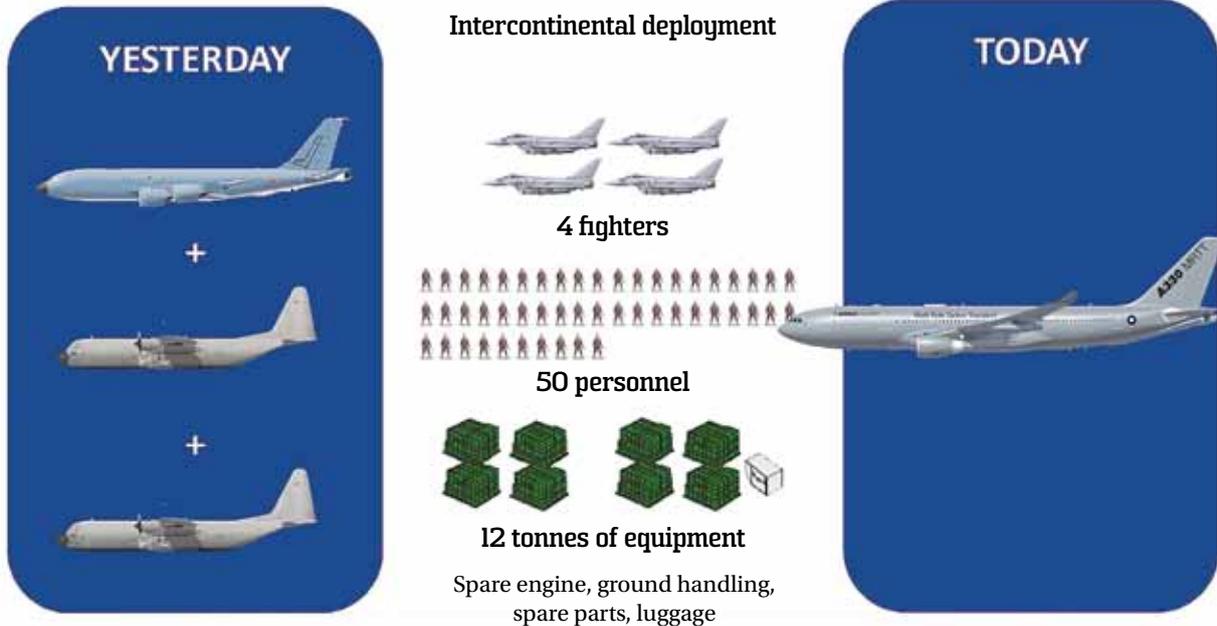
- Aerial refuelling (tanker role), passenger and/or
- Freight transport, and/or
- Medical evacuation (MEDEVAC).

Also, its tank capacity is sufficient enough to supply the required fuel volume thereby no need of additional reserves. The company claims that there is no major structural modification required to carry more passengers and more freight. Hence the aircraft stands out above than any of its competitors. **SP**



Anil Gupta  
Airbus Defence & Space, India operations

## A330 MRTT: One mission - Two roles



**A330 MRTT can deploy 4 fighters and airlift all necessary support equipment and personnel over 2,800 nm**

### Key elements

**A**330 MRTT inherit the up-to-date design and manufacturing technologies, and integrates the most advanced avionics as well as the proven fly-by-wire control systems which allow total flight envelope protection (when in normal control law) featured by the basic A330-200. This means higher reliability as well as lower crew workload, and enabling concentration on mission execution.

The A330 MRTT is offered with a customised suite of military avionics and a mission system integrated with civil avionics. A

comprehensive survivability package including a Defensive Aid System (DAS), fuel tank inerting system and an armoured cockpit are all available.

Representing state-of-the-art in its category, the A330-200 has a range of up to 8,000 nm/ 14,800 km, with a maximum speed of Mach 0.86. It is the primary choice as a platform for a Multi-Role Tanker Transport, offering the best performance at the lowest investment and costs. It provides the best value for money, with potential for long-term growth as confirmed by its continuing successes in the market. **SP**

### 3D printed parts fly for first time in UK fighter jets

**B**AE Systems has revealed that 3D printed components created by its engineers have flown for the first time on-board Tornado fighter jets, paving the way for using 3D printed parts in other military kit. The 3D metal parts were successfully flown from the company's airfield at Warton in Lancashire.

Engineers are designing and producing 3D printed functional components at the Royal Air Force (RAF) Marham, which will cut the cost of repairs, maintenance and service to the RAF to the tune of more than £1.2 million over the next four years.

The company's Combat Engineering team is using 3D printing to engineer ready-made parts for supply to four squadrons of Tornado GR4 aircraft - including protective covers for Tornado cockpit

radios, support struts on the air intake door and protective guards for power take-off shafts.

With some of the parts costing less than £100 per piece to manufacture, 3D printing has already resulted in savings of more than £3,00,000 and will offer further potential cost savings of more than £1.2 million between now and 2017.

Mike Murray, Head of Airframe Integration at BAE Systems said: "You are suddenly not fixed in terms of where you have to manufacture these things. You can manufacture the products and whatever base you want, providing you can get a machine there, which means you can also start to support other platforms such as ships and aircraft carriers.

"And if it's feasible to get machines out on the front line, it also gives improved capability where we wouldn't traditionally have any manufacturing support." **SP**



# Honeywell's annual aircraft modelling competition inspires India's future pilots and engineers

**H**oneywell has announced the Air Force Bal Bharati School as the winner of its third annual Aero Club model flying competition in New Delhi. The Aero Club competition is a Honeywell Hometown Solutions initiative that increases engagement in, and understanding of aviation to inspire the next generation India's aerospace industry professionals.

The event, which took place today at the Air Force Bal Bharati School in Delhi, was attended by Pritam Bhavnani, President of Honeywell Aerospace India, and Honeywell Inc's new Country President Anant Maheshwari. It included over 150 students from four schools in the New Delhi area.

"Putting the practicalities of flight into the hands of India's aspiring aviation professionals is one of the best ways to foster new growth and engineering talent in the industry," said Pritam Bhavnani, President, Honeywell Aerospace India. "By encouraging these students to get 'hands-on' with aviation, we are ensuring that India's talent pool of young, enthusiastic pilots and engineers continues to flourish in years to come."

Launched in July 2011, Aero Club is part of the Honeywell Hometown Solutions' science and maths education initiative, a series of programmes created to inspire the next generation of innovators by improving science, technology, engineering and maths education around the world. This year's competition is the largest to date, with

students benefitting from the chance to build and fly model aircraft using aero modelling kits supplied by Honeywell in a bid to achieve the longest indoor flight.

Students participating in the Aero Club initiative are given practical advice from Honeywell Field Service Engineers to help them learn the concepts of aerodynamics and principles of flight. During the one-day competition, students get to test their theoretical and practical knowledge of airworthiness, speed and handling capabilities based on their aircraft designs. Participating schools in this year's competition were the Air Force School, Air Force Golden Jubilee Institute, Air Force Bal Bharati School and Sawan Public School, Bhatti Mines, with students ranging from IX to XI Standard.

## Aerospace Learning is Passion

In addition to Aero Club, Honeywell Hometown Solutions is also ensuring passion for aviation is driven from the top down in the classroom. To date, the company has sponsored 1,973 teachers from 35 countries to attend the Honeywell Educators @ Space Academy programme at the US Space and Rocket Center in Huntsville, Alabama, where teachers participate in 45 hours of training focused on science and space exploration. In a series of astronaut-style exercises and simulations, teachers learn new and innovative ways to teach science, technology, engineering and maths. **SP**

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## Rafale F3R standard launched

Jean-Yves le Drian, Minister for Defence, handed Eric Trappier, Chairman and CEO of Dassault Aviation, the “F3R” standard development contract for the Rafale combat aircraft. This event took place recently on the occasion of Le Drian’s visit to the Dassault Aviation Mérignac plant. The contract was notified by the French defence procurement agency (DGA) on December 30, 2013.

The F3R standard is an evolution of the Rafale “F3” standard. It is part of the ongoing process to continuously improve the aircraft in line with operational requirements. It will enable Dassault Aviation to integrate the following equipment and weapons onto the Rafale:

- The European Meteor long-range air-to-air missile produced by MBDA. This high-performance missile will achieve maximum effectiveness thanks to the “active array” radar which equips all production Rafale aircraft delivered since mid-2013 (1).
- The Thales PDL-NG new-generation laser designator pod. Primarily used for air-to-ground strikes, in daylight or darkness, this pod will further enhance the high degree of precision that the Rafale has achieved since its first engagements (in 2007 in the Afghan theatre).
- The laser homing version of the Sagem AASM air-to-ground modular weapon (2). This family of weapons, with GPS primary guidance and an additional booster, is unmatched. It was used by the Rafale during operations in Libya (2011) to destroy targets at ranges of several tens of kilometres with metric precision. The laser homing version is particularly adapted to moving targets.

F3 R will also include upgrades to Rafale sensors and to systems ensuring total interoperability.

The launch of the F3R standard:



- Guarantees that French forces will continue to have a high-performance aircraft adapted to their requirements.
- Reinforces the strong points of the Rafale in export competitions.
- Contributes to maintaining the competences of the design bureaux of Dassault Aviation and its industrial partners at a world-class level.
- Confirms the ongoing improvement process and opens the way to future developments for France and export customers. Validation of the F3R standard is scheduled for 2018. **SP**

## Thales begins development of new-generation laser designation pod



The French defence procurement agency DGA has awarded Thales with the contract to develop the new-generation laser designation pod (PDL NG). This latest milestone is a follow on from the risk reduction phase led throughout 2013 and series production is expected to begin in 2018.

Thales will develop the PDL NG that will provide the French air forces with new day/night imaging and engagement capabilities in complex theatres of operations. The PDL NG will be designed to integrate with both the Rafale and Mirage 2000D fighter aircraft.

The risk-reduction phase, the first step in the development of any programme, confirmed the system’s architecture, its high level of functional integration, reliability and the development schedule. The awarding of this development contract confirms the importance of optronics in future air combat systems and acknowledges the technical and operational expertise that Thales has acquired on laser reconnaissance and designation systems over the past 40 years. **SP**

## Korea begins installation of ELINT collection equipment in fighter planes

The Korean Agency for Defence Development has succeeded in developing an ELINT (electronic intelligence) and image intelligence collection systems, which are installed on F-16s and are able to collect ELINT and image intelligence with domestic technology, and will make it military strength in stages.

On December 30, the Defence Acquisition Program Administration (DAPA)

said the ELINT collection system ADD developed would be deployed in the military beginning that day, and the image intelligence collection system, completing development that month, would be installed next year, revealing the development completion of those technologies.

To improve ability to collect reconnaissance intelligence, DAPA invested 79.6 billion won from 2007 to this year, promoting the project of a “tactical reconnaissance intelligence collection system” for which the ELINT and image intelligence collection system are developed with domestic technology. Of these, the ELINT collection system, starting deployment that day, can collect and analyse electronic intelligence against enemy’s electronic threats in real-time.

In addition, the image intelligence collection system to be deployed next year is for collecting and analysing night-day target images and assessing battle damage during the war.

Brigadier General Lee Seong-yong, the head of the command and reconnaissance programme department of DAPA, showed his expectation that these systems enable the military to rapidly collect intelligence and support air operations effectively. **SP**

## A400M Atlas flies first operational mission



**O**n December 29 the French Air Force carried out the first operational mission of an A400M Atlas tactical transport aircraft between Orléans-Bricy air base in France and Bamako airport, in Mali.

After taking off at 10:00 EST from its base, the A400M flew for six hours and 40 minutes carrying a load of 22 metric tonnes of equipment intended for French forces deployed in Central Africa on Operation Serval.

This first mission was thoroughly prepared and planned. “We paid special attention in preparing this mission, to be able to handle all contingencies,” says Lt Colonel Creuset, mission commander. “We were able to train on the full flight simulator which has been operational for a few weeks at the A400M training center at Orléans air base.”

Since August 2 last, when the first Atlas transport was handed over to the French air force, the crews of the multinational entry into service team (MEST) at Orléans have carried out operational trial and training flights. This first operational mission was carried out only five months after the French Air Force obtained its A400M, and the Bamako flight was flown by aircraft serial number MSN8, the second aircraft which was delivered less than two months ago. This demonstrates the French Air Force’s high degree of trust in the aircraft, and in the

crews that operate it.

“If this is a true ‘première’ for the A400M, it is not so new for the airmen who carried it out,” said Lt. Col. Creuset. “MEST personnel have a wide range of experience, and each member has flown sufficiently diverse operations so they can easily apprehend this kind of mission.”

Two A400Ms are currently operated by the MEST at Orléans-Bricy, the air force’s Air Base N° 123. This first operational mission demonstrates the aircraft’s capabilities, and is a major step towards its full operational capability, which it is expected to achieve by the end of 2014.

The A400M Atlas is indispensable for the renewal and modernization of the French air force’s fleet of tactical transport aircraft. Its service introduction will allow the gradual retirement of the C160 Transalls while adding to the capabilities of the C130 Hercules fleet.

A tactical transport aircraft with strategic range, the A400M Atlas meets current military requirements for crisis management and modern operations. It also allows France to maintain its standing with its international partners and with various international organizations. **SP**

## 14 Alenia Aermacchi C-27Js transferred to US Coast Guard



**T**he United States Coast Guard (USCG) will acquire 14 Alenia Aermacchi C-27Js as part of an intra-service transfer from the United States Air Force (USAF). The transfer was approved on December 19 through the Congressional passage of the 2014 National Defense Authorization Act and formally signed into law by President Obama on December 26.

The law allows 14 of the current USAF C-27Js to be promptly transferred to the USCG with initial flight operations commencing within 6-12 months. The aircraft will be used for medium range surveillance USCG missions such as maritime patrol, drug and migrant interdiction, disaster response, and search and rescue.

The company also anticipates the USCG will immediately begin the process for expanding the C-27J’s capabilities with tailored mission kits to include surface-search radars, electro-optical sensors and mission suites installed on all 14 planes.

The aircraft represent a highly efficient, cost-effective solution to the USCG’s Deepwater recapitalization program and reinforce the C-27J’s proven adaptability, maneuverability, and speed for maritime and search and rescue missions.

The C-27J will play an important role in improving the response capability and operational effectiveness of the USCG and generating significant cost savings for the taxpayer. With this transfer, the USCG will receive an aircraft with the advanced medium surveillance capabilities needed to further enhance its ability to perform critical missions. The C-27J will provide the USCG with greater range, endurance, speed and payload capacity than other twin turboprops in its inventory, and the capability to perform both medium and long-range missions, said Benjamin Stone, President and Chief Executive Officer of Alenia Aermacchi’s North American business unit. **SP**

## Boeing and Israel Aerospace Industries’ Arrow 3 Interceptor completes 2nd flight test

**T**he next-generation Arrow 3 interceptor, co-developed by Boeing and Israel Aerospace Industries’ (IAI) MLM Division, has completed its second successful flight test, further demonstrating its ability to enhance Israel’s multi-tier anti-ballistic missile defense strategy.

Arrow 3 is the latest interceptor for the Arrow weapon system jointly developed by Israel and the United States. It can be launched earlier after threat detection and engage threats at higher altitudes

outside the Earth’s atmosphere than previous interceptors.

“This successful flight test, 10 months after the first, is an important milestone in the decade-long partnership between IAI and Boeing in the Arrow programme, and a demonstration of the effective solutions that come from global cooperation in the face of evolving threats,” said Bill Dickerhoff, Arrow Program Director for Boeing.

The flight was conducted by the Israel Ministry of Defense and the US Missile Defense Agency during a test of Israel’s national missile defense system. The Arrow system is the world’s first operational, national missile defense system. Prime contractor IAI-MLM is responsible for interceptor development and production and system integration. Boeing co-develops and co-produces the Arrow 3 interceptor and provides interceptor components for the in-service Arrow 2. **SP**

## Northrop Grumman, US Navy complete nine flights of Triton UAS

**N**orthrop Grumman Corporation and the US Navy have completed nine initial flight tests of the Triton unmanned aircraft system (UAS), marking the half-way point in a process called envelope expansion.

During envelope expansion, the test team validates the aircraft's ability to operate at a range of altitudes, speeds and weights. The flights are taking place at the company's manufacturing facility in Palmdale, California.

"Completion of envelope expansion will allow the test team to prepare for installation and further testing of Triton's surveillance sensors," said Mike Mackey, Northrop Grumman's Triton Program Director.

The Triton test team accomplished endurance flights up to 9.4 hours at altitudes up to 50,000 feet. The aircraft also performed doublets, a manoeuvre that tests the aircraft's ability to recover from small perturbations in its flight path caused by turbulence.

Triton carries a variety of intelligence, surveillance and reconnaissance sensor payloads that allow military commanders to gather high-resolution imagery, use radar to detect targets, and



provide airborne communications and information-sharing capabilities to military units across long distances.

The Navy plans to field 68 Triton UAS and will be used with the manned P-8 Poseidon maritime patrol aircraft to conduct surveillance missions. **SP**

## France deploys first two Reapers to Niger



**T**he medium altitude long endurance Reaper unmanned aerial vehicles have been delivered to the Niger Air Force. Visiting the Sahel region, the [French] Minister of Defence was able to inspect their installation.

A first system of MQ-9 (Block 1) Reaper drones has been delivered to the French Air Force and deployed in the Sahel region. A system consists of two unmanned aircraft and a ground control station. Traveling to Niger recently, the Defence Minister Jean-Yves Le Drian was able to inspect their installation before the detachment becomes fully operational in January.

The arrival of this first UAV system is a result of the priority given to intelligence in the White Paper on Defense and National

Security that was approved by the President of the Republic on April 29, 2013. The 2014-19 military programme law provides for the purchase of four UAV systems, for a total of 12 unmanned aircraft. They will complement the Harfang drones that are already operating in various theaters.

Decided by the Minister of Defence, this acquisition is intended to make up for the delay in drone capabilities that France had accumulated in recent years.

It was in August 2013 that the US administration gave its consent, allowing France to begin the process of acquiring of two medium altitude long endurance (MALE) Reaper drones. Since then, the first six pilots and sensor operators have been trained.

France thus reinforces its significant intelligence capabilities in this part of Africa. These drones will provide surveillance and control over large areas and intelligence against terrorist formations. **SP**

## UAV integration with naval combat systems: DCNS opens a new chapter in naval aviation

**F**ollowing sea trials conducted from December 9-13, 2013 as part of the Serval unmanned air systems (UAS) programme, the French defence procurement agency (DGA) and DCNS have validated the functional integration of an unmanned air vehicle (UAV) with the

combat system of a warship.

Launching and recovering a UAV from a warship presents many complex challenges. The successful physical and functional integration of a tactical VTOL (vertical take-off and landing) UAV on board a surface combatant by DCNS, with no impact on flight safety, represents a major breakthrough for naval air forces.

Following sea trials on board the L'Adroit Gowind class offshore patrol vessel, the DGA, the French Navy and DCNS validated all functional blocks between DCNS's Polaris combat system and the Camcopter S100 VTOL UAV developed by Schiebel of Austria. Based on the results of the trials, the DGA has issued DCNS with a permit to fly for the Camcopter S100.

The tests were designed to evaluate the performance of the DIOD-A module, developed by DCNS and integrated on this occasion with the Polaris combat system, for managing UAV payload data (from electro-optical sensors in this case) in real time. A further aim was to demonstrate that the interface between the UAS and the ship's combat system has no impact on flight safety.

The DIOD-A module met all DGA requirements and now promises to deliver significant operational benefits to French Navy staff in charge of operating the combat management system and the VTOL UAV.

The tests were the first of their kind in Europe and the successful outcome is attributable in large part to effective collaboration between government technical services, DCNS and its Austrian partner Schiebel. **SP**

## Unmanned demo aircraft exceeds 10,000 combat flight hours



**T**he US Navy's unmanned RQ-4A broad area maritime surveillance demonstrator (BAMS-D) surpassed 10,000 flight hours in December 2013 in support of operations in the US Central Command (CENTCOM) area of responsibility.

Now entering its sixth year of deployment, BAMS-D provides intelligence, surveillance, and reconnaissance support to the fleet and is used to collect lessons learned for its successor, the MQ-4C Triton unmanned air system.

"This was originally intended to be a

six-month concept demonstration," said Capt. Jim Hoke, Progame Manager for the Persistent Maritime Unmanned Aircraft System programme office (PMA-262). "Six years later, the tempo of operations and demand for products from BAMS-D has remained steady and the deployment has been extended indefinitely."

Flown by both Navy and contractor personnel, the asset is controlled from Patuxent River and operated under Commander, Patrol and Reconnaissance Wing 2, Commander, Task Force 57 in theatre.

In a typical mission, the aircraft normally tracks surface shipping and images littoral targets of naval interest in the CENTCOM AOR, said Mike McDaniel, the former BAMS-D test director, who is now Triton's test director. Within minutes, crew members analyse these tracks and images and then send them out to units worldwide. **SP**

## Development of the stratosphere endurance UAV design technology by 2017

**C**ollaborating with the Ministry of Science, ICT and Future Planning, the Ministry of Trade, Industry and Energy

and the Korea Meteorological Administration, DAPA will develop the stratosphere endurance UAV (unmanned aerial vehicle) design technology by 2017, by investing 45.2 billion won in total.

Last December 27, DAPA held a meeting to start the "stratosphere endurance UAV design technology" with relevant officials of four ministries at ADD (Agency for Defense Development) and signed an MoU for mutual cooperation.

The project of the stratosphere endurance UAV design technology is to demonstrate whether an ultra-light UAV, which can collect weather data or relay communication, staying in the air for three days in the stratosphere, at the height of 10 to 50 km, has technical validity and practicality.

For this project, DAPA is liable for 18 billion won, the Ministry of Trade, Industry and Energy for 19 billion won, and the Korea Meteorological Administration for 8.2 billion won. Meanwhile, the Ministry of Science, ICT and Future Planning takes a role to adjust and control by managing governmental department councils and a civil-military technical cooperation special committee. DAPA is responsible for system integration, UAV design, development of a complex propulsion system based on solar cells, and testing and evaluation in this development project. **SP**

## Northrop Grumman's Hunter UAS surpasses 1,00,000 combat flight hours

**N**orthrop Grumman Corporation's (NOC) Hunter unmanned aircraft system (UAS), in use with the US Army since 1996, recently surpassed 1,00,000 combat flight hours in service.

The MQ-5B Hunter, which is currently deployed supporting contingency operations across the globe, provides warfighters with state-of-the-art reconnaissance, surveillance, target acquisition (RSTA), communications relay and weapons delivery.

"Our very close working relationship with our Army customer has been critical to the programme's enduring success," said Steve Hogan, Vice President and General Manager, Integrated Logistics and Modernization division, Northrop Grumman Technical Services. "The team's innovative partnering approach has been seamless over the years. The team has established an impeccable track record of continuous modernisation and highly reliable performance while serving on the front lines shoulder-to-shoulder with our nation's warfighters in combat operations."

The RQ-5A Hunter was the Army's first fielded UAS. The MQ-5B is the next-generation Hunter, continuing a legacy of service to Army corps, division and brigade warfighters. Flying over the battlefield with its multimission optronic payload, the MQ-5B gathers RSTA information in real time and relays it via video link to com-



manders and soldiers on the ground.

The MQ-5B Hunter is distinguished by its heavy fuel engines, its "wet" (fuel-carrying) extended centre wing with weapons-capable hard points and a modern avionics suite. The MQ-5B Hunter system uses the Army's One System ground control station and remote video terminal. It also carries a communications relay package to extend the radio range of warfighters. Hunter is also equipped with a differential GPS automatic take-off and landing system. **SP**

## Surrender of Maoist leader

**A**n important leader of CPI (Maoist) Party, G. Venkata Krishna Prasad @ Guksa Usendi, who was the spokesperson for Dandakaranya region, has surrendered before the Andhra Pradesh Police. The Home Minister Sushil Kumar Shinde has welcomed the surrender of the senior Maoist leader.

The Home Minister has appealed to other senior cadres to follow this example. "The CPI (Maoist) Party should give up their armed struggle and join the mainstream. All the surrendered people will be treated well as per the surrender and rehabilitation policy of the Government," said Shinde.

On December 11, 2013, the Ministry of Home Affairs issued an order under Section 25(3) of the Unlawful Activities (Prevention) Act, 1967 for the retention of the cash of ₹1.14 crore seized from the possession of Manoj Kumar Gupta of Bengaluru on the grounds that the same is a part proceeds of terrorism of the People's Revolutionary Party of Kangleipak (PREPAK), United People's Party of Kangleipak (UPPK), a proscribed terrorist organisations of Manipur.

On December 26, 2013, sanction for prosecution for filing the supplementary charge sheet against one accused person was given under the Unlawful Activities (Prevention) Act, 1967 in a case relating to the members of the proscribed terrorist organisation, Kangleipak Communist Party (KCP) having involvement of a criminal



conspiracy to wage war against the Government of India.

An Unlawful Activities (Prevention) Tribunal, to be presided over by the sitting judge of the Delhi High Court, was constituted on December 6, 2013, for adjudicating on declaration of the Meitei Extremist Organisations as unlawful associations under Unlawful Activities (Prevention) Act, 1967.

The law and order situation in Andhra Pradesh in the context of the Telangana agitation was reviewed and deployment of additional 95 Coys of CAPFs has been extended up to January 31, 2014, for maintaining law and order in the State.

Out of the total allocation of ₹1,847 crore for 2013-14 under the Scheme for Modernisation of State Police Forces, an amount of ₹155.91 crore was released during December 2013. Out of this, ₹3.74 crore was released to Ordnance Factory Boards of Bihar and Jharkhand for supply of arms and ammunition, ₹73.43 crore to State Governments of Jharkhand, Assam and Arunachal Pradesh for construction activities and ₹78.74 crore to five different State Governments (Gujarat, Nagaland, Odisha, Uttar Pradesh and Uttarakhand) for purchase of vehicles/communi-

cation equipment, etc.

Out of the total outlay of ₹990 crore earmarked in the budget of 2013-14 under Border Area Development Programme (BADP), an amount of ₹639.67 crore has been released for the implementation of the scheme in 13 States. **SP**

## US University research on UAV to track missing persons in search and rescue missions

**R**esearch at the University of Cincinnati could soon enable unmanned aerial vehicles (UAV) — similar to US military drones patrolling the skies of Afghanistan — to track down missing persons on search-and-rescue missions, to penetrate curtains of smoke during wildfire suppression, or possibly even to navigate urban landscapes on delivery runs for online retailers like Amazon. It all could be done autonomously with a human acting only as a supervisor.

"Drones have gotten a very bad rap for various reasons," says Kelly Cohen, Associate Professor of Aerospace Engineering and Engineering Mechanics at the University of Cincinnati. "But our students see that unmanned systems can have a positive impact on society."

A University of Cincinnati release reports that Cohen and a team of researchers have developed an experimental capability to capture the dynamic behaviour of the UAV platform, which complements other work they have done with UAVs in disaster management operations. Wei Wei, one of Cohen's students and the lead author of "Frequency-Domain System Identification and Simulation of a Quadrotor Controller," will present the UAV dynamics research at the American Institute of Aeronautics and Astronautics' SciTech 2014 conference in National Harbor, Maryland.

In his research, Wei used special engineering software to develop the dynamic model essential for autopilot design for a wide variety of unmanned aircraft having multiple rotors. He has applied

his method to quadrotors — UAVs with four propellers — and other types of drones, but it can work with nearly any aircraft.

Cohen says there is nothing on the market today like Wei's system because of its low cost and fast, highly accurate results. Cincinnati-based entrepreneur Steve Burns is already working with the University of Cincinnati on a concept vehicle using Wei's simulations, through a recent University of Cincinnati Research Institute contract.

"A selling point for this configuration is its efficiency, in both time and money, and the accuracy," Wei says. "We're already proving it using flight-test data, and it has matched nearly perfectly. This would enable not only quadrotors, but any flying objects to operate on autopilot." **SP**

## US not for bilateral no-spy agreement with Germany

**T**he United States has refused to enter into a bilateral no-spy agreement with Germany, and has refused to rule out eavesdropping on calls of German political leaders in the immediate future, according to reports in the German press.

It now appears that hopes in Germany that the United States would agree to a bilateral non-spying pact — similar to agreements between the United States and Britain, Canada, Australia and New Zealand — have been dashed.

The German Government has told the Obama Administration it would consider such a "nest of spies" a breach of the Vienna Convention on Diplomatic Relations. In August 2013, the German Government said that there had already been a verbal agreement and that a pact had been suggested by the United States. **SP**

# DARPA's top 10 innovations in 2013



Have a look back at the most popular innovations in 2013, based on webpage views of DARPA which are listed from No. 10 to 1.

## 10. Better Understanding of Human Brain Supports National Security

April 02, 2013—Today, at a White House event, the President unveiled a bold new research initiative designed to revolutionise the understanding of the human brain. As part of this initiative, DARPA intends to invest roughly \$50 million in 2014 with the goal of understanding the dynamic functions of the brain and demonstrating breakthrough applications based on these insights.

## 9. Smaller Pixels, Smaller Thermal Cameras for Warfighters

April 16, 2013—The military uses long-wave infrared (LWIR) cameras as thermal imagers to detect humans at night. These cameras are usually mounted on vehicles as they are too large to be carried by a single warfighter and are too expensive for individual deployment.

## 8. This Web Feature Will Disappear in 5 Seconds

The sophisticated electronics used by warfighters in everything from radios, remote sensors and even phones can now be made at such a low cost that they are pervasive throughout the battlefield. These electronics have become necessary for operations, but it is almost impossible to track and recover every device.

## 7. DARPA Envisions the Future of Machine Learning

March 19, 2013—Machine learning - the ability of computers to understand data, manage results, and infer insights from uncertain information - is the force behind many recent revolutions in computing. E-mail spam filters, smartphone personal assistants and

self-driving vehicles are all based on research advances in machine learning.

## 6. Members of Top Nine Software Teams Move Forward from DARPA's Virtual Robotics Challenge

June 27, 2013—The DARPA Robotics Challenge (DRC) was created with a clear vision: spur development of advanced robots that can assist humans in mitigating and recovering from future natural and man-made disasters. Disasters evoke powerful, physical images of destruction, yet the first event of the DRC was a software competition carried out in a virtual environment that looked like an obstacle course set in a suburban area.

## 5. Falling Up: DARPA to Launch Just-in-Time Payloads From Bottom of Sea

January 11, 2013—Today, cost and complexity limit the Navy to fewer weapons systems and platforms, so resources are strained to operate over vast maritime areas. Unmanned systems and sensors are commonly envisioned to fill coverage gaps and deliver action at a distance.

## 4. DARPA Experimental Aircraft Program to Develop the Next-Generation of Vertical Flight

February 25, 2013—One of the greatest challenges of the past half century for aerodynamics engineers has been how to increase the top speeds of aircraft that take off and land vertically without compromising the aircraft's lift to power in hover or its efficiency during long-range flight. The versatility of helicopters and other vertical take-off and landing (VTOL) aircraft make them ideal for a host of military operations.

## 3. Warrior Web Prototype Takes its First Steps

May 22, 2013—A Soldier carries a 61-pound load while walking in a prototype DARPA Warrior Web system during an independent evaluation by the US Army. Warrior Web seeks to create a soft, lightweight under-suit that would help reduce injuries and fatigue common for Soldiers, who often carry 100-pound loads for extended periods over rough terrain.

## 2. New Nerve and Muscle Interfaces Aid Wounded Warrior Amputees

May 30, 2013—Since 2000, more than 2,000 service members have suffered amputated limbs. DARPA's breakthrough research with advanced prosthetic limbs controlled by brain interfaces is well documented, but such research is currently limited to quadriplegics; practical applications of brain interfaces for amputees are still in the future.

## 1. Extreme Miniaturisation: Seven Devices, One Chip to Navigate without GPS

April 10, 2013 - The US Military relies on the space-based Global Positioning System (GPS) to aid air, land and sea navigation. Like the GPS units in many automobiles today, a simple receiver and some processing power is all that is needed for accurate navigation. **SP**

## Security breaches frighten shoppers, stores

**R**etail chain 'Target' reacted swiftly to its enormous data breach, but the chain is far from the only company scrambling to mitigate damage from the online assault, retail and security experts say.

'Target' reported in December 2013 that criminals had gained access to 40 million shoppers' credit- and debit-card information on November 27 — the day before Thanksgiving and just ahead of one of the busiest shopping days of the year — and maintained access through December 15.

Similarly, Luxury retailer Neiman Marcus also reported that hackers stole credit- and debit-card information from as many as one million customers and made unauthorised charges over the holiday season. The security breaches have left those retailers with a huge and costly problem as they work to remedy things for affected customers.

Shoppers are now wary about shopping in these retail chains and want all bankers and retailers to put in place foolproof swiping of debit/credit cards. **SP**



## Nun faces up to 30 years for breaking into weapons complex

**O**n the outskirts of Knoxville, Tennessee, is the Y-12 National Security Complex, America's "Fort Knox" of weapons-grade uranium, which Sister Megan Rice, breached with just a hammer and bolt cutters.

On July 28, 2012, 83-year-old Sister Rice and two fellow anti-war activists bushwhacked up to the edge of Y-12, cut through three separate security fences, and sprayed peace slogans and human blood on the wall of a building that is said to hold enough weapons-grade uranium to obliterate human civilisation several times over.



"The security breach," as the Department of Energy's Inspector General later described it, exposed "troubling displays of ineptitude" at what is supposed to be "one of the most secure facilities in the United States."

At a February hearing of the House Energy and Commerce Committee, multiple members of Congress thanked Rice for exposing the site's gaping vulnerabilities. Eleven launch officers were targeted in a separate investigation of illegal drug use. But that didn't deter federal prosecutors from throwing the book at Rice and her accomplices:

Greg Boertje-Obed, a 57-year-old carpenter, and Michael Walli, a 63-year-old Vietnam veteran. They now sit in Georgia's Irwin County Detention Center, awaiting a January 28 sentencing hearing where a federal judge could put them in prison for up to 30 years.

In May, the three activists were convicted of willfully damaging federal property and, more seriously, sabotaging national defence material—a charge that precludes them from being released on bail. It was the latest in a string of heavy-handed crackdowns on activists who've dared to engage in vital acts of civil disobedience.

Rice broke into the complex to bring attention to what she sees as its unlawful production of nuclear weapons. The Treaty on the Nonproliferation of Nuclear Weapons, signed by the United States in 1969, commits nations to "pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament." Yet rather than phasing out nukes, the United States is refurbishing them at Y-12 and building a new \$19-billion nuclear weapons production plant adjacent to the uranium facility. **SP**

## Sentence for vandalism

**O**n June 25, 2010, Oliver Fricker became the second high-profile foreigner (after Michael P. Fay in 1994) to be sentenced to caning for vandalism in Singapore. He was sentenced to five months' jail and three strokes of the cane under the Vandalism Act and Protected Areas and Protected Places Act. On appeal, the jail sentence was increased to seven months.

He pleaded guilty to cutting through the fence of an SMRT Changi train depot with an accomplice and spray painting two metro train carriages with the words "McKoy Banos", a widely documented signature of graffiti artists who have vandalised trains around the world. Fricker was arrested on May 25, just two days before he was to leave for a new job in Switzerland. An arrest warrant was also issued for his British accomplice, Dane Alexander Lloyd. **SP**

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