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# MRMR takes-off!



The Defence Ministry has given the Indian Navy go-ahead for procurement of nine new medium range maritime reconnaissance (MRMR) aircraft PAGE 6

DELENG/2010/34651



# Global Hawk achieves two BAMS milestones

**N**orthrop Grumman Corporation has commenced flight tests of the first developmental multifunction active sensor (MFAS) radar destined for the US Navy's MQ-4C Broad Area Maritime Surveillance Unmanned Aircraft System (BAMS UAS). The MFAS sensor has been integrated into the company's Gulfstream II testbed aircraft based in Palmdale, California, for flight testing after having completed ground station testing in late November at the company's Electronics Systems facility.

Marking another milestone, the first BAMS aircraft has received its wings and is standing on its own gear at the company's Palmdale Manufacturing Center in California.

"These two important milestones demonstrate continued programme maturity leading us to first flight later this year," said Gerald A. Duke Dufresne, Sector Vice President and Unmanned Systems General Manager. "Our unmanned systems are providing



the US Navy and other customers with affordable, combat-proven high altitude, long endurance intelligence, surveillance and reconnaissance solutions."

Over the next several months, testing of the MFAS radar will be broken down into three phases: radar integration, mode integration and refinement, and data collection. Each phase tests the various capabilities and modes of the radar that will be used by the Navy to provide a persistent common picture of the maritime surface traffic.

The MFAS sensor operates with a rotating sensor that incorporates electronic scanning and provides mode agility to switch between various surveillance methods. These include maritime-surface-search (MSS) mode for tracking maritime targets and inverse-synthetic-aperture radar (ISAR) mode for classifying ships. **SP**

PHOTOGRAPH: Northrop Grumman



**Cover:**  
*The Defence Ministry has given the Indian Navy go-ahead for procurement of nine new medium range maritime reconnaissance (MRMR) aircraft*

Cover image: Airbus Military

#### PUBLISHER AND EDITOR-IN-CHIEF

Jayant Baranwal

#### ASSISTANT GROUP EDITOR

R. Chandrakanth

#### SR TECHNICAL GROUP EDITORS

Air Marshal (Retd) B.K. Pandey

Air Marshal (Retd) V.K. Bhatia

Lt General (Retd) Naresh Chand

Lt General (Retd) V.K. Kapoor

R. Adm (Retd) S.K. Ramsay

#### SPECIAL CONTRIBUTOR

Lt General (Retd) P.C. Katoch

#### SR COPY EDITOR & CORRESPONDENT

Sucheta Das Mohapatra

#### CHAIRMAN & MANAGING DIRECTOR

Jayant Baranwal

#### PLANNING & BUSINESS DEVELOPMENT

Executive Vice President: Rohit Goel

#### ADMIN & COORDINATION

Bharti Sharma

Survi Massey

#### DESIGN & LAYOUT

Senior Art Director: Anoop Kamath

Designers: Vimlesh Kumar Yadav,

Sonu Bisht

#### SALES & MARKETING

Director: Neetu Dhulia

Head Vertical Sales: Rajeev Chugh

#### SP'S WEBSITES

Sr Web Developer: Shailendra P. Ashish

Web Developer: Ugrashen Vishwakarma

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E-mail: [subscribe@spsmai.com](mailto:subscribe@spsmai.com)

#### LETTERS TO THE EDITOR

[editor@spsmai.com](mailto:editor@spsmai.com)

#### FOR ADVERTISING DETAILS, CONTACT:

[advertise@spsmai.com](mailto:advertise@spsmai.com)

[guidepub@vsnl.com](mailto:guidepub@vsnl.com)

[neetu@spguidepublications.com](mailto:neetu@spguidepublications.com)

[rajeev.chugh@spguidepublications.com](mailto:rajeev.chugh@spguidepublications.com)

#### SP GUIDE PUBLICATIONS PVT LTD

A-133 Arjun Nagar,  
(Opposite Defence Colony)  
New Delhi 110 003, India.

Tel: +91 (11) 24644693,  
24644763, 24620130

Fax: +91 (11) 24647093

E-mail: [guidepub@vsnl.com](mailto:guidepub@vsnl.com)

#### REPRESENTATIVE OFFICE

534, Jal Vayu Vihar  
Kammanhalli Main Road  
Bengaluru 560043, India.

Tel: +91 (80) 23682534

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# The NCTC concerns

**T**he National Counter Terrorism Centre (NCTC) has run into rough weather as perceptions of the Centre and the States are at variance. Though there is no doubt that all the States believe in what the Home Minister P. Chidambaram has said that 'internal security' is a shared responsibility, they have raised concerns, some of which on political grounds.

One of the bones of contention is that the NCTC is sought to be given powers of arrest and searches as part of its preventive operations which some of the State Governments have opined would lead to 'vindictive political harassments'.

The Chief Ministers of West Bengal, Gujarat, Tamil Nadu, Bihar, Odisha, Himachal Pradesh, Jharkhand, Karnataka, Madhya Pradesh and Tripura have raised objections. The consent of the States is crucial for the success of the NCTC. They also said that the powers given to the NCTC amount to interfering with the jurisdiction of states on 'law and order' and hence, it impinges on the federal structure of the Constitution.

The NCTC comes under the Intelligence Bureau (IB) and presently the IB enjoys protection from the Right to Information Act and it is felt that if it starts functioning as an intelligence collection agency plus a central police then it may no longer get this protection. The NCTC in the US, from where the Home Minister has got the idea, is an independent institution.

We hope that the issue gets resolved at the earliest and we have a Central agency which gets cracking on the growing terror networks within and outside the country.

Moving from NCTC to India's armed forces modernisation exercise, SP's Exclusives dwells on the overtures of US in offering F-35 Lightning II. The other issue that is grabbing media attention is the delay in acquiring helicopters and one of the vendors has written to the Army Chief on the same.

The International Conference on Autonomous Unmanned Vehicles (ICAUV 2012) held in Bangalore, which was sponsored by SP Guide Publications, was a successful event, reflected in the participation levels, both by the Indian scientists and the world robotic and unmanned community. The conference explored the trends in unmanned vehicles and opened up avenues for collaborative efforts.

Air Marshal (Retd) B.K. Pandey in his report mentions how it was evident that despite the high level of automation already achieved, much work remained to be done in respect of technological advancement before unmanned aircraft can be integrated into civilian air traffic management system with the required degree of safety.

Lt General (Retd) P.C. Katoch in his frank fortnightly column has written about how Tibet is disturbed by Chinese military presence and truly Tibet needs to be freed, but the dragon remains unmoved.

In the technology section, we have featured Kevlar underpants which protect the pelvic region, borne out of huge necessity as seen in troubled regions of Afghanistan, Iraq and other countries where improvised explosive devices (IEDs) have had debilitating effect on the US forces. A sizeable number of warfighters have lost their legs from the joint downwards due to IED attacks.

Happy Reading!

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

[ By SP's Special Correspondent ]

# Will India ever operate the F-35?

**W**hen the Dassault Rafale was declared the lowest bidder in the highly anticipated MMRCA competition, the US Government signaled that it was still “willing to share information” with India on the F-35 Lightning II, the centrepiece of America’s single largest military hardware programme ever. The seemingly innocuous comment was technically accurate, but it glossed completely over the substantive, and fairly high-profile, efforts both Washington and the aircraft’s maker have made to persuade India of the virtues of being a future operator of the type. For over four years, the Pentagon and Lockheed have put a great deal of weight behind the F-35 as a possible platform for the Indian armed forces. While the F-35A was initially positioned as the pot of gold at the end of the technological rainbow that the Indian Air Force (IAF) could ride with the F-16IN Super Viper, the latter’s elimination from the MMRCA competition last April meant that the F-35A for India presumably took on even greater significance for the world’s largest developer of advanced military systems. In official documentation, in planning files, in presentations within the Pentagon’s Defense Security Cooperation Agency (DSCA), the F-35 for India was, and remains, a key focus area, and one that the US won’t be willing to let go of just yet.

In November 2011, a few weeks after the MMRCA bids had been opened for the final comparison, Defence Minister A.K. Antony told Parliament, “The US has not offered India a partnership in the development of the world’s most advanced fighter plane, F-35 joint strike fighter”, an answer that was technically

accurate, but again glossed over the depth of engagement on the F-35 for India so far.

While India has willingly listened to US overtures, and in one instance solicited information on the second and third variants of the F-35, it has kept a studied distance from making any commitments, preferring to wait and watch. The IAF, which has been briefed several times about the primary F-35A, holds the programme in high esteem. But opinion is largely unanimous — that if the IAF were to ever be an operator of the F-35, it would be a political decision, not based on any foreseeable requirement. On its part, the IAF has dismissed suggestions from some quarters that the MMRCA purchase be mothballed in favour of a delayed, outright purchase of F-35 aircraft.

A senior Lockheed Martin executive says, “The IAF has been frankly impressed with the capabilities that the F-35 brings to the table. You can choose to model your requirements on what you think you need. Or you can look at an advanced aircraft like the F-35 and say, that meets my requirement better than anything else I can think of.”

Apart from the well-known troubles that still stand in the way of the F-35 entering operational service with its primary customers, there are several things that present themselves for consideration were India to ever consider the F-35 as a future asset, in any of its variants.

The most obvious: India is pumping funds into two next generation fighter aircraft programmes — the Indo-Russian fifth generation fighter aircraft (FGFA) and the indigenous ADA-led

## RSH chopper deal at final stage, vendors jittery

**W**ith India’s effort to acquire 197 brand new light reconnaissance and surveillance helicopters (RSH) reaching its final stage, the two final contenders are anxious for the final result. While Eurocopter has written a letter to Indian Army Chief General V.K. Singh requesting to know why a decision is still pending on the long-drawn out acquisition process, Rosoboronexport has announced that it is confident of bagging the deal that could exceed \$1 billion. Eurocopter, which has fielded the AS 550 C3 Fennec, says in its letter, “We take this opportunity to express our concern regarding the time frame for the very important programme, for which the RFP was issued in July 2008. The technical evaluation process has now taken over 38 months and has not yet been concluded due to reasons which are unknown

to us.” Eurocopter’s anxiety is understandable.

In 2007, the company suffered a major shock when the MoD pulled the plug on the first iteration of the same deal following allegations of discrepancies in platform fielded. At the time, the AS 550 C3 was widely considered to be a frontrunner against its then contender, a variant of the Bell 407. Disappointed but not rebuffed by the abort, the company fielded the same platform when the contract was retendered the following year. But delays have expectedly raised questions about where things stand, especially since the far younger effort to acquire attack helicopters has already identified a winner.

On the other hand, Rosoboronexport earlier this month issued a press release to Russian media that the Ka-226T Sergei helicopter would soon beat out the Eurocopter contender to win the Indian deal. The acquisition is indeed in its final stages, with the Technical Oversight Committee (TOC) approving the final report from the Army and MoD. **SP**



PHOTOGRAPH: Anoop Kamath

[ By SP's Special Correspondent ]



Advanced Medium Combat Aircraft (AMCA). The fact that both aircraft are being developed as stealthy high performance fighters with a pronounced stand-off strike capability that fills any conceivable void that the F-35A could really fill. In November 2010, Lockheed Martin's Michael R. Griswold, Director of advanced development programmes, had said, "The fifth generation JV with Russia? Well, all I can say is best of luck with that!" What appeared to be a simple barb that underscores the technological rivalry that still exists between the US and Russia, may actually be something the U.S. is counting on, at least in part.

Second, there is optimism that the MMRCA will be India's last ever purchase of a manned fighter aircraft from abroad (not counting follow-on orders and upgrades): with the Tejas pro-

gramme maturing, hopefully, into full-fledged operations and the two stealth aircraft programmes expected to bloom over the decade, there is hope within the establishment that for the first time there could be serious self-reliance in India's combat aircraft acquisitions and planning. But tangible considerations have frequently been outranked by political motivations and sensitivities. That there are at least two well-known fighter types in the IAF inventory that were ordered more for the diplomatic fruits that were to be had than any hard requirements from the ultimate user is a matter of historical record.

For the F-35, therefore, the Indian Navy may be a more possible bet. In 2010, Lockheed Martin decided to respond to the Navy's request for information on a future carrier fighter with data on the F-35B jumpjet and F-35C carrier-borne fighter. While the Navy had simply requested information on the F-35, without specifying a variant, Lockheed Martin has considered it prudent to pitch both variants. While the Navy uses the last of its Sea Harrier jumpjets, the F-35B is being pitched as a logical next step, since it will be the only new generation STOVL fighter being produced. Even the last batch of Royal Navy Harriers that India had once expressed interest in, have been acquired by the US Marines. While the Indian Navy has long made the decision to move to STOBAR operations, kicking off with the MiG-29K, and eventually the LCA-Navy, there is a sense that the operational flexibility and appeal of another jumpjet will be of deep appeal to a navy that has great affection for what its Harriers could do. The F-35C on the other hand, as a CATOBAR jet, would perceptibly compete with the MiG-29K, Rafale and two concept jets — the naval Typhoon and Sea Gripen. The Navy is yet to move forward on its next generation carrier-based fighter aircraft programme, but as long as the field remains open, the F-35 Lightning II has hope. **SP**

## India opens negotiations with Dassault for Rafale deal

**A**midst reports that the procedure employed to arrive the lowest bidder in the MMRCA final leg was "questionable", the MoD's contract negotiation committee (CNC) has formally opened exclusive discussions with Dassault Aviation towards concluding a final contract for 126 Rafale fighter jets for the Indian Air Force. Preferring not to comment on suggestions from the runner-up campaign that a more competitive bid would be put forward for the Eurofighter Typhoon package, the MoD has sent out a signal that the time for comparisons is closed, and that negotiations will continue exclusively with Dassault Aviation now.

Negotiations are expected to take the remainder of the calendar year before a final contract is drawn up, vetted by both sides, and finally signed. While Dassault has refrained from officially commenting on the reports, sources in the company say they are confident of successfully concluding a contract with the Indian Government. "This is not the first time we are negotiating with the Indian Government. We have done it before. We are fully sensitive to the procedures and requirements, and are therefore in the best possible position to fulfil all requirements," the Dassault official said. **SP**

## DRDO begins testing gun-mounted robot

**A**fter the success of the Daksh ordnance disposal and surveillance robotic vehicle that was recently inducted into the Army, and receiving good reviews from the user, DRDO laboratory R&D(E) has finished prototyping a combat robot codenamed gun-mounted robot (GMR), that it intends to offer to the Army, paramilitary forces and police forces in the next two years. The GMR is now mature for development trials in simulated scenarios.

The robot's primary weapon will be an indigenous remotely operated 7.62mm gun along with a grenade launcher. DRDO scientists, in cooperation with academic institutions and private incubation firms, are confident that the GMR will be comparable with similar systems already deployed by the US forces, especially in Iraq. Fitted with sensors for around-the-corner targeting and damage assessment, the GMR will be offered in both tracked and wheeled variants. **SP**



[ By SP's Special Correspondent ]

## Government approves MRMR aircraft deal

The Indian Navy's ambitious expansion in air assets moves forward with the government providing an all-clear for Navy HQ to proceed with the procurement of nine new medium range maritime reconnaissance (MRMR) aircraft. In October 2010, the navy called for information (for the second time) from the global market to support the acquisition of MRMR aircraft with operating range of at least 350-Nm and patrol time of at least 3.5-hours.

The Navy currently operates Tu-142, Il-38SD and Do-228s for varying degrees of maritime surveillance/reconnaissance, but will be moving to the jet regime for the first time on the role, with brand new Boeing P-8Is that begin delivery next year, and to be based at INS Rajali, Arakkonam. The nine new MRMR aircraft that will be acquired will augment the mission spectrum profiles that will be satisfied by the 12 P-8Is long range maritime reconnaissance (LRMR) jets, and are likely to be based at INS Hansa, Goa. According to official documents, the MRMR will be used by the Navy for maritime patrol, anti-surface warfare (two anti-ship missiles and jammer pod minimum), ELINT/ESM/ECM/COMINT and search and rescue.

The aircraft expected to vie for the deal include the Saab



2000, a 'lite' version of the Boeing P-8I Neptune, the Dassault Falcon 900 MPA, Alenia Aeronautica ATR-72 MP and the EADS CASA C-295 MPA. The Navy's expanded maritime security duties, both coastal and in deep water, mean that it needs many more aircraft than earlier planned. In fact, the navy has already defined a need for at least 12 more (in addition to 12 ordered) LRMR aircraft, though it is not clear if it will choose to acquire more Boeing P-8Is, or float a fresh competition. **SP**

## DAC approves LCA Navy

The troubled naval variant of the LCA Tejas has had no reason to cheer for long, but will be encouraged by the fact that the government has accorded approval to a limited series production phase for India's first carrier-borne maritime fighter jet. The Defence Acquisition Council (DAC) has



approved the production of nine units for the Navy, roughly half a squadron, that will ostensibly operate off India's first indigenous aircraft carrier currently under construction at Kochi.

The first prototype of the LCA Navy, which was rolled out in 2010, has missed multiple target dates for a debut flight. Beset with technological hurdles, the team was fully confident of putting NP-1 into the air in January, but again did not manage to do so. LCA Navy Programme Director Commodore C.D. Balaji is under pressure now to show results. The test programme will be uneconomical from the start, given that the Navy will only induct nine of the Mk.1 aircraft owing to severe thrust limitations.

The proposed LCA Navy Mk.2, to be powered by a single GE F414 turbofan is expected to meet performance requirements. For now, the Aeronautical Development Agency (ADA) is busy wrapping up slow and fast taxi tests of the NP-1 in Bangalore. Given the existing and anticipated delays, it is unlikely that the LCA Navy will be type certified before 2015. The first prototype of the LCA Navy is a naval twin-seat operational trainer, similar in many respects to the IAF trainer variant (PV-5). **SP**

## Army scouts for UAV mission simulator

With more unmanned assets to be acquired and plans afoot to broad base the UAV stream into a cadre in the Indian Air Force, the Indian Army is looking to beef up infrastructure to support the capability and has announced its interest in acquiring an advanced UAV mission simulator to train pilots and crew in operating IAI Heron/Searcher Mk.2 drone operations. The Army has stipulated that the UAV mission simulator needs to be capable of conducting initial and refresher training for pilots and observers, and with a separate console for instructors.

Training on the simulator will need to allow rookie UAV pilots perform in simulated UAV flight in all phases with all possible payloads, different operational scenarios, critical flight emergencies and recovery mechanisms, specific training on direction of own artillery fire (DOOAF) and battlefield surveillance training by simulation of different types of terrain, environmental and operational scenarios. Interestingly, the Army also stipulates that its would be desirable for the mission simulator to be upgraded in the future to incorporate SATCOM, VTOL UAV and weaponised payloads training, an indicator of the future entry of medium altitude long endurance (MALE) UAVs, vertical take-off and landing drones and unmanned combat aerial vehicles (UCAVs) like the Rustom-H and AURA. While the Army has indicated the need for one mission simulator, it is likely that two will be ordered. **SP**

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# Butterflies in the dragon belly

**C**hina Daily of July 1, 2011, revealed after decades of forced bulldozing of dwellings of poor and aged in name of 'development', such government activity would be curbed. Over decades, cases of elderly suicides and self-immolations filtered out despite news blackouts, not surprising after China's Tiananmen fame. It took hundreds of suicides to initiate the draft law followed by 12 years of debating. Tiananmen was small compared to some 30-40 million Chinese killed during the 'Great Leap'. In 2009, some 10,000 Uighurs vanished overnight in Xinjiang after clashes with Chinese security forces and in July 2011, fourteen were shot dead and four others killed.

Chinese arrogance is demonstrated in the 2005 statement of Lt General Lin Yazhou, Deputy Political Commissar PLAAF, when he said, "When a nation grows stronger, it practises hegemony. The sole purpose of power is to pursue power." China's obsession of suppressing collective thoughts was evident from banning even Phalun Gong but that is no guarantee population will always remain silent spectator. China needs to make a distinction from yesteryears to 21st century. Information can hardly be blocked despite curbs. Blogs, micro blogs apart, software is already developed to access blocked websites. Insolence and ruthlessness can build public anger akin to the Arab Uprising and the Jasmine Revolution.

Massive Chinese protests in Wukan that started in September 2011 against forcible acquisitions turned into mass protests due to custodial deaths when villagers forcibly occupied the local party office of the CCP, making Mazu Temple China's Tahrir Square and sympathetic gatherings elsewhere including Guangzhou. News and pictures of government suppression spreads like wildfire with authorities fight a losing battle to curb news.

This also applies to continued suppression of political, religious and ethnic rights of Tibetans, subjugating their culture, heritage and language, settling seven million Han Chinese in Tibet to out-

number the six million Tibetans, ensuring Lhasa is Chinese majority and deploying a plethora of strategic weaponry in Tibet. In the book *Trapped Transition: The Limits of Developmental Autocracy*, Minxin Pei writes, "At the mass level, ignorance, stereotyping, and latent hostility characterise the views of India held by a large segment of Chinese society. At the elite level, while interest in India is growing rapidly, the discourse on India is heavily polarised and politicised." This is obviously pioneered and practised by the CCP.

Chinese Foreign Minister had the audacity to tell his Indian counterpart that "mere presence" of populated areas would not affect Chinese claims on Arunachal Pradesh. Shouldn't same apply to the Tibetan Plateau that is one-fourth of China - what are

seven million Han Chinese occupiers, 70 per cent of whom scurry back to mainland every winter for fear of being frozen? Why should 'future to back' be one sided. Tibet was a bigger kingdom than China in sixth century and even captured the then capital of China in seventh century. Why should China's claims not be restricted within her ancient Great Wall? The unrest in Tibet's Sichuan Province against Han settlers is snowballing. A number of Tibetan monks have immolated themselves and trouble is spreading to entire

Tibet despite Chinese banning religious activities in monasteries and firing at protestors. There have been bomb explosions too preceded by leaflets warning against China's demographic invasion of Tibet. All told some 11 Tibetans have been killed in police firing and some 40 injured since March last year. There is heavy military deployment against Tibetans.

The dragon appears unmoved with butterflies in her belly but deadly termites may be getting ready to gnaw at her innards. Widening of her fault-lines is China's own doing. Better sense should make way to democracy, respecting human rights including providing 'true autonomy' to Tibet. **SP**

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



**Chinese Foreign Minister had the audacity to tell his Indian counterpart that "mere presence" of populated areas would not affect Chinese claims on Arunachal Pradesh. Shouldn't same apply to the Tibetan Plateau that is one-fourth of China?**



## Nimr 6x6 Armoured Patrol Vehicle equipped with systems from DRS Technologies

The first ever UAE company to appear at International Armoured Vehicles event, Nimr develops and manufactures a wide range of interoperable defence vehicles that feature high power delivery, high mobility, high versatility and high protection levels.



Under a memorandum of agreement between Nimr and DRS Technologies, part of the Finmeccanica Group, DRS Technologies, is equipping Nimr vehicles with tactical vehicle electronics, electro-optics, vehicle power management and tactical communications. This combination of Nimr's vehicle engineering capacity and DRS Technologies' systems and integration skills can equip these vehicles to deliver world class C4ISTAR solutions, including battle management, close-in situational awareness, reconnaissance and surveillance, and secure vehicle and tactical communications. In partnership with other Finmeccanica businesses, DRS can also integrate highly effective electronic countermeasures against the IED threat as well as a range of stabilised overhead weapon systems capable of meeting most of the operational scenarios the vehicles are likely to encounter. **SP**

## Lockheed Martin deploys foliage penetrating reconnaissance radar

After successfully completing operational demonstrations, Lockheed Martin's penetrating radar capable of detecting objects that are buried, camouflaged or concealed under dense foliage was deployed to support US Southern Command (SOUTHCOM).



Lockheed Martin's tactical reconnaissance and counter-concealment-enabled radar (TRACER) will support SOUTHCOM missions in counter-terrorism, humanitarian assistance and disaster relief operations.

TRACER is a light weight, low-frequency synthetic-aperture radar that can peer through foliage, rain, darkness, dust storms or atmospheric haze to provide real-time, high-quality tactical ground imagery. Prior to this deployment, TRACER successfully completed more than 160 flight tests on manned and unmanned platforms. For its SOUTHCOM mission, TRACER will operate on a US Army C12 aircraft.

There are currently four qualified TRACER systems available for deployment on manned or unmanned platforms. TRACER was developed for the US Army's Intelligence and Information Warfare Directorate, based at Aberdeen Proving Grounds, Maryland. **SP**

## Azerbaijan's mega weapons purchase from Israel

Azerbaijan has agreed to buy \$1.6 billion in weapons from Israel, a massive deal that is likely Azerbaijan's largest single arms purchase ever. The deal will include drones, anti-aircraft and missile defence systems, Israeli officials have told news agencies. The deal would be almost equal to Azerbaijan's stated 2012 defence budget of \$1.7 billion (though will certainly be spread out over many years).

The timing of the deal is misleading: regardless of the ongoing ratcheting up of tension between Israel and Iran, and increasing attention to Israel's intelligence activities in Azerbaijan, these weapons are destined to be used not against Iran, but against Armenia, which controls the breakaway Azerbaijani territory of Nagorno Karabakh. Though it's tempting to think otherwise. **SP**

## GD to showcase Piranha armoured vehicle

General Dynamics European Land Systems (GDELS), a business unit of General Dynamics, is to showcase its latest member of the Piranha family of wheeled armoured vehicles and the most modern mobile military bridge systems at the International Air & Space Fair (FIDAE) 2012 exhibition in Santiago (Chile) from March 27 to April 1, 2012. The new EAGLE light tactical vehicle and the latest solutions for artillery systems will also be featured.



The latest version of the Piranha family will raise the benchmark in the survivability, mobility and firepower areas, marking unprecedented progress in the development of armoured vehicles. The latest sale of the Piranha to the Brazilian Marines and its current use in national homeland defence activities and UN peacekeeping operations in Haiti have proven the reliability and survivability of this highly mobile system. The Piranha provides the highest levels of survivability against conventional and asymmetric threats, while having the capacity to fill all battlefield roles such as APC, electronic warfare, ambulance, reconnaissance, command, mortar and even direct fire with up to 120mm calibre turrets. The Piranha with its open system architecture, high payloads, the largest internal volume in its class and exceptional mobility can fulfill armed forces' needs worldwide. **SP**

## Harris connects warfighters to tactical cloud

Harris Corporation has unveiled the Harris Falcon networking system — the first end-to-end system for connecting warfighters in the field to the tactical cloud. The system broadens and simplifies the delivery of secure



PHOTOGRAPHS: Nimr, GDELS, Lockheed Martin, Harris



## No slowing down of arms sales, despite slowdown: SIPRI

**S**ales of arms and military services by the largest arms-producing companies—the SIPRI Top 100—continued to increase in 2010 to reach \$411.1 billion, according to new data on international arms production released by the Stockholm International Peace Research Institute (SIPRI).

The total arms sales (including sales of military services) of the SIPRI Top 100 maintained their upward trend in 2010, although at 1 per cent in real terms, the increase was much slower than in 2009. Over the period since 2002, the increase has been 60 per cent in real terms.

Arms-producing and military services companies from North America and Western Europe once again dominated the list (which however does not include China-based companies). Sales by the 44 US-based companies accounted for over 60 per cent of all arms sales by the Top 100 arms-producing companies in 2010. The 29 companies based in Western Europe, accounted for another 30 per cent.

The global arms industry continues to be highly concentrated, with the top 10 arms-producing companies, accounting for 56 per cent, or \$230 billion, of total Top 100 arms sales.

“The data for 2010 demonstrates, once again, the major players’ ability to continue selling arms and military services despite the financial crises currently affecting other industries,” states SIPRI arms industry expert Dr Susan Jackson. “To take one example, Oshkosh Corporation had a 156 per cent increase in arms sales in 2010 after winning the M-ATV (MRAP all-terrain vehicles) contract. In other cases, change is likely, not due to the financial crisis but rather because of the withdrawal of foreign troops from Iraq and the subsequent expected decrease in related equipment sales.”

video, data and other crucial command and control applications over both wideband tactical and emerging cellular networks.

The new system combines information technology resources, such as a computer server and Falcon wideband tactical radio, into an integrated, lightweight package that can be deployed to support missions at the tactical edge. By utilising the Falcon networking system, tactical users can now access applications and other critical data files that were previously beyond their reach.

To help transform the user experience in military communications, Harris designed the Falcon networking system with a 4G tactical cellular module that will enable warfighters to use ruggedised smartphones and other lightweight devices on the battlefield. **SP**

## Fourth Baynunah class corvette launched

**S**elex Sistemi Integrati, a Finmeccanica company, took part in the launching of the fourth Baynunah class corvette, named Mezyad, which took place on February 15 at the Abu Dhabi Ship Building Company in Abu Dhabi (United Arab Emirates). Many local authorities attended the launching cer-

## The expanding military services market

Of the SIPRI Top 100 arms-producing companies, 78 are based in the United States and Western Europe. These companies generated \$368 billion in total arms sales, which is 91.7 per cent of the total arms sales of the SIPRI Top 100 arms producers in 2009.

Data for 2010 shows a continuing increase in the sales of military services—including systems support, training, logistics, and maintenance, repair and overhaul—with 20 companies in the SIPRI Top 100 categorised primarily as military services providers.

Combined military sales for these companies rose from \$22.3 billion in 2002 to \$55 billion in 2010, a 147 per cent increase in real terms. Furthermore, as a result of outsourcing and changes in military technologies, such services will play a key role in company strategies for the foreseeable future.

In addition, a large number of other companies in the Top 100 that are not specialised military services companies also generate significant sales from military services. For example, in 2010 BAE Systems reported that 48 per cent of its total sales (or \$15.8 billion) were generated in the services market.

Ten of the SIPRI Top 100 are based in Asia (3 in India, 4 in Japan, 1 in Singapore, 2 in South Korea), excluding China, and 5 in the Middle East (3 in Israel, 1 in Kuwait, 1 in Turkey). The SIPRI Top 100 companies in these two regions generated \$24 billion in combined arms sales, which is 6 per cent of the SIPRI Top 100 arms sales in 2009.

Increased sales in 2010 illustrate how the arms industry is shielded from immediate, drastic financial threats.

The expansion and consolidation of the arms industry further strengthened the position of the Top 100 arms producers. Significantly, the entry point for inclusion in the Top 100 rose from \$280 million in sales in 2002 to \$640 million in 2010.

The SIPRI Top 100 list will appear in SIPRI Yearbook 2012 (published in June 2012), alongside full analysis of recent trends in arms production. **SP**



emony together with the representatives of Abu Dhabi Systems Integration (ADSI), the joint venture created by Selex Sistemi Integrati and the Abu Dhabi Ship Building shipyard.

The Baynunah programme, managed by ADSI, relates to the supply of six 70-metre advanced corvettes to the UAE Navy.

The six corvettes are all equipped with the IPN-S/R combat management system and the NA25XM fire control systems by Selex Sistemi Integrati which is also the main supplier and integrator of the systems onboard. **SP**



## India to order 71 more Mi-17 V5 medium lift helicopters

**F**ollowing the order for 80 Mi-17 V5 helicopters that is in the process of induction into the Indian Air Force (IAF), the government plans to procure 71 more of the type from Russia, including a certain number for the Border Security Force and central police forces. The new generation Mi-17s, with more powerful engines and firepower, could be the workhorse of the IAF's medium lift capability, with additional numbers intended to replace ageing Mi-8 and older generation Mi-17 airframes currently in service.

The Mi-17 V5s, ordered in 2008, are fully night operations

capable and are fitted with advanced sensors and navigation systems for operations across the board. The IAF plans to use the new aircraft for disaster relief, logistics and air maintenance operations at high altitude, offensive operations and for surveillance. While the procurement of medium lift helicopters continues, uncertainty prevails over the Indian multi-role helicopter (IMRH) programme, being pioneered by the Hindustan Aeronautics Limited. The company is still understood to be scouting for a technology partner for the programme, which envisages a platform with an all-up weight of 13 tonnes, a maximum speed of 275 kmph and a service ceiling of 22,000 ft. The armed forces have stipulated that they want the IMRH to have a 3,500-kg payload capacity and range of 500-km at sea level. **SP**

*-SP's Special Correspondent*

## Harvest Hawk modification

**I**n February 2012, the US Marine Corps received the first KC-130J Harvest Hawk (Hercules Airborne Weapons Kit) armed tanker with a modified paratroop door that allows the crew to launch standoff precision-guided weapons while the aircraft remains pressurised.

The new door, called the Derringer Door, eliminates the need for the crew to depressurise the aircraft and lower the cargo ramp prior to firing AGM-175 Griffin air-to-surface missiles.

Currently deployed Harvest Hawk-equipped KC-130Js use a cargo ramp-mounted launch-tube system. The Derringer door and storage rack do not interfere with KC-130J cargo handling.

Harvest Hawk (Hercules Airborne Weapons Kit) is a modular roll-on, roll-off weapons system that includes a fire-control console; an AN/AAQ-30 target sight; a quad-mount AGM-119 Hellfire missile launcher; and the Derringer Door. **SP**



PHOTOGRAPHS: PIB, Navair



## Boeing delivers 257 Super Hornets on time, on budget

**B**oeing on February 22, 2012, announced that it has completed delivery of 257 F/A-18E/F Super Hornet strike fighters and EA-18G Growler electronic attack aircraft to the US Navy. Each aircraft was delivered ahead of schedule and within the contract budget.

The aircraft were delivered to the Navy from 2007 through 2011 under a multi-year procurement (MYP) contract awarded to Boeing on December 29, 2003. The Navy purchased the aircraft during fiscal years 2005-09. Multi-year procurement contracts provide a stable production environment that enables manufacturers and

## Lockheed Martin F-35 update

**L**ockheed Martin's F-35 programme continues to build on its 2011 flight test success. For 2012, the baseline F-35 system development and demonstration (SDD) flight test plan calls for the accumulation of 1,001 test flights and 7,873 test points. However, growth in test point requirements throughout the year is anticipated, and the plan will be adjusted as needed.

As of February 20, the F-35 Lightning II fifth generation multi-role fighter had conducted 114 flight tests and achieved 773 test points. A portion of the earned test points came from work added to the flight test baseline plan. Lockheed Martin has delivered three F-35s to the Department of Defense (DOD) year to date. **SP**

## Cassidian to support MedEvac missions in Afghanistan

**C**assidian will support the Forward Air Medical Evacuation (FwdAir-MedEvac) mission carried out with NH90 helicopters of the German Army in the evacuation of ill and injured persons. For this purpose, the German Federal Office of Defence Technology and Procurement (BWB) ordered a total of eight units of Cassidian's mobile EUA (= Einsatz-Unterstützungsanlage) operations support system for mission control, preparation and planning.

From the end of 2012, German Army Aviation will be in charge of providing forward air medical evacuation in Afghanistan using their NH90 helicopters. The FwdAirMedEvac helicopters will provide a solid base for emergency medical care for German soldiers in crisis areas.

The EUA operations support system combines operational command and control with technical logistic support. Its current adaptation complements its extension ordered in May last year for the support helicopter Tiger ASGARD (Afghanistan Stabilisation German Army Rapid Deployment) which, from October 2012, will also be used to support the German mission in Afghanistan. The EUA operations support system, developed by Cassidian, integrates the capabilities of the German helicopters into the integrated military command, which is ensured via the German Army C3I System (FüllinfoSys H), for both MedEvac and armed support missions.

From the end of 2012, the EUA will also be used to support the missions of the HAD and HAP variants of the Spanish Tiger helicopters. **SP**



suppliers to reduce cost through bulk purchasing and productivity enhancements.

"Super Hornets and Growlers provide unmatched, proven and affordable capability for US Navy carrier strike groups around the globe," said Mike Gibbons, Vice President, Boeing F/A-18 and EA-18 programmes. "Boeing and its more than 1,900 Super Hornet and Growler suppliers are committed to ensuring this nation's warfighters have the advanced capability they need, on time and on budget, as promised."

Boeing delivered 210 Super Hornets to the Navy during MYP I, which spanned fiscal years 2000 through 2004. Procuring aircraft through the first two multi-year contracts generated \$1.7 billion in savings for the Navy. MYP III is projected to generate more than \$600 million in savings, with total savings of more than \$2.3 billion across the three F/A-18E/F and EA-18G contracts. **SP**



## Boeing B-1 Bomber completes 10,000th combat mission

**T**he Boeing B-1 bomber aircraft has completed its 10,000th combat mission. The heavy bomber entered service with the US Air Force on June 29, 1985, and has been in nearly continuous combat for the past 10 years. The milestone mission took off from a base in Southwest Asia and was flown in support of operations over Afghanistan before returning to base.

“The B-1 brings tremendous flexibility to our nation’s defense,” said Lt Colonel Alejandro Gomez, mission team lead. “In any mission, the B-1 has the ability to loiter, dash, positively identify targets, show force, and strike targets precisely.



Whatever our aircrews are asked to do, they can perform with this aircraft.”

B-1 crews in Southwest Asia fly a variety of missions, including close air support for troops on the ground, giving them cover and alerting them to threats they cannot see. On-site maintainers keep the fleet ready to fly.

“10,000 conventional combat missions for a relatively small fleet of 66 B-1s is a major milestone and a testament to the men and women who built, sustain and modernise the fleet, including the US Air Force, Boeing and our subcontractors,” said Rick Greenwell, Boeing B-1 Program Director. “We continue to draw on expertise and experience from across Boeing to enhance our support of this amazing aircraft.”

Today’s B-1 can carry a mixed load of weapons in each of its three bays. Its long range allows it to base far from the conflict and loiter unrefuelled for long periods. Its swept wings allow it to fly fast, slow, low or high as the situation demands. **SP**



## BAE Systems to provide electronic warfare systems for B-2 bomber

**B**AE Systems has won a contract from Northrop Grumman – Aerospace Systems to provide electronic support measure (ESM) systems for use on all 20 B-2 Spirit bombers. This ESM upgrade will be a complete replacement of the current aging AN/APR-50 system. With this award, BAE Systems will now be providing electronic warfare systems on all three of the US Air Force’s low observable platforms; the F-22, F-35 and B-2 aircraft.

“As a result of an extremely rigorous competition for a modernised ESM system for the B-2, Northrop Grumman is pleased with the selection of BAE Systems as our primary partner to deliver a rapid, affordable defensive capability to the warfighter,” said Dave Mazur, Aerospace Systems Vice President, Long Range Strike. “Modernising the B-2 defensive system is critical to continued long-range strike supremacy and that will be accomplished through leveraging BAE Systems’ extensive portfolio of ESM technology.”

Northrop Grumman selected BAE Systems in a competitive bid process over the incumbent and industry’s top electronic warfare providers, to replace the aircraft’s 30-year-old legacy AN/APR-50 ESM system. The system, in conjunction with the radar warning receiver, detects electronic threats encountered by the B-2 and provides situational awareness of detected threats to its air crew. **SP**

## Israel selects M-346 trainer aircraft

**T**he M-346 trainer aircraft of Alenia Aermacchi has been selected by Israel’s Ministry of Defence to train its air force pilots.

Giuseppe Giordo, Alenia Aermacchi’s Chief Executive Officer and Responsible for Finmeccanica’s Aeronautics Sector, has commented: “We would like to thank the Israeli Ministry of Defence for their trust in and their choice of the M-346, a fact that confirms the product excellence, result of the skill and expertise of Alenia Aermacchi’s human resources”.

The aircraft has just been delivered to the Italian Air Force and, in the short term, will also be in service with Singapore’s Air Force. “This new and important achievement represents the result of the synergic collaboration between the Italian industry and authorities and a big-value success for the Italian high-technology aeronautical industry and for the whole ‘Country System.”

The M-346s, which will make the Israeli Air Force’ new trainers fleet, and will replace the TA-4 Sky-Hawks, currently operated by IAF (Israel Air Force), will be a total of about 30 aircraft.

The official contract award is scheduled for the middle of 2012 and the airplanes will be delivered to the customer starting in the middle of 2014. **SP**



PHOTOGRAPHS: USAF, Alenia Aermacchi

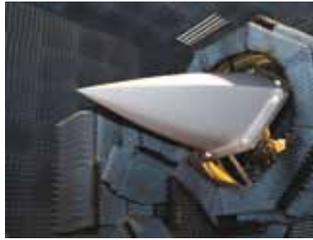


## ACAB to develop KFX fighter Radome prototype

**T**he Volvo Aero owned company, Applied Composites AB - ACAB - has been appointed by LIG Nex1, a LIG Group company in South Korea, for the development of a prototype stealth radome for the KFX aircraft programme.

ACAB is recognised as one of the leading European suppliers of advanced composite components for military applications. Among other things, ACAB is specialised in advanced radome technology, including the latest generation stealth and low-observable technology. ACAB has supported and supplied Saab for over half a century with radome technology for the Saab fighter programmes. ACAB is the supplier of the Gripen fighter radomes.

The radome (radar dome) is the streamlined structural part in the nose of the aircraft which protects the radar antenna from wind and weather. It is carefully designed to withstand the mechanical loads without compromising the radar performance. In addition, it increases the survivability of the aircraft due to its sophisticated stealth features. **SP**



## Boeing to support Korea F-15Ks

**B**oeing has announced that it has received a performance based logistics (PBL) contract from the Republic of Korea's Defense Acquisition Programme Administration (DAPA) to ensure the long-term, affordable sustainment of the Republic of Korea Air Force (ROKAF) fleet of F-15K fighter jets.

The five-year contract, valued at approximately \$300 million, also brings new opportunities to local industry, and Hyundai Glovis will provide in-country logistics handling and supply chain distribution activities. **SP**



## 250TH C-130J Super Hercules built is delivered

**A**irbus Military has recently signed a firm contract with PT Dirgantara Indonesia (PT DI) to supply nine C295 military transport aircraft for delivery to the Indonesian Ministry of Defence.

The 250th C-130J Super Hercules built at the Lockheed Martin facility here was recently delivered to Dyess Air Force Base, Texas. This is the 15th C-130J delivered to the 317th Airlift Group at Dyess since 2010 and the second of 11 aircraft to be delivered to the base in 2012. Dyess will have the distinction of being home to the largest C-130J fleet in the world when it receives its 28th Super Hercules aircraft in 2013.

Last month Lockheed Martin delivered the 2,400th C-130 built to US Air Force Special Operations Command. The C-130 production line in Marietta is the longest continuously operating military aircraft production line in history. **SP**



## Boeing marks first anniversary of KC-46A Tanker contract award

**T**he Boeing KC-46 Tanker programme recently marked the first anniversary of receiving a US Air Force contract to build the next generation aerial refuelling tanker, the KC-46A. Over the past year, the programme has completed key milestones in support of the design and development phase on or ahead of schedule, and is now preparing for a preliminary design review (PDR) in March.

"The KC-46 programme is on a good path. Boeing's performance thus far has been solid," said Major General Chris Bogdan, KC-46 Program Executive Officer, US Air Force. "Our commitment



is to deliver the KC-46A to the nation's warfighters, on schedule and ready to go to war on day one, as the world's most advanced tanker. I'm pleased to report that Boeing is meeting its commitments."

Since receiving the contract on February 24, 2011, the Boeing KC-46 team has completed several major milestones, including a system requirements review, integrated baseline review, 767-2C PDR, and firm configuration reviews for the 767-2C and the KC-46A Tanker.

Boeing will build 179 next generation aerial refuelling tanker aircraft that will begin to replace the Air Force's fleet of 416 KC-135 Tankers. The KC-46A Tanker is a wide body, multi-mission aircraft updated with the latest and most advanced technology to meet the demanding mission requirements of the future, including a digital flight deck featuring Boeing 787 Dreamliner electronic displays and a flight control design philosophy that places aircrews in command to maximise combat manoeuvrability. **SP**



# International Conference on autonomous unmanned vehicles

[ By Air Marshal (Retd) B.K. Pandey ]

Organised by the Aeronautical Development Establishment (ADE) Bangalore, an ISO 9001:2008 certified multi-disciplinary organisation under the Defence Research and Development Organisation (DRDO), the second edition of International Conference on Autonomous Unmanned Vehicles (ICAUV 2012) was held at Eagleton Golf Resort, a picturesque locale on the outskirts of Bangalore. The two-day event on February 24 and 25, 2012, though largely focused on unmanned aircraft systems (UAS), had dedicated sessions on unmanned ground and underwater vehicles.

As compared with the first edition of the conference held in April 2009, the number of participating nations this time round had gone up from eight to 15. In all there were around 400 participants from North and South America, Australia, Europe and Asia. The conference had four plenary sessions, six industry talks and 50 presentations on a range of subjects that covered every conceivable aspect of UAS. Participants from amongst the global aerospace majors included Northrop Grumman, a company that designed and built the Global Hawk, Raytheon which provided sensors and support equipment for the Hawk and Lockheed Martin whose Skunk Works has a range of futuristic projects on the anvil. Of special interest to the Indian Air Force (IAF) were the unmanned combat aerial vehicles (UCAV) under development that unfortunately is not available for offer to India on account of restrictions imposed by the Missile Technology Control Regime. A prototype of the UAV developed and flight tested by a team of students from Delhi Technological University with financial resources and support from Lockheed Martin, was displayed at the venue.

Notable amongst the speakers were Dr Siva S. Banda, Chief Scientist from US Air Force Research Laboratory who delivered the keynote address, system designers from Rolls-Royce, BAE Systems, Saab of Sweden, EADS (France and Germany), Directors from International Civil Aviation Organisation and representatives of European Organisation for Civil Aviation Equipment. The technical sessions deliberated upon aero propulsion systems, flight and mission control systems, avionics systems, structural systems, unmanned ground vehicles, unmanned underwater vehicles, mini and micro UAV systems, current and future trends as also operational experience with lessons drawn. Dedicated industry sessions were conducted on the second day to facilitate interaction and exploration of avenues for collaboration between DRDO and the global industry. Issues pertaining to the ongoing international programme related to certification of UAS and their integration in the air traffic management system in controlled civilian airspace and the imperative need for India to understand and actively participate in the formulation of regulatory procedures and practices. From the proceedings

it was evident that despite the high level of automation already achieved, much work remained to be done in respect of technological advancement before unmanned aircraft can be integrated into civilian air traffic management system with the required degree of safety.

Apart from providing a platform for interaction amongst Indian and international UAS communities to forge strategic alliances between the two, to enable access to the evolving technologies, the conference provided an exposure to the representatives of the Indian armed forces to the latest developments, advancements and ongoing research in the United States, Europe and Israel, the leading players in this discipline. Presentations made by the ADE, the IAF and the Indian Navy also provided an insight into the progress made in related research and development in India, state of the industry, current capabilities and the potential



market for different categories of UAS especially for the Indian armed forces as well as for civilian applications. But perhaps an important aspect of the exercise was the exposure to the opportunities available in the global market for the budding Indian UAS industry as well as the opportunity for the Indian operators to share and deliberate upon the operational experience gained and the lessons learnt by the major military powers that have accumulated vast experience in the deployment of a wide variety of UAS in the wars in Iraq and the Afghanistan-Pakistan region. Of particular relevance was the employment of UAS in the counter-terrorism role.

The scale on and the manner in which the event was organised was a clear expression of India's understanding and appreciation of the capabilities that UAS have to offer for application both in the military and civilian regimes and the critical role this family of aerial platforms can play in the future. **SP**



## Watchkeeper to be key pillar of Anglo-French defence cooperation

**T**he largest tactical unmanned air system (UAS) in Europe was announced as a key pillar of a broad Anglo-French defence cooperation in the field of UAS as the French Government confirmed its interest in working with the UK to develop Thales UK's Watchkeeper.

Victor Chavez, Chief Executive of Thales UK, said, "Unmanned air vehicles (UAVs) have played a fundamental role in military operations in recent years, and it is only natural that they now also take centre stage in international defence agreements. The UK and France want to remain leaders in the use of UAVs, and working together on Watchkeeper would ensure both have the best intelligence capabilities without duplicating the costs."

The company's next-generation Watchkeeper system, to be built entirely in Europe, will deliver life-saving surveillance and operational capabilities to the UK's armed forces, and is also the only tactical UAV to meet European airworthiness criteria – completing over 100 flights in the UK as part of its trials programme. **SP**

## DRDO systems to help in CBRN emergencies

**T**he Defence Research and Development Organisation (DRDO) is developing a slew of ground-based and unmanned aerial systems to detect chemical, biological, radiological and nuclear (CBRN) emergencies. The DRDO is developing systems and equipments which will map a contaminated area with zero human exposure.

"We are developing ground-based and unmanned aerial systems which can be deployed deep in the affected zones to map and record level of contamination during CBRN emergencies," DRDO'S Chief Controller, Life Sciences, Dr W. Selvamurthy has said.

DRDO has a major ongoing programme till 2014 to develop technologies to deal with CBRN emergencies. Micro Aerial Vehicles (MAVs) are also being developed for effective deployment in more critical areas," he said.

DRDO is also investing ₹100 crore for setting up a national centre at Panipat in Haryana to train armed forces and paramilitary personnel as 'first responders' in CBRN emergencies. **SP**

## Indian Navy UAV incident

**A**n Indian Navy unmanned aerial vehicle (UAV) crashed into a hill near Visakhapatnam. The Israeli-origin searcher, MK II UAV, was returning to base following a sortie which, according to media reports, was flown to reconnoitre Maoist stronghold areas as part of Operation Green Hunt. The Indian Armed Forces mostly use Israeli drones. **SP**

## End of the Harfang mission in Afghanistan

**O**n February 16, 2012, the French Air Force's Harfang drone detachment carried out its final mission in the Afghan theatre, after more than 5,000 flight hours.

The detachment has been deployed on Bagram air base since February 2009, and operated by about 40 Airmen of the 01.033 "Belfort" UAV squadron based in Cognac.

With over 5,000 flight hours performed in theatre, during 660 operational sorties, the detachment provided 3,500 hours of video imagery to operational units and to command centres. About 40 per cent of Harfang missions were flown in support of French units, and the other 60 per cent in favour of other national contingents, mainly deployed in the Eastern Region.

Harfang, a MALE (medium altitude long endurance) unmanned vehicle, is equipped with the ROVER (remote operations video enhanced receiver) transmission system that broadcasts video imagery in real time to combat troops on the ground.

The detachment mostly supported ISAF by flying reconnaissance missions to gather data used for operational planning and to monitor operational areas, as well as for convoy escort, contributing to the fight against improvised explosive device and direct support the operations of ground troops.

The return of the airmen of the UAV detachment marks the beginning of the third phase of French disengagement from Afghanistan. Four hundred soldiers have been withdrawn in October and December 2011. Two hundred more will follow in March, comprising the Harfang detachment and a combat company belonging to the joint tactical group Surobi. **SP**





## New entrant aims at UAV, drone market

**A**dvanced Defense Technologies, Inc., (ADTI) announced recently that it has signed a joint venture with North Carolina-based Halberd Corporation to build next generation drones and UAVs. The joint venture focuses on short and long range drones/UAV for both defence and commercial markets. Global spending on drones is forecast to nearly double in the next decade, growing to \$11.3 billion a year according to industry research firm Teal Group.

The joint venture combines ADTI's and Halberd's core technologies to develop a cost-effective, next generation drone and UAV system. The payload system will utilise ADTI's micro-wave/millimetre-wave circuits, sub-systems and system designs including wideband phased array antenna designs, T/R modules, transceivers, electronically steered antennas (ESA), and wideband RF antenna systems.

The aircraft systems will utilise Halberd's short and long-range unmanned aircraft and drone technology incorporating advanced composite construction techniques and ultra-light materials. The combined companies will be delivering flexible, mission specific drones and UAVs that will perform various simple and complex missions.

R.S. Tahim, President and CEO of Advanced Defense Technologies, Inc., stated, "The joint venture allows ADTI to move forward quickly and produce mission specific drones in a cost-effective and timely manner. We have already set up a team comprised of members of both companies and we are currently strengthening the team with other leading scientists and technology partners. We feel confident this collaborative approach will expand the capabilities of the system and also expedite our ability to close revenue generating contracts."

Halberd Corporation is a manufacturer of both short and long-range unmanned aircraft. Our UAV's are intended for both private and governmental use in such diverse industries as military, oil and gas, municipal, meteorological, forestry, agriculture and coastal/border surveillance.

ADTI develops systems and technologies for the military defence and homeland security industry. The company's system design technology has been developed under several SBIR Programmes with government agencies including NASA, DARPA, a prestigious defence contractor (Phillips Labs), and the US military (USAF, Army, Navy and MDA). SP



## Insitu delivers the first two Integrator UAVs

**T**he first of two Integrator unmanned aircraft systems for the US Marine Corps has been flown and delivered by Insitu Inc. The first Integrator system, which give the Marines early operation of the aircraft — part of the military's small tactical unmanned aircraft system programme — is being provided under a government-owned, contractor-operated arrangement.

"The Integrator system delivery at Twentynine Palms (California), just less than a year-and-a-half post-contract award, is a reflection of our commitment to STUAS and our commitment to the US Marine Corps," said Bill Clark, Insitu Senior Vice President of Integrator Programmes. SP

## Obama signs UAV Aerospace Bill

**T**he US President Obama signed a \$63.4 billion Federal Aviation Administration reauthorisation bill that opens the door for integrated commercial and civil use of unmanned aerial drones in US airspace.

Unmanned aircraft system manufacturers hailed the bill as a "Valentine's Day present" that includes important provisions that integrate unmanned aerial systems (UAS) into the national airspace system and, in some cases, into the hands of emergency responders' within 90 days.

The new law requires the FAA to come up with a comprehensive integration plan within nine months and to create a five-year UAS roadmap. It also requires expedited access for public users, like law enforcement, firefighters and emergency responders' use of the vehicles, as well as allowing first responders to fly very small — 4.4-pound — vehicles within 90 days, if they meet certain requirements, said Association for Unmanned Vehicle Systems International (AUVSI). SP

## Rustom-2 first flight in February 2014

**T**he first flight test of indigenously developed UAV Rustom-2, set to be used solely for defence purposes, would take place in February 2014, the Aeronautical Development Establishment Director P.S. Krishnan announced at a recent press conference.

"Designing of Rustom-2 has been completed, purchase orders have been placed and we are on schedule to fly for the first time in February 2014." The entire project of making 10 Rustom-2 UAVs and spare vehicles at a cost of ₹1,540 crore would be completed by August 2017.

Indigenous technology would enable ADE save about 40 per cent cost, he said, adding that all parts, except for cameras and sensors, have been developed in the country. Weighing 1.8 tonnes, Rustom-2 would have a capacity payload of 350 kg, a wing span of 21 metres and an endurance of above 24 hours, he said.

"Rustom UAVs could be deployed for military missions like reconnaissance and surveillance, target acquisition, target designation, communications relay, battle damage assessment and signal intelligence," Krishnan said. SP



## Internal Security a 'shared responsibility': Home Minister

**T**he Union Home Minister P. Chidambaram has said that internal security was a 'shared responsibility' of the Centre and the State governments. The Minister made this

statement in the light of the opposition to the Centre's plans to create a National Counter-Terrorism Centre (NCTC).

Chidambaram said the Centre, as part of its constitutional obligation, was responsible for protecting all parts of the country from external aggression as well as internal disturbances. "The Constitution...assigns law and order and police to the State government but also assigns the Central Government the responsibility of protecting every part of India from external aggression and internal disturbance under Article 355."

He mentioned that the founding fathers of the Constitution in all their prudence "have made national security or internal security a shared responsibility. Irrespective of the nature of security threats or irrespective of the government in office" in any particular state, the Centre's approach had always been to "work together" with the states.

The state governments are opposed to the NCTC, with its powers to arrest, interrogate, investigate across the country, on the grounds that it will infringe on the state's powers and rights.

Referring to the "most troubled states — Odisha, Jharkhand, Chhattisgarh, southern part of Bihar and the Jangalmahal region of West Bengal — where Naxalism remains a concern," Chidambaram said these states were not "ruled by the Congress, the party to which I belong. But as a member of the Central Government I have the responsibility to work with the states and give all the assistance they require to quell any militancy." **SP**

## Bangladesh and India discuss security

**T**he Bangladesh Home Minister Shahara Khatun expressed the hope that the much-awaited extradition treaty between Dhaka and New Delhi would be signed soon and asserted that her country did not harbour any anti-India terrorist on its soil.

At a joint press conference here with her Indian counterpart P. Chidambaram, she said: "Bangladesh will not tolerate any anti-India activity on its soil. We have not allowed in the past, nor will we in the future. Both countries are victims of terrorism. So, there is no question of harbouring anyone." She said joint efforts were needed to eliminate terrorists.

Chidambaram said the extradition pact was in the final stages of consideration by the Bangladesh Government and that it was "moving forward." The treaty would facilitate the handing over of ULFA leader Anup Chetia, now in a Dhaka jail, to India.

The issues discussed at the delegation-level meeting include border management, mutual legal assistance treaty, repatriation of prisoners and visa-related issues.

On the problem of illegal migration from Bangladesh, he said it was no longer a big issue, as last year India had permitted a lot of Bangladesh nationals to travel here. "There is no reason for any Bangladeshi to cross over illegally. But I do admit that some crossings do take place. We have to strengthen the border



management. We have identified the border outposts that are vulnerable and both sides will strengthen border management in these outposts." **SP**

## More checkpoints on US-Mexico border

**T**he US Customs and Border Protection (CBP) officials are considering introducing more unmanned checkpoints at ports of entry along the US-Mexico border. The CBP officials will be introducing more unmanned checkpoints at ports of entry along the US-Mexico border.

CBP already has a few automated checkpoints along the northern border, but only recently did it launch its first unstaffed entry point in Big Bend National Park, a remote portion of southwest Texas. If successful, CBP could roll out more robotic checkpoints in desolate stretches of the southern border.

The system will cost an estimated \$1.6 million for the first year to install and the National Park Service projects that between 15,000 and 20,000 people will use the border crossing in its first year. In comparison, the port of entry at El Paso processes between 40,000 and 85,000 people a day. **SP**





## Government clarifies on terrorist cases

**T**he Union Ministry of Home Affairs has issued the following statement regarding the number of major terror incident cases solved by investigating agencies.

“Government’s attention has been drawn to a statement made by the spokesperson of a political party that no case of terror has been solved by the investigating agencies in the last eight years.

We have compiled a list of major terrorist incidents since May 2000. Major terrorist incident is defined as a case where at least some persons have suffered injuries.

Since May 2000 there have been 46 major terrorist incidents. Of these, all but seven cases have been solved. In nine cases, convictions have been obtained. In the remaining 30 cases, charge sheets have been filed in 29 cases and trial has commenced in 19 cases. Two cases ended in acquittal and appeals have been preferred. Of the seven “unsolved” cases, four cases are close to

being solved. The recent busting of an IM module has revealed that the said module was responsible for the following incidents: bomb blast at German Bakery, Pune; bomb blast near Chinnaswamy Stadium, Bangalore; shoot out and blast near Jama Masjid, Delhi; and serial bomb blasts in Mumbai.

As regards the German Bakery case, one charge sheet has been filed, one of the accused is facing trial, and six accused have been declared absconders. It is also pertinent to point out that some cases are being reinvestigated/further investigated. In this category fall the following cases: bomb blast in Malegaon, Maharashtra; bomb blast in Samjhauta Express, Haryana; bomb blast in Mecca Masjid, Andhra Pradesh; bomb blast in Ajmer Shariff Dargah, Rajasthan; and bomb blast in Modassa, Gujarat.

NIA has arrested Nabakumar Sarkar, Swami Aseemanand, Lokesh Sharma, Devender Gupta and others. Recently, NIA has arrested Kamal Chouhan.

The facts stated above will make it clear that the government and the investigating agencies are sparing no effort to solve every terror case and bring the perpetrators to justice. **SP**



## NSG’s Kolkata hub inaugurated

**T**he National Security Guard (NSG) hub at Kolkata with 462 personnel will be the regional centre for eastern India serving the states of both east and northeast, Union Home Minister P. Chidambaram has said.

“The NSG hub was located here July 1, 2009. We had promised the country that within six months (after the 2008 Mumbai attacks) we will have NSG hubs in Mumbai, Chennai and Kolkata and we fulfilled that promise,” Chidambaram said while inaugurating the permanent structures of the NSG facility in Badu area of North 24-Parganas.

Following the 2008 Mumbai attacks, which showed the necessity for rapid response teams, the Central Government decided to station NSG contingents at permanent facilities in Mumbai, Chennai and Kolkata for swift movement of the commandos to the action area. “The hub now has about 241 personnel. But this hub in Kolkata, after it is augmented with additional facilities that will be created in Rajarhat (on the city’s northeastern outskirts), will have 462 personnel here,” he said.

Chidambaram said the reason behind making the Kolkata NSG hub was to ensure it catered to the needs of the states of both eastern and north eastern India. It is set up on a plot of eight hectares given by the Airports Authority of India.

“When the full facility is created, it will be virtually double the facility that is created in Mumbai or Chennai...we are happy to acknowledge that in December 2011 the state government agreed to give us 14 hectares of land in Newtown-Rajarhat area,” he said. **SP**

## Separate investigation and prosecution cadre likely?

**E**xpeditious trial of cases has to be ensured by making necessary changes in procedure. States must create a separate investigation cadre. Separate prosecution cadre is also required. This was stated by the Union Home Minister P. Chidambaram at the Consultative Committee meeting of the Ministry of Home Affairs which discussed the topic: Investigation, Prosecution and Trial - The Need for Revamping.

He said that the Law Commission of India had been requested to give a report on the amendments required immediately. He said the Department-related Parliamentary Standing Committee on Home Affairs while examining the Code of Criminal Procedure (Amendment) Bill, 2010 in its 146th Report has recommended that there should be comprehensive review of the Criminal Justice System and introduction of composite draft legislation for revamping of the Criminal Justice System in the country. Accordingly, Ministry of Law & Justice has been appealed to request the Law Commission of India to examine and give a comprehensive report covering all aspects of criminal law, so that comprehensive amendments could be made in the various laws viz. IPC, CrPC, Evidence Act, etc. It was also suggested that the Law Commission of India may also, inter-alia, take into account the recommendations made by the Malimath Committee and other committees/commissions in this regard. The recommendations of the Law Commission of India in this regard are awaited.

While initiating the discussion, the Union Home Minister said, the investigation has moved to technology-based evidence, new forensic tools are used by other countries. We also need to move towards it. **SP**



# Proposed cybersecurity legislation would advance government network security

**I** discussed the recently-introduced Cybersecurity Act of 2012 and the ways it will help keep the American public safe from theft, fraud and loss of personal and financial data. Another important component in the proposed legislation addresses one of DHS' core cybersecurity missions – securing the federal executive branch networks.

Protecting the “dot-gov” domain is critical because it's not only where the government does its own business and maintains essential functions, but it's also where we provide services to the American people. One of the ways DHS helps to secure these networks is through the National Cybersecurity Protection System, which leverages sophisticated intrusion detection capabilities. We also provide onsite technical assistance to help agencies bolster their own cybersecurity defences and respond to incidents when they happen. The proposed legislation would enable DHS to be more effective and efficient in its protection of federal networks by clarifying DHS' authorities in this space and enabling better sharing of cybersecurity information from other federal agencies to DHS. At the same time, strong privacy and civil liberties protections have been incorporated into the proposal to protect the rights of federal employees and other users of federal systems.

Supporting federal civilian departments and agencies in enhancing their cybersecurity posture is a priority for the Obama Administration as evidenced in the President's FY 2013 budget request, which allocates an additional \$200 million above FY 2012 to further reduce risk in the federal cyber domain. This funding



will enable improved continuous monitoring at departments and agencies, and support other critical cybersecurity capabilities to thwart advanced, persistent cyber threats. The legislation would further this effort by modernising the Federal Information Security Management Act (FISMA) to focus agencies' network security efforts on the implementation of actual security measures instead of costly and ineffective paperwork exercises.

None of these robust cybersecurity operations are possible without a world-class workforce. Over the past two years, DHS has increased the size of its cybersecurity workforce by approximately 500 per cent, and the Department's FY 2013 budget request continues to support high-quality, cost-effective

cybersecurity education and training to develop and grow a robust cybersecurity workforce. The proposed legislation will enhance DHS's ability to attract and retain cybersecurity professionals to execute our complex and challenging mission by providing additional hiring and compensation flexibilities.

Cybersecurity is complex and always changing. The Cybersecurity Act of 2012 aligns closely with the Administration's proposal and serves to better define what is expected of DHS and what tools are at our disposal to accomplish the cybersecurity mission. In short, it will enable us to execute on our current mission more efficiently and effectively to protect the federal government's computer networks. **SP**

—Mark Weatherford,  
Deputy Under Secretary for Cybersecurity, US

## HP bags contract

**T**he US General Services Administration (GSA) announced it had awarded Hewlett Packard a one-year contract worth \$47 million to support government-compliance with Homeland Security Presidential Directive-12 (HSPD-12).

Under the contract, HP will assist GSA in managing the identities of more than 5,000,000 federal employees and contractors at more than 90 federal agencies, commissions and boards. More specifically, GSA will use HP's Assured Identity solution which allows the agency to manage the entire life cycle of the credentialisation process.

The GSA MSO USAccess programme is a major provider of Personal Identity Verification (PIV) credentials to federal agencies. In addition to federal agencies that provide their own PIV credentials, the GSA MSO and HP will deliver identity credentials needed to help secure federal facilities, systems and applications as part of the government-wide Homeland Security

Presidential Directive-12 (HSPD-12) programme.

As part of the agreement, the GSA MSO has implemented the HP Assured Identity solution. This enables the USAccess programme to provide agencies with the key components to manage the full life cycle of a PIV credential by simplifying the process of sponsoring, enrolling, adjudicating and credentialing applicants. PIV credentials issued under the USAccess programme are secure and reliable, and comply with government-established HSPD-12 standards.

“Protecting government facilities and information system assets is critical to national security,” said Keith Blodgett, Vice President, Leveraged Delivery and Enterprise Clients, US Public Sector, HP Enterprise Services. “HP will continue to provide and manage the HSPD-12 identity credentials necessary to help secure these vitally important assets.”

In a world of continuous connectivity, HP enables agencies to become Instant-On Governments with technology, security and innovation embedded throughout their organisations to deliver immediate services to citizens and clients. **SP**



# 'Kevlar Underpants'

## protect pelvic region

**F**or dismounted soldiers patrolling Afghanistan roads, improvised explosive devices can be even more devastating than for those in armoured vehicles, but a new line of protection may help.

"A few years ago, in certain areas of Afghanistan, we started to notice the dismounted improvised explosive device, or IED, threat becoming more prevalent," said Lt Colonel Frank J. Lozano, PEO Soldier protective equipment. "There were a lot of significant injuries, and very traumatic injuries occurring to soldiers in the lower extremity area. A number of soldiers lose their lower leg below the knee, while there are a lot of above-the-knee amputations, and a lot of high hip amputations."

Soldiers who stepped on an IED might suffer injuries that required amputations which didn't leave enough of a limb for a prosthetic leg, for instance. But those soldiers were also suffering extensive damage to the perineum region, the part of the body that includes the anus and reproductive organs.

"It's very traumatic, very heartbreaking, when soldiers go through those types of events, and they are very young, and then they come home and they are not able to have children," said Lozano. "It's one of the harsh realities of this type of warfare when you have dismounted IEDs."

The army wanted to do something to offer protection to soldiers. Taking a cue from British forces that had already found a material solution to the problem, the army developed the Pelvic Protection System. The system includes two layers of protection for soldiers, including the Tier-I protective undergarment, called the "PUG," and the Tier-II protective outer-garment, called the "POG."

"We wanted first to be able to protect the genital region so that soldiers going through those traumatic events would still be able to do things like have a family when they get home," Lozano said.

Both components of the system are worn like shorts. The PUG is worn under a soldier's ACU pants. It can be worn in place of underwear, or over the top of a soldier's underwear. Some soldiers have called them "Kevlar boxers" or "combat underpants" and it's not far from the truth. "It's kind of like a bicycle shorts garment," Lozano said. "It's designed to be worn under the pants, close to the skin. You can wear it like you'd wear a normal piece of underwear."

The PUG has a breathable, moisture-wicking material on the outer thighs. Along the inner thighs is knitted Kevlar to protect the fleshy inner parts of the thighs and the femoral artery. Over the groin, more knitted or woven Kevlar. "It's not really very complicated," Lozano said.

The colonel said that as a result of an IED blast, sand, dirt, and "manure that's been in the ground for decades" is pulverised and can wind up embedded in a soldier's flesh. "It can take 20 or 25 surgeries to go through and pick all that out," he said. "If you don't get it all, then that causes infections and it can lead to further amputations."

The PUG is part of a system to prevent that from happening in the first place. The fabric used in the garment has also been tested to ensure that it won't melt or drip when exposed to high heat. "Since it's so close to the skin, we don't want to exacerbate any type of heat damage a soldier might get in an IED blast."

The outer garment, the POG, provides even more protection for soldiers, and performs similar to the soft portions of the improved outer tactical vest. It "protects along a greater range of fragments," Lozano said. While soldiers can wear the undergarment on its own, Lozano said if soldiers are going to wear the outer garment they should wear it in conjunction with the undergarment.

"Because the Tier-II has more ballistic protection, it is a little more rigid," he said. "If you wear the Tier-I under the Tier-II, it prevents chafing. It also provides the maximum amount of coverage together with the maximum amount of protection, without restricting your movement."

Wear test and user evaluations have ensured that the tiered pelvic protection system is comfortable for soldiers to wear," said Lozano. "You might go through testing and think you've got a great design, but then you put it on a soldier and tell him to road march for 40 km and shoot and go through an obstacle course and find out, it's a terrible design." He said that even if the protection is great, if it's not comfortable, soldiers might not want to wear it.

Soldiers in theatre who have worn the gear have reported back on their experience and have helped inform changes to the pelvic protection system, Lozano said. Early on, he said, there were reports of chafing and "poor thermal management," for instance.

"We've worked with the soldiers in theatre to redesign the system; we've gone through a couple of design iterations," Lozano said. "It's taken a good six to nine months. We're getting now to an optimised system where soldiers are seeing their feedback codified in a material solution and it's more comfortable and breathable and soldiers are more willing and apt to wear it."

The army first put the pelvic protection system into theatre in June 2011. Now, the system has been fielded to some 15,000 soldiers. The typical issue includes three PUGs and one POG. Fielding is happening now for soldiers in theatre and for soldiers stateside. **SP**





## Lockheed expands F-35 component facility in Florida

**L**ockheed Martin's operation in Pinellas Park officially opened a new 57,000-square-foot manufacturing facility to produce aircraft canopy components for the F-35 Lighting II fighter.

The new facility is an annex to Lockheed Martin's existing 1,97,000 square-foot building that has been producing structural components for more than 10 different types of aircraft since 1997. The operation began with 80 employees and has since grown to its current workforce of 250, with additional jobs expected as the F-35 programme moves towards peak production. The expanded facility can support production of up to 20 F-35 canopy units a month.

In remarks at the event, Harry Glenn, chief of staff for US Rep. Bill Young, chair of the House Appropriations Subcommittee on Defense, said, "The Lockheed Martin Pinellas facility has distinguished itself with its quality, safety and efficiency and has become a centre of excellence for the manufacturing of F-35 canopies."

Aircraft canopy components include the "windshield" of the aircraft – a clear plastic bubble – and the frame, ejection pyrotechnics and other structures that support it. **SP**



## Navantia and Veercraft Marine sign MoU

**N**avantia has signed a memorandum of understanding with Veercraft Marine, the shipbuilding company located in South Africa, in which both parties wish to collaborate with regards to the construction of offshore patrol vessels (OPVs) and inshore patrol vessels for the South Africa navy, in relation with BIRO project.

The objective of both companies is to identify and pursue possible business opportunities for the construction of OPV's

and IPV's for the South African Navy and jointly make the necessary efforts for the award of the BIRO Project. **SP**

## General Dynamics UK and Tandon Group partner up

**G**eneral Dynamics UK has signed a teaming agreement with India's Tandon Group to jointly pursue opportunities in the security and defence markets in India. Together the companies will deliver indigenous systems integration capability to their Indian customers and India as a whole.

This new relationship builds on General Dynamics UK's existing track-record of partnering with Indian companies to meet unique Indian requirements. Through a partnership with Hindustan Aeronautics Limited (HAL), for example, General Dynamics UK supports the Indian Air Force's Hawk aircraft fleet in an effort that includes substantial transfer of intellectual property.

"This partnership with General Dynamics UK will enable Indian defence and security customers to realise the true benefits of systems integration, at the same time maximising the existing technical, manufacturing and support already available from our companies in India," commented Sandeep Tandon, Managing Director at Tandon Group.

"Teaming with Tandon Group will provide General Dynamics UK with a respected Indian partner, together with whom we can deliver excellent integrated solutions for programmes in India's defence and security sectors," commented Dr Sandy Wilson, President and Managing Director of General Dynamics UK.

"The Tandon Group partnership will enable us to continue our strategic focus enabling us to deliver real tangible benefit to our Indian customers," commented Wayne Beck, Head of International Partnerships at General Dynamics UK.

Tandon Group has been a pioneer in creating high technology companies focused on providing global customers with low-cost innovative technology solutions. The group is now spending considerable resources through its defence licensed subsidiary MEPL to serve Indian defence and security customers.

General Dynamics UK will be present at Defexpo 2012 to be held at Pragati Maidan in New Delhi (Stand 14.24). **SP**

## SECURITY EVENTS

### Defence & Security 2012

5-8 March  
Impact Exhibition Centre  
Bangkok  
Thailand  
<http://www.asiandefense.com/>

### Military Cyber Security Conference

7-9 March  
Arlington, Virginia,  
United States  
<http://www.militarycybersecurity.com/>

### Soldier Modernisation Asia 2012

12-15 March  
Singapore, Singapore  
<http://www.soldiermodasia.com>

### International Security National Resilience Exhibition and Conference

19-21 March  
Abu Dhabi Exhibition Centre,  
Abu Dhabi, UAE  
<http://www.isnrabudhabi.com/portal/home.aspx>

### Iraq Defence & Security Summit 2012

24-25 March  
Erbil Rotana Hotel,

Erbil, Kurdistan,  
Iraq  
[www.iraqstability.org/aboutsummit.aspx](http://www.iraqstability.org/aboutsummit.aspx)

### Defexpo India 2012

29 March - 1 April  
Pragati Maidan  
New Delhi, India  
[www.defexpoindia.in](http://www.defexpoindia.in)

### Info Security Europe 2012

24-26 April  
Earls Court  
London, UK  
<http://www.infosec.co.uk/>



## Putin assassination plot foiled

**R**ussian and Ukrainian security services recently foiled a plan to assassinate Vladimir Putin. They have detained suspected militants plotting to murder the Russian premier in Moscow after next month's presidential election.

The group, the subject of an international arrest warrant, was arrested in the Ukrainian Black Sea town of Odessa after arriving there from the United Arab Emirates via Turkey, Russia's Channel One reported. The suspects were acting on the orders of Doku Umarov, a Chechen rebel who has previously claimed responsibility for attacks in Russia, according to the state-run television channel.

Ukraine's state security service alerted Russia to the plot on January 6 following an explosion two days earlier in a residential building in Odessa, which killed a man planning the attack and injured his associate, Channel One said.

Putin, 59, who served as President from 2000 to 2008, is seeking a return to the Kremlin in the March 4 ballot. Three polls published last week predict he will win the contest in the first round. **SP**



## Lindsay Lohan upgrading home security

**A**ctress Lindsay Lohan is in search of a bodyguard and better home security system following a recent breach in security at her Los Angeles home, which allowed a man to get to her front door. Lohan was at her Venice beach home when a man, identified as Lonnie Short, walked to her door and announced himself as a friend of the celebrity's alleged stalker David Cocordan. Short knocked on the door and said he needed to explain some things, but Lohan called the police and had the man arrested for trespassing.

Lohan is now looking to invest in more home security, including surveillance cameras and a bodyguard, to prevent the same thing from happening again. **SP**



PHOTOGRAPHS: www.celebs101.com

## London Police deny Olympics security compromised

**T**he London Police has denied claims that the Olympics security operation had been compromised after confidential documents detailing anti-terrorism discussions were found on a train. The police said information in the dossier, which reportedly included details of pre-Olympics rehearsals, the names and mobile numbers of police officers and minutes of meetings at which anti-terrorism measures were discussed, were operationally sensitive.

The dossier was found by a commuter on a train in Dartford, Kent recently and handed to a British tabloid newspaper before being returned to police. The police said one of its officers had lost his bag containing security documents and immediately reported it. **SP**

## Congress complains to EC against Rahul's security lapse

**T**he Congress has approached the Election Commission seeking action against the Uttar Pradesh administration over "deliberate" security lapses in public meetings and rallies of Rahul Gandhi in the poll-bound state.

In a written complaint to Chief Election Commissioner, the party has mentioned specific instances to draw the EC's attention over what it has called "serious and deliberate" security lapses during the rallies addressed by the AICC General Secretary in Uttar Pradesh, party sources said.

Naming organisations like Ramdev Samarthak Manch, Matadata Jagaran Manch and Swabhiman Manch, the party claimed that volunteers of these organisations caused security breaches in Gandhi's programmes on January 19 at Baberu in Banda district, Orai in Jalaun district on January 18 and at Lalitpur on January 17, respectively. **SP**

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