TRAGEDY OF INS SINDHURATNA AND BEYOND : A VIEWPOINT PAGE 5

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Tropex 2014 concludes

The Indian Navy's major annual exercise Tropex (Theatre Level Operational Readiness Exercise) concluded on February 28, 2014. The exercise involved large-scale naval manoeuvres in all three dimensions, viz. surface, air and underwater, across the Bay of Bengal, Arabian Sea and the Indian Ocean.

The month-long exercise was aimed to assess the operational readiness of naval units, validate the Navy's war-fighting doctrine and integrate newly included capabilities in its 'Concept of Operations'. Around 60 ships and submarines, and 75 aircraft took part in this exercise, along with participation of units from the Indian Air Force and Indian Coast Guard. The exercise also saw the 'maiden' participation by the newly acquired P-8I Long Range Maritime Patrol aircraft and the nuclear submarine Chakra.

The exercise also provided the Indian Navy with an opportunity to validate its network-centric warfare capabilities, with effective utilisation of the recently launched Indian Navy's Satellite, GSAT 7. SP

PHOTOGRAPHS: Indian Navy

Cover:
The Indian Navy's major annual exercise Tropex involved large-scale naval manoeuvres in all three dimensions, viz. surface, air and underwater, across the Bay of Bengal, Arabian Sea and the Indian Ocean.

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Accidents in Indian Navy, lessons to be learnt

Over the past year, the Indian Navy has been under the scanner for a spate of accidents. The recent fire in submarine INS Sindhuratna, which claimed the lives of two officers and immediately thereafter, the Navy Chief Admiral D.K. Joshi resigned "taking moral responsibility of the accidents and incidents which have taken place during the past few months." This has come as a major jolt.

The accident comes close on the heels of the sinking of INS Sindhurakshak, a Russian kilo class submarine, and killing three officers and 15 sailors. At the press conference during Defexpo in New Delhi, the Defence Minister A.K. Antony had underscored that such accidents/incidents were a matter of serious concern and that the Navy had been directed to diligently follow standard operating procedures. He had also warned then there would be no excuses.

While the Minister's statement can be appreciated, the issue that rattles everyone in the armed forces is the 'delayed' release of funds for modernisation of the armed forces. There have been constant reports how the Navy needs to replace some of its ageing submarine fleet. More than half of submarines have completed 75 per cent of their operational lives. Long before Sindhurakshak went out of action, only six of India's 14 submarines were operating at any given time, while there is tardy progress on building the Scorpene with French assistance.

The government has to provide adequate funds for the modernisation programme and not keep diverting capital expenditure towards revenue expenditure as it was done in 2013-14. The Navy Chief's resignation is a telling reminder to the political class and the bureaucrats to go beyond platitudes and assurances.

Meanwhile, Indian Navy had a successful completion of its annual exercise Tropex (Theatre Level Operational Readiness Exercise). The exercise involved large-scale naval manoeuvres in all three dimensions, viz. surface, air and underwater, across the Bay of Bengal, Arabian Sea and the Indian Ocean.

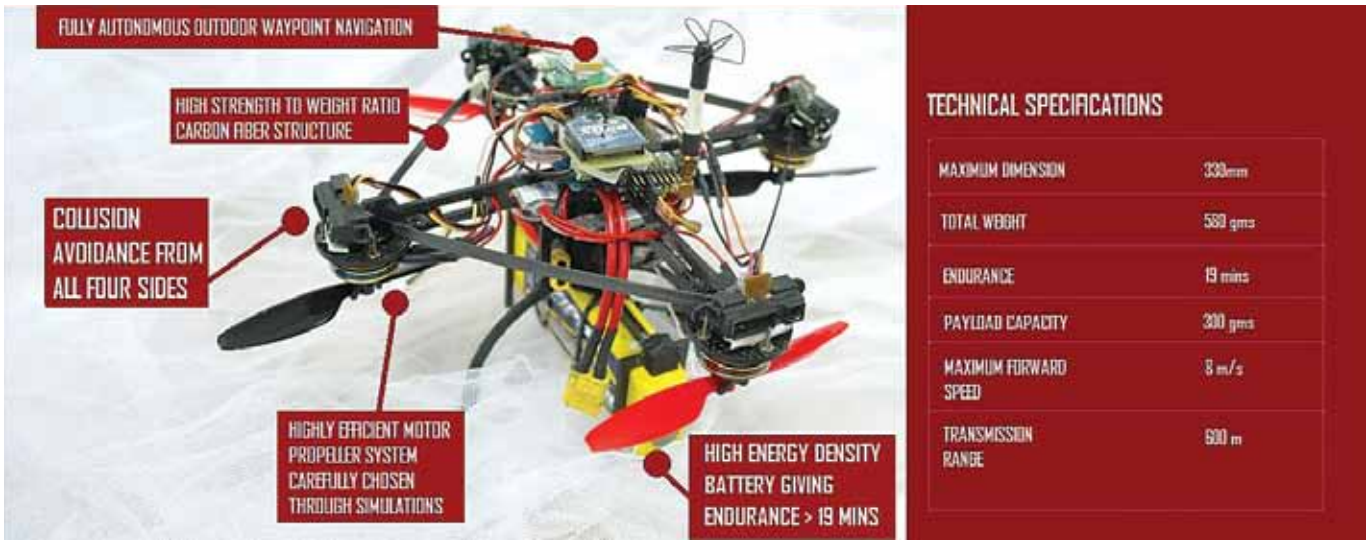
The month-long exercise was aimed to assess the operational readiness of naval units, validate the Navy's war-fighting doctrine and integrate newly included capabilities in its 'Concept of Operations'. Around 60 ships and submarines, and 75 aircraft took part in this exercise.

In his fortnightly viewpoint, Lt General (Retd) P.C. Katoch has said that India needs serious introspection to keep pace with the modernisation of the defence forces. The hike in foreign direct investment in defence from 26 per cent to 49 per cent with state-of-the-art technology transfer has not attracted any worthwhile capital because of the bureaucratic red tape and defence procurement policy that is not found attractive by foreign firms due to uncertainties and the time factor. He states that unless serious bottlenecks are removed joint ventures, particularly Indo-US, in the 'Buy and Make' category will remain a distant dream. In another article, he discusses how laser weapons have added a new dimension to warfare.

We look forward to your feedback as it would help us in improving our content and sharpen our coverage.

Happy reading!

Jayant Baranwal
Publisher & Editor-in-Chief



IIT Bombay's 'Chaturpaksha' makes waves

A mini quad-rotor drone developed and built by a team of students at IIT Bombay is making waves, standing out in a national competition held by the Ministry of Science & Technology. The MICAV 14 competition has the team emerge runners up with their 'Chaturpaksha' drone, which previously bagged third place in the international IMAV 2013 competition in France last September. Development on the drone began in January 2013.

"The indigenously developed and manufactured carbon fibre structure has been optimised over numerous iterations, high quality neddymium magnet motors and highly efficient propellers have been carefully chosen through simulations," says the team, comprising Nikunj Kothari, Prasanna Shevare, Gaurav Tendolkar and Chinmay Das. The Chaturpaksha auto-pilot is also optimised for indoor autonomous flight. Along with such products as the Defence Research and Development Organisation-IdeaForge Netra drone, the Chaturpaksha could evince interest among the armed and paramilitary forces, as well as police services across the country, which have unanimously expressed requirements of technology to meet urban warfare and short-range intelligence gathering. SP

Team Tejas for mobile telemetry system

Racing towards final operational clearance (FOC) by the end of this year for the LCA Tejas Mk.1, the Aeronautical Development Agency (ADA) is looking for a fully integrated mobile telemetry system (MTS), comprising the entire system inside an air-conditioned shelter mounted on a truck platform.

In addition to the MTS currently stationed in Goa, the ADA is looking for a vendor or consortium to undertake the design, development, supply, installation, testing, commissioning, maintenance and operation of a new generation MTS. Major telemetry subsystems will be supplied by ADA, sourced separately. The MTS will need to be fully deployable anywhere in the country, and air transportable by Il-76 or C-17 Globemaster III.

The scope of work includes an air-conditioned container-style shelter with interiors, military grade diesel generator power system with UPS, antenna system (will be provided by ADA and shall be integrated onto the vehicle by the vendor with suitable telescopic masts), 19 rack mounted telemetry and communications subsystems, air-conditioning systems (military grade), high performance vehicle, lighting and electrical system, monitoring stations and video displays and telescopic masts. SP

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PHOTOGRAPHS: IIT, ADA

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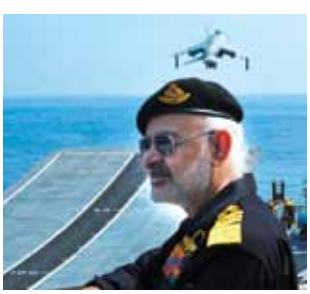
P.C. KATOCH

Tragedy of INS Sindhuratna and beyond

Post the tragic accident of INS Sindhuratna that resulted in the sacrifice of two young officers, major damage to the submarine and the resignation of Admiral D.K. Joshi, the Chief of Naval Staff, there is urgent need for not only refection but action.

In the immediate aftermath of the tragedy, press reports revealed that a cinfidential report by the Indian Navy to the Prime Minister and the Defence Minister had brought out the critical state of the Navy's fleet, particularly the Kilo class submarines. The series of accidents in the Navy in recent months included INS Sindhurakshak and INS Sindhuratna, both Kilo class submarines, the former's tragedy in August 2013 having caused the death of 18 naval personnel.

It is not that Admiral Joshi resigned just because of the mishap of INS Sindhuratna. There was more loss of lives in case of INS Sindhurakshak and accidents are out of control of the Chief of Naval Staff; something that the Ministry of Defence (MoD) should have understood. But what must have been galling to the Admiral perhaps was that with modernisation of the naval fleet stonewalled at every stage by the government, he could do little to stop his personnel being harmed further, forced to sail in outdated submarines in serious need of upgrades.



The fact is that most of the Kilo class submarines have long outlived their service lives. But the Navy has been forced to keep upgrading and refitting them to keep its offensive potential strong. However, there is a limit to all this especially when even decisions of refitment and upgrades are logjammed by the bureaucracy at every stage. Time is hardly linked to criticality of equipment and therefore important decisions are left in limbo.

Why our indigenous submarine plans have been glutted were well explained by Anil Manibhai Naik, Chairman and Managing Director of L&T, in a letter to the Prime Minister in 2011 saying, "Defence Production [MoD] Joint Secretaries and Secretaries of Defence Ministry are on the Boards of all PSUs – sickest of sick units you can think of who cannot take out one conventional submarine in 15 years now with the result that the gap is widening between us and China and bulk of the time we resort to imports out of no choice. The defence industry which could have really flowered around very high technological development and taken India to the next level of technological achievement and excellence is not happening."

What has been surprising in all this is that the MoD appears to have closed the issue having accepted the resignation of Admiral Joshi instantaneously avoiding culpability in the utter lack of modernisation of the armed forces. INS Sindhuratna's batteries used up their life cycle in December 2012 but the submarine was forced to go for minor refit and continue on sea because of the depleted numbers of the Navy. It was still running on 15-month-old batteries. It could not get new batteries because procurement was delayed for more than those months by MoD.

It was on its first sea trial when the fire broke out due to the batteries. Yet the Defence Minister and the Defence Secretary, latter charged with the 'Defence of India' under Rules of Business of the Government of India, failed to share moral responsibility, whereas they should have both tendered their resignation. Similar are the cases of scores of the Indian Air Force (IAF) pilots sacrificed flying obsolete MiG-21s that were aptly named 'flying coffins.' Recently, Wing Commander Sanjeet Singh Kaila in his writ petition against the Hindustan Aeronautics Limited and the MoD, has submitted a 3D animation of 2005 MiG-21 crash to Delhi High Court to demonstrate how the accident took place.

The existing shortages of ₹1,41,000-crore worth of arms and ammunition in the Army includes critical voids in bullet-proof jackets and *patkas*, lack of which means avoidable loss and injury to soldiers. Of course, no artillery gun has been inducted into the Army in last three decades, 90 per cent of equipment of army air defence is obsolete, and the infantry is short of night vision, surveillance and communication equipment. No wonder, first time the report of the Parliamentary Committee on Defence has talked of shortages of soldiers in the army, which all these years was only in the officer category. The bottom line is that unless accountability is brought among the bureaucrats and the Defence Minister himself takes interest in accelerating the modernisation of the armed forces, the situation can turn extremely grave. SP

The existing shortages of ₹1,41,000-crore worth of arms and ammunition in the Army includes critical voids in bullet-proof jackets and *patkas*, lack of which means avoidable loss and injury to soldiers. Of course, no artillery gun has been inducted into the Army in last three decades, 90 per cent of equipment of army air defence is obsolete.

PHOTOGRAPH: Indian Navy

Accident on board INS Sindhuratna, two officers dead

Two Naval officers were declared dead by the Indian Navy in an accident on INS Sindhuratna. They are Lt Commander Kapish Muwal and Lt Manoranjan Kumar.

"The two officers who were earlier declared missing have been located in the compartment and after examination by medical officers both the officers were declared dead," the Navy press release stated.

The submarine, which suffered a mishap after heavy smoke filled one of its compartments, reached the Mumbai harbour the next day. The Russian-made Kilo class submarine was forced to surface after the accident. The submarine was on a routine exercise when smoke engulfed it leading to the accident, Navy sources said.

The Indian Navy has stated INS Sindhuratna was at sea off Mumbai for routine training and workup (inspection). While at sea in the early hours of February 26, 2014, smoke was reported in the sailors' accommodation, in compartment number three. Smoke was brought under control by the submarine's crew.

In the process of controlling the smoke/fire, seven crew members inhaled smoke and felt uneasy. The Headquarters, Western Naval Command (HQWNC) rushed a Sea King helicopter with medical team. Seven of the nine crew members were transferred to naval hospital Asvini.

Naval ships were dispatched by HQWNC to provide assistance to the submarine. Submarine is safe and does not have any weapons on board. The submarine will return to harbour shortly. An inquiry has been ordered to establish the cause of the incident.

Taking moral responsibility for the accidents and incidents which have taken place during the past few months, the Chief of Naval Staff Admiral D.K. Joshi resigned from the post of CNS on February 27. The Government has accepted the resignation of Admiral Joshi with immediate effect.

The Vice Chief of Naval Staff Vice Admiral R.K. Dhowan will be discharging the duties of officiating CNS, pending appointment of regular CNS. SP

Admiral D.K. Joshi

PHOTOGRAPHS: Indian Navy, PIB

Successful trials of Akash surface-to-air missile

Akash, the indigenously designed, developed and produced surface-to-air missile for the Indian Army, was once again successfully flight tested recently at the Integrated Test Range (ITR), Chandipur. These were part of a series of trials being conducted in various engagement modes from the first of production model system being produced to equip two regiments of Indian Army.

The flight destroying a target in receding ting mode, as well as the one conducted on February 21, 2014, destroying an approaching target, fully met the mission objectives and few more trials are planned in different engagement modes.

"Development and production of Akash weapon system with the active participation of DRDO labs, public sector units (PSUs), Ordnance Factories, National R&D Laboratories, academic Institutions and about 200 private industries is yet another symbol of India's strength in making indigenous weapon systems," stated Avinash Chander, Scientific Advisor to RakshaMantri and Secretary Department of Defence R&D, congratulating the production agencies, Indian Army and DRDO team. "The successful trials show the continuing excellence of Indian weapon systems".

Akash is India's first indigenously designed, developed and produced air defence system surface to air missile capable of engaging aerial threats upto a distance of approximately 25 km. The multi-target, multi-directional, all weather air-defence system consisting of surveillance and tracking radars, control centres and ground support systems mounted on high mobility vehicles for the "Army" version of Akash is designed to enable integration with other air defence command and control networks through secured communication links. Developed by DRDO, the Army version of Akash is being produced by the Bharat Dynamics Limited as the nodal production agency with the involvement of the Bharat Electronics Limited and a large number of other industries. The total production value of Akash air defence systems cleared for induction by the Indian Army and Indian Air force is more than ₹23,000 crore. SP

MKU reaches out further to international clients

MKU, a leading manufacturer of ballistic protection equipment and night vision devices (NVDs), showcased its protection solutions including ballistic jackets, armour inserts, helmets, advanced protection gear, platform protection solutions for aircrafts, naval vessels and land vehicles at Defexpo 2014. The show stoppers were the latest range of personal protection products some of which are patented in the US and comply with the most stringent and new International Standards like NIJ 0101.06.

Another highlight was the display of the new range of night vision devices manufactured by MKU GmbH showcasing the Jaguar 7 binocular, Jaguar 14 monocular and night eye weapon sight. A dedicated NVD experience dark zone was an integral part of the display.

MKU Managing Director, Neeraj Gupta, said "I congratulate the Ministry of Defence (MoD) as well as FICCI for the success of this show. Though MKU has a large international presense and customer base, to be able to showcase our world-class patented technologies at home gave us a huge sense of pride. This platform allowed us to meet with our customers on our home ground. We will continue to work with and support the MoD in its vision to make India self-reliant and a net exporter of defence and security products."

With state-of-the-art infrastructure in India and Germany and ahead of the curve, proven technology, MKU has a presence in more than 100 countries worldwide. MKU holds patented technologies that are recognised in US, Europe and other parts of the world. Its products certified by the leading names in the world, including, the National Institute of Justice (US), HP White Labs (US), Mellrichstadt (Germany), TNO (Netherlands), and DRDO (India). MKU is a registered supplier to NATO and the UN. SP

PHOTOGRAPH: Anoop Kamath

Raytheon demonstrates Griffin Block III missile

Raytheon Company demonstrated its latest variant of the combat-proven Griffin missile, the Griffin Block III, throughout a series of test shots culminating in several direct hits against a variety of static and moving targets.

"The Griffin is already well known for its ability to destroy targets with pin-point accuracy using an advanced GPS and semi-active laser guidance. The

Griffin Block III introduces an improved semi-active laser seeker and a new Multi-Effects Warhead System that maximises the weapon's lethality against a variety of targets," said Mike Jarrett, Vice President of Air Warfare Systems with Raytheon Missile Systems. "Block III's enhancements will improve the warfighter's ability to engage a broad set of static and fast-moving targets with assured confidence and greater performance."

The Griffin missile's new seeker adds enhanced electronics and signal processing to improve performance in the most challenging scenarios and expands the employment footprint. Production of the Griffin Block III missile is currently underway and the company expects it to serve as the core weapon for current and future Griffin users.

The Griffin missile is a multi-platform, multi-service weapon with a proven track record for successful rapid integration on land, sea and air assets. The Griffin AGM-176A is an aft-eject missile designed for employment from platforms such as the C-130 aircraft. SP

PHOTOGRAPHS: Raytheon, Saab, US Navy

Saab's Carl-Gustaf man-portable weapon system selected by US Army

Defence and security company Saab's man-portable weapon system Carl-Gustaf has been chosen by the US Department of the Army to be a programme of record within the US Army. This means that the world leading shoulder-fired weapon system, with a long service record with the US Special Operations Forces, will now become standard issue to the US Army's Light Infantry units.

The Carl-Gustaf system will provide the US Army with a capability that units using disposable shoulder-fired munitions currently lack. This system has been a key component of the US Special Operations Forces for over 20 years.

As true multi-role, man-portable shoulder-fired weapon, the Carl-Gustaf weapon system is currently in use in more than 40 countries worldwide. The highly modern system has a long and successful history, and it has been continuously modernised to adapt to the users' ever changing needs.

Anticipating future operational needs, Saab is constantly working to make a great system even better. A new, lighter weight, version of the Carl-Gustaf is currently under development.

Furthermore, advances are also being made to the Carl-Gustaf ammunition family with the recent release of the new 655 CS (Confined Space) high explosive anti-tank (HEAT) round. This is the first in a new generation of munitions for the Carl-Gustaf designed to reduce back blast. This will allow soldiers to safely employ the weapon in confined spaces, minimising the hazardous effects of traditional shoulder-fired munitions. SP

Lockheed Martin-led team lays keel for US's 11th littoral combat ship

The Lockheed Martin-led industry team officially laid the keel for the US Navy's 11th littoral combat ship (LCS), the future USS Sioux City, in a ceremony held at Marinette Marine Corporation.

The industry team is building Freedom class LCSs for the US Navy, and has delivered two ships with five others under construction and one soon to begin construction. The nation's first LCS, USS Freedom, completed her deployment to Southeast Asia, during which she participated in multiple international maritime exercises, conducted patrols in the South China Sea and provided disaster relief for Operation Damayan.

As USS Freedom proved, the ship class is addressing the Navy's need for an affordable, highly-networked and modular ship unlike any other in the world. The platform is designed and outfitted with mission systems to conduct a variety of missions including anti-surface, mine and submarine warfare. The next LCS to deploy will be the Freedom class USS Fort Worth (LCS 3) in 2014.

"We are proud to provide our sailors with a proven warship that allows them to carry out their missions around the world," said Dale P. Bennett, Executive Vice President of Lockheed Martin's Mission Systems and Training business. "We are working in partnership with the Navy as they build a fleet able to operate forward, stand ready for any challenges, and serve our essential war-fighting requirements."

The Lockheed Martin-led LCS team includes shipbuilder Marinette Marine Corporation, a Fincantieri company, naval architect Gibbs & Cox, and nearly 900 suppliers in 43 states, including approximately 30 small businesses in Wisconsin and Michigan. SP

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Evading the laser

Tactical high energy laser / Advanced concept technology demonstrator

Laser warning system would eventually need to be fitted onto our armoured vehicles too in view of emerging threats from laser weapons albeit most of them are already fitted with smoke dispensing mechanism

PHOTOGRAPH: US Army Space & Missile Defense Command

The advent of laser weapons has added a new dimension to warfare. These have already been fitted and tried out from ground, sea and air platforms. Laser-fitted assault rifles are under development and their deployment in space as the ultimate weapon against nuclear ICBMs is well on the cards.

In the United States, the tactical high energy laser (THEL) has successfully shot down short- and medium-range tactical missiles and artillery rounds. However, one of the main challenges in understanding operational implications of laser weapons lies in the varied characteristics of different laser weapons. The most technologically advanced laser weapons are chemical lasers that derive their high power levels from chemical reaction that produce beams of intense infrared (IR) radiation. Electrically-powered solid state lasers (SSL) are less powerful, passing electricity through a crystal or glass medium to produce laser beams. SSL are being developed rapidly as they have the promise of tactical level employment.

Yet another category of lasers is the free electron lasers (FEL), using electricity to create laser light on different wavelengths to match changing environmental conditions. Capabilities that make lasers attractive for operational use are that they have a highly agile speed of delivery; rapid engagement of multiple targets and re-targeting can be effectively undertaken; high capacity magazine – number of shots is increased exponentially; low incremental cost per shot; accuracy and adjustability are of exceptional order; logistical support requirements are much lower, and the design is flexible.

At the same time there are also factors that limit the operational employment of laser weapons, these being: atmospheric attenuation and turbulence; line of sight dependency; minimal effects on hardened structures and armoured vehicles; single wavelength limits the range of operational conditions in which these are effective; eye safety needs to be catered for, and; chemical fuels and exhaust.

Considering the strengths and limitations of laser weapons, they are well suited for active defence as well as offensive strikes. As part of active defence, they can provide air, land, sea and space platforms the ability to defend themselves. Similarly, other plat-

forms and large areas can also be protected from missiles, aircraft, bombs, artillery shells and rocket attacks. In offensive strike role, laser weapons provide the capability to achieve lethal or non-lethal effects against a whole range of suitable targets.

The proliferation of laser weapons has increased the calls for countermeasures. Because lasers are basically light, phenomenon can be significantly decreased or negated altogether by phenomenon like fog, rain, smoke, which can disperse or refract the laser beam to ineffectualness depending on how thick the beam is. If the target surfaces are reflective, they also are an obstacle to some limited extent bouncing the beam but reflective surfaces are not enough by themselves against laser attack since mirrors are usually frequency specific, making them vulnerable to a laser weapon that can easily change the beam wavelength. Yet, mirrors will absorb some amount of energy of the laser beam, causing melting or distortion of the mirror surface.

However, unless the mirror is unusually tough and smooth down to its component molecules, it won't be able to reflect a laser hit in the same spot more than once or twice. Yet, if the object has the same colour as the laser beam, it can neutralise the laser; even

Advance Light Helicopter Dhruv

a blanket with the 'same' colour can therefore deflect or degrade the laser beam of matching colour. The fallout is that either the laser beam should be tunable or at least produce a laser beam that is not common. On balance, reflective surfaces and same colour pigments would be of doubtful value against laser weapons with changeable frequencies. Also, having a highly reflective or bright surface easily detected by adversary's sensors would be a profound disadvantage that may significantly outweigh any protection provided.

Another effective defence against laser weapons is through use of aerosols for protection through dispensers. These are usually available in the form of a canister or a bomb, as also cans or casings that can spray the aerosol speedily. The aerosol pumps ultrafine reflective particles into the air for protection against a potential target. These ultrafine particles remain suspended in the air for considerable time. The laser beam hitting the aerosol disperses once it hits the aerosol provided both the beam and the aerosol have matching wavelengths.

Mechanised forces are also going in for the use of 'Ablative Armour'. This is generally made of an array of tightly clustered gel or foam packs. When the laser beam hits one of these foam packs, the heat of the beam boils the foam/gel and the explosive reaction absorbs, deflects or disperses the energy of the beam. However, a second laser beam fired at the same spot will go through and through. Considerable research is ongoing in the development of 'superconductive energy dispersive armour'; fabric interwoven with superconductor wire to instantly absorb the incoming electromagnetic energy beam and disperse it evenly over its entire surface area. Of course, it depends on the development of room temperature superconductors. To counter the superconductive energy dispersive armour, the laser beam would have to pump in enough energy to fully destroy the entire armour together before it can penetrate through to reach its intended target. This will be even more complex if the superconductor mesh protecting the armour is cooled through the refrigeration unit or a heat sink. In such eventuality, even more energy would be required to overcome the superconductor mesh and penetrate through to the target effectively.

Proliferation of laser weapons have forced most armies to go in for laser warning systems for their aircraft, helicopters, tanks and armoured vehicles. Certain versions of India's advance light helicopter (ALH) too has such system, from Saab in instant case; land electronic defence system (LEDS) – 50 Mk II, which is an integrated, modular, active defence system consisting of a laser warning system (LWS) and an on-board smoke controlling system (OSCS).

The LWS Control offers: capability to integrate to the host platforms of battlefield management system (BMS capability to integrate to an external on-board smoke control unit to fire the on-board smoke grenades manually or automatically once threat is detected; capability to integrate to and cue an external remote weapon system (RWS) in direction of the threat detected, and; capability to integrate to and cue a blinding laser in the direction of the detected threat.

Features of the LWS include: full hemispherical coverage; detecting and managing all known lasers associated with anti-armour threats; simultaneously dealing with up to eight threats; full range threat management option including classification, identification and library linked prioritisation; provision of threat positional data in azimuth and elevation; low false alarm rate; stand alone or integrated mode of operation; redundancy because of multiple sensors; unique anti-reflection capability that is extremely efficient in typical high clutter land scenarios; auditory threat alerts on intercom; user definable threat library tools; built in test capability, and; laser training system compatibility.

The OSCS control offers: the capability to integrate to host platforms of BMS, turret position indicator (TPI), GPS, MET Sensor and RWS; capability to integrate to an external sensor suite (like laser warning, radar, acoustics) that provides threat direction inputs, and; capability to integrate to on-board smoke tubes that are installed on a platform, turret, RWS, or any combination thereof. Features of the OSCS include: full hemispherical coverage; independent of smoke supplier and calibre; smoke tube inventory management; automatic or manual firing; optimal automatic dispensing of 120 degrees around threat bearing; misfire management; hatch open management; built in test capability; communication channel configurability to suite platform integration; integration to any sensor suite, and; ballistic control platform configurable (availability of wind speed, turret and RWS rotation).

Laser warning system would eventually need to be fitted onto our armoured vehicles too in view of emerging threats from laser weapons albeit most of them are already fitted with smoke dispensing mechanism. Due thought also needs to be given to likely future targets for laser attack who presently are not configured to create their own smoke screens. These would be missile launchers, missile sites, command and control vehicles especially in manoeuvre battle, and even artillery guns. SP

PHOTOGRAPH: SP Guide Pubns

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Acquiring US defence technology
Myth and reality

With over 77 per cent of defence imports, India needs serious introspection to keep pace with the modernisation that its defence forces urgently need. The hike of foreign direct investment (FDI) in defence from 26 per cent to 49 per cent with state-of-the-art technology transfer during 2013 has not attracted any worthwhile capital because of the bureaucratic red tape and defence procurement policy that is not found attractive by foreign firms due to uncertainties and the time factor.

The US Deputy Secretary of Defence Ashton B. Carter, during his visit to India last September, said that US technology and exports control areas were being looked at so that India has the same status as the closest allies of US, for the US system to operate on a timescale consistent with the needs for the Indian side to make decisions, aim being to take the Indo-US defence relationship to the next level and help India raise the indigenisation of its defence systems.

US technology and exports control areas were being looked at so that India has the same status as the closest allies of US, for the US system to operate on a timescale consistent with the needs for the Indian side to make decisions

PHOTOGRAPH: Anoop Kamath

Past Indo-US experience has hardly been good in this regard. Whatever technology came from the US was decades old and in some cases like the ANTPQ-37 radar not only was it 25 years old but had been given to Pakistan 10 years earlier. Factually, India has been getting far more advanced technologies from Russia and Israel than from the US. Then is the question whether US really want a strong India? This is relevant because the track record of the US in defining 'strong allies' and dumping them at the drop of a hat in its perceived national interests has not been good either.

There was also the case of sabotaging India acquiring Russian cryogenic technology through a chain of events implicating senior Indian Space Research Organisation (ISRO) scientists Nambi Narayanan and Sasi Kumaran in a spying scandal that pointed to Central Intelligence Agency (CIA) involvement, US making efforts to scuttle it since 1992 with George Bush denouncing it as violation of the Missile Technology Control Regime (MTCR).

This apart, in recent years India has procured defence equipment from the United States, latest acquisitions including the C-130Js, with M77 Howitzers of BAE Systems next on the anvil. One can expect complete weapon platforms and systems to keep coming in with the attenuated cost and political factors. Carter's statement and his dialogue with the Indian National Security Advisor naturally has caused interest in terms of future Indo-US joint ventures (JVs); sharing technology and co-production.

But while the US is examining its technology and exports control areas to facilitate Indo-US JVs for helping India indigenise defence systems, it is equally important for us to introspect – something that should have been done when we failed to attract FDI in defence despite hiking the limit from 26 to 49 per cent. For that matter, little attention has been being given to why our own private industry does not find the defence sector attractive enough or rather their participation is far less than desired.

Now take the 'Buy and Make' projects, which are the correct way to go about developing systems in order to leapfrog technology. We would float a request for information (RFI) giving the usual response time of three months or so. A US firm has to obtain permission from the US Government every time for exports to the concerned country. Then, if the equipment or system is itself a JV within the US (items, parts taken from different firms), then each of these firms too have to obtain US Government approval for export of specific technology or item to the concerned country. This process requires anything up to 12 months or more. Next comes the more difficult part in a US firm teaming up with the Indian firm in a 'Buy and Make' project. Before such a joint venture is established, the Indian firm needs to put down on paper what items and in what specific quantities would form part of the 'Buy' from the US firm.

More importantly, the US firm cannot export the said items directly to the Indian firm of the JV. As per current rules, these items can only be exported under the FMS route on a government-to-government basis. The implications are that first the Indian firm lists out the items specifying quantities and obtains Government of India approval, which itself is liable to numerous queries, file pushing and consequent loss of time. Thereafter, Government of India would need to take up a separate case with the US Government to obtain these items through the FMS route, import them and then provide these to the concerned Indian firm to kick off the 'Buy and Make' project. On balance, it can be safely assumed that unless these serious bottlenecks are removed, Indo-US JVs in any 'Buy and Make' project will remain a distant dream. SP

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

Tejas Mk II preliminary design soon

The Aeronautical Development Agency (ADA) is giving the final touches to the preliminary design of the light combat aircraft (LCA) Tejas Mk II, scheduled to be completed by the end of March. A separate project team from ADA and the Hindustan Aeronautics Ltd (HAL), dedicated to the upgraded version, is currently undertaking daily reviews to get the first cut of the design out by next month.

The main scope of Tejas Mk II programme is to have the engine changed from the current GE F-404 to GE F-414. A development contract for eight engines for the preliminary design phase has already been signed with GE, with the critical design review already been completed at its Boston facility. The Mk II fighter will have OBOGS (Onboard Oxygen Generating System), which is being developed by the Defence Bioengineering and Electromedical Laboratory (DEBEL), a Bengaluru-based Defence Research and Development Organisation lab.

Tejas Mk II will have a unified electronic warfare system aimed at detecting and ducking enemy radar and later jamming it. The Mk II project was sanctioned in 2009 at a cost about of ₹2,400 crore and post-design finalisation phase, two prototypes are set to roll out from the HAL hangars. The IAF has committed a minimum of squadrons of Tejas Mk II. SP

Cobham bags orders for V-22 refuelling probes

Following the signing of a memorandum of understanding (MoU) by Boeing and Cobham in June 2013, Cobham has recently secured the first two annual lots for the supply of refuelling probes for the V-22 Osprey tilt-rotor aircraft in support of the second V-22 multi-year award from the US Naval Air Systems Command (NAVAIR).

Capable of withstanding severe operating environments, Cobham's refuelling probe is an inherent feature of the Bell Boeing V-22, and is fundamental to the aircraft's self-deployment capability and operational range. The unique, patented telescoping mechanism extends the probe tip beyond the Osprey's nose, and fully retracts into the fuselage. These characteristics provide the aircraft with improved aerodynamics and a reduced footprint.

Probes will be fitted on future US Marine Corps MV-22 models and US Air Force Special Operations Command CV-22 models. SP

Textron AirLand's Scorpion completes additional test flights

Textron AirLand announced that the Scorpion intelligence, surveillance and reconnaissance (ISR)/strike aircraft completed additional test flights in January and February.

The Scorpion team is planning to conduct several hundred hours of additional flight tests in 2014, each flight targeting specific objectives pushing the aircraft's airspeed, altitude, and performance envelope. "Overall, we've had very positive results through the initial test flights. In these early flights, we have evaluated the aircraft performance and tested a wide range of mechanical and electronic systems. The Scorpion is a very agile platform and I'm confident in the airframe as we continue through the test and evaluation phase," commented Dan Hinson, chief test pilot for the Scorpion team and 23-year veteran Navy pilot.

Textron AirLand is pursuing sales opportunities with US military branches as well as a number of US partner nations. The company is seeking market licence and export approvals for additional opportunities, driven by early interest from specific US partner nations. SP

Korea completes delivery of 16 T-50 trainers to Indonesia

South Korea has completed the delivery of 16 T-50 supersonic trainer jets built by the Korea Aerospace Industries (KAI) to Indonesia. After signing a $400-million deal in 2011, KAI said it delivered 16 T-50i planes between September and January using ferry flights via Taiwan and the Philippines.

With sales of T-50s to Indonesia, South Korea has become the world's sixth supersonic trainer jet exporter. Indonesia is the biggest Southeast Asian buyer for South Korea's defence industry, buying Korean-made submarines and trainer jets.

The KFX project aims to build F-16 class fighter jets to replace the Air Force's ageing fleet of F-4 and F-5 fighter planes, while eyeing the overseas market with homegrown aircraft. SP

PHOTOGRAPHS: IAF, Textron AirLand, Bell / Boeing

A400M "Ville d'Orléans" wins airworthiness certificate

On February 18, at Air Base 123 at Orléans, Gen. Hervé Rameau, head of the Direction de la Sécurité Aéronautique d'Etat (French state airworthiness board, DSAé) officially handed over to Lt Colonel Paul Creuset, commander of the Multinational Entry into Service Team (MEST), the certificate of airworthiness of the first A400M to enter service with the French air force, MSN07 "Ville d'Orléans."

Certification requires an in-depth review of the aircraft's technical documentation, and well as a physical inspection, which were both carried out by DSAé personnel. SP

Alenia Aermacchi signs contract with Poland for eight M-346

Alenia Aermacchi, a Finmeccanica company, has signed a contract with the Ministry of Defence of Poland to supply eight M-346 Master. The contract – signed after the aircraft was selected, as already announced – is worth EUR 280 million.

In addition to the eight aircraft, the provision also includes logistic support, a training programme for pilots and engineers and a ground-based training system with dedicated classrooms and educational materials.

After Italy, Singapore and Israel, Poland is the fourth customer to order the M-346, considered the most advanced/lead-in fighter trainer aircraft currently available on the market and the only new-generation trainer specifically designed to train pilots to fly high-performance latest generation military aircraft. SP

Over 150 Russian-made helicopters in UN peacekeeping operations

Over 150 Russian-made helicopters are currently involved in UN humanitarian and peacekeeping operations around the world. Speaking at the Russian Hour conference at HeliExpo 2014 in Anaheim, California, United States, representatives of Russian Helicopters, and commercial aviation firms UTair, PANH Helicopters and Ukrainian Helicopters discussed their positive experience of cooperation in this area.

"The extensive use of Russian-made helicopters in UN missions is further testimony to the unique capabilities of our technology," Russian Helicopters CEO Alexander Mikheev said. "Russian helicopters are unmatched on humanitarian and peacekeeping missions. I am confident that the new technologies we are currently working to develop will also become effective instruments for UN missions."

"UTair helicopters have played an active role in air transport support for UN missions since the early 1990s," UTair Helicopter Services President Alexei Vinogradov said. "Over this time a great wealth of positive experience in using Russian-made helicopters has been amassed."

"The helicopters are ideally suited to a diverse range of operations, from UN support missions, passenger transport, observation and monitoring, SAR and medevac operations, and support for special police units."

"Our helicopters are operated under UN contracts in the most challenging climates, in places where there is a wide temperature range, in dust storms and heavy downpours, in mountainous terrain, and landing on unprepared ground," First Deputy General Director of PANH Helicopters Alexei Skorikov said. "Nonetheless, Russian helicopters are recognised world over for their reliability and the high-quality of our flight and engineering teams, all of which enable us to complete these complex missions. We also actively cooperate with Russian Helicopters on modernising our helicopters, updating their avionics in line with the particular demands placed on us by the specific areas in which we operate."

Today a wide range of Russian-made helicopter models carry out UN missions. They include those in the Mi-8/17 family, the world's heaviest-lifting Mi-26(T), and multi-role Ka-32 type helicopters. They take part in UN missions in a range of climates and environments across the world, from Afghanistan, South Sudan, Somalia, East Timor and countries across Africa. During the conference, Russian Helicopters also unveiled new developments that incorporate the latest modern technologies and build on experience using helicopters on UN missions. Russian Hour participants had the opportunity to hear about new helicopters, such as the medium multi-role Mi-171A2 and transport and passenger Mi-38. SP

PHOTOGRAPHS: French Air Force, Alenia Aermacchi, Russian Helicopters

Handing over of IJT to Indian Air Force by HAL

The development of IJT is in advanced stages of certification with more than 800 test flights completed so far. The activities are progressing well with completion of sea level trials, night flying trials, high altitude trials as well as weapon and drop tank trials.

The activities left for obtaining final operational clearance (FOC) are the refinement of stall characteristics and spin testing which will commence as soon as stall characteristics are refined. The project was sanctioned in 1999 and the first and second prototypes flew in March 2003 and in March 2004 respectively. The prototypes were initially flight tested with the Larzac engines from Snecma.

All efforts are being made to achieve FOC by December 2014. Production of aircraft will commence immediately thereafter. This information was given by the Minister of State for Defence Jitendra Singh in a written reply to Dr Chandan Mitra in the Rajya Sabha. SP

US Navy tests infrared search and track on Boeing Super Hornet

The US Navy recently tested, for the first time on a Boeing F/A-18 Super Hornet aircraft, the infrared search and track (IRST) sensor that will find hard-to-detect targets over long distances. Boeing and Lockheed Martin are developing and integrating IRST, an essential upgrade to the combat capability of the Navy's Super Hornets.

"Adding an advanced infrared sensor to the Super Hornet broadens the Navy's warfighting ability," Navy F/A-18 Programme Manager Capain Frank Morley said. "Combined with the Super Hornet's advanced radar and the Growler's electronic attack radar jamming ability, IRST will allow the fleet to dominate the skies in all threat environments."

The IRST system is being developed under a $135-million contract awarded in 2011 and is currently planned to be deployed by 2017. The technology was initially tested last year on a Boeing King Air test aircraft, which helped reduce costs by advancing the technology before installation on Super Hornets. SP

Boeing and Air France Industries complete modification of French AWACS aircraft

Boeing and Air France Industries KLM Engineering & Maintenance have successfully completed the midlife upgrade modification on the first of four E-3F airborne warning and control system (AWACS) aircraft for the French Air Force. The upgrade is part of a foreign military sale (FMS) in 2010 between France's Direction Générale de l'Armement (DGA) and the US Government.

"The success of this upgrade rests in the outstanding cooperation between Boeing and Air France Industries," said Yves Galland, President of Boeing France "We are looking forward to continue this successful partnership to meet the French Air Force's military needs."

The aircraft now will undergo ground and flight tests at Avord Air Base before being delivered to the Air Force later this year once qualified by DGA. The midlife upgrade is the most important to date for the French fleet and is modelled on the Block 40/45 contract developed for the US AWACS fleet. SP

AMC announces 'initial operational capability' milestone for upgraded C-5 aicraft

The US Air Mobility Command officials have announced the initial operational capability milestone for the C-5M Super Galaxy aircraft. IOC was achieved for upgraded C-5M aircraft after successful qualification test, operational test and evaluation and delivery of the 16th C-5M aircraft with trained aircrew and maintenance personnel now at Dover Air Force Base, Deleware.

The C-5M Super Galaxy is one of the largest aircraft in the world and the largest airlifter in the US Air Force inventory. Air Force C-5 aircraft deliver life-saving equipment, supplies and cargo and provide outsized cargo capability necessary for Mobility Air Force to support contingency and humanitarian operations worldwide. SP

PHOTOGRAPHS: SP Guide Pubns, Boeing, US Navy

10,000 flight hours of Harfang drone

Deployed to support French operational in Mali since January 17, 2013, the French Air Force's 1/33 "Belfort" UAV squadron reached the milestone of 10,000 flight hours with the Harfang unmanned aircraft during the night of February 15-16, 2014. The Harfang is a medium-altitude, long-endurance (MALE) UAV designated Système Intérimaire de Drone MALE (SIDM) by the French military.

This is a major milestone in the history of the French Air Force's unmanned aircraft, and more particularly for the 1/33 squadron. The aircraft which passed the 10,000 hour mark belongs to the "escadrille" SAL-33, the same unit to which belonged famed aviator and author Antoine de Saint Exupéry, and which marked its centenary this year.

These 10,000 flight hours constitute a significant experience and knowledge accrued during several foreign deployments in recent years. This milestone coincides with another, the 3,000th flight hour in support of Operation Serval in Mali.

Since their initial operational deployment in 2009, French Air Force SIDM Harfang drones have flown over 900 operational reconnaissance and intelligence missions, as well as surveillance and designation of targets for precision-guided weapons launched by other aircraft.

With the arrival of the Reaper, which has already been cleared for operations, the French Air Force has reinforced its support capabilities in the Sahel-Saharan region, thanks to these ISR (Intelligence, surveillance, reconnaissance) unmanned aircraft. SP

Successful tests pave way for production of Denel's New Seeker 400 UAV

Denel's Seeker 400 unmanned aircraft system successfully completed its first round of flight tests after a three-year development process.

Tsepo Monaheng, the CEO of Denel Dynamics, expressed confidence that production of the Seeker 400 for clients will start in the second half of 2014. "This is a remarkable achievement for Denel and again confirms our global leadership position in the design and manufacturing of UAVS."

The tests done at the Alkantpan range in the Northern Cape focused on performance parameters. A second round of tests, due to be conducted in March, will determine the craft's production readiness.

The Seeker 400 can be used for a wide range of military and civilian missions, including disaster response and maritime surveillance. It can stay up in the air for 16 hours at altitudes of up to 18,000 ft. At typical operating altitudes of between 4,500 and 9,000 ft it is invisible to a person on the ground and is effectively inaudible at altitudes higher than 1,000 metres above ground.

The Seeker 400 aircraft has a cruising speed of 150 kmph and carry a payload of 100 kg. It has a wingspan of 10 metres and is launched from conventional airfields.

Monaheng said the Seeker 400 has the ability to simultaneously carry two different payloads such as an electro-optical payload and synthetic aperture radar and a completely digital video system. These payloads can be changed over in the field, allowing the Seeker to be tailored for different tactical situations.

The 250-km line-of-sight range can be doubled through the deployment of a tactical ground station. This enables the Seeker 400 to relay data to ground stations and field commanders over extended distances.

Monaheng said the Seeker 400 is a highlight in South Africa's development of a local UAV which started in the mid-1980s. Its forerunner, the Seeker 2, has been deployed in operational service by international clients, including in Afghanistan.

The Seeker was also the first UAV in the world cleared for operations in controlled airspace when it was deployed to monitor potential hotspots during South Africa's first democratic elections in 1994.

The Seeker 2 has undergone further developments by Denel Dynamics, and has since rebranded as the Seeker 200, and offered to clients who require medium endurance and dual payload capability offered by the latest version. SP

PHOTOGRAPHS: French Air Force, Denel

Lockheed Martin and AeroVironment to pursue joint opportunities in UAS markets

AeroVironment Inc., a leader in unmanned aircraft system solutions, and the Lockheed Martin Corporation, one of the world's largest aerospace companies and a leading systems integrator, recently announced an agreement to jointly pursue opportunities in unmanned aircraft system (UAS) development.

"At Lockheed Martin, we look forward to partnering with AeroVironment to potentially develop integrated solutions for the unmanned systems market," said Paul Lemmo, Lockheed Martin Senior Vice President, corporate strategy and business development.

"Numerous customers are seeking persistent solutions for wide area applications, such as border surveillance and communications, that are much more affordable than those available previously," said Roy Minson, AeroVironment Senior Vice President and General Manager of its Unmanned Aircraft Systems business segment. SP

Remotely piloted aircraft flies first long-duration test using repurposed satellite

Using a repurposed commercial satellite, Air Force crews flew MQ-1 Predators and MQ-9 Reapers from Creech Air Force Base, Nevada, during multiple missions in November and December.

A test team with the 53rd Test Management Group, Detachment 4 and led by Lt. Dan Broyles successfully demonstrated inclined orbit satellite capability for MQ-1 and MQ-9 to meet operational needs this year and beyond, said Major Joshua Williams, the detachment commander.

MQ-1 and MQ-9 remotely piloted aircraft were used during tests late last year to implement beyond line-of-sight capability using lower-cost, inclined orbit satellite communications. SP

UK-built Taranis unmanned aircraft surpass all expectations

The UK Ministry of Defence (MOD) and BAE Systems have revealed that Taranis, the stealthy unmanned combat vehicle demonstrator and the most advanced aircraft ever built by British engineers, surpassed all expectations during its first flight trials last year.

Taranis, named after the Celtic god of thunder, made its maiden flight at an undisclosed test range on August 10, 2013, under the command of BAE Systems' test pilot Bob Fraser. The demonstrator aircraft made a perfect take-off, rotation, 'climb-out' and landing on its 15 minute first flight. A number of flights took place last year, of up to one hour in duration and at a variety of altitudes and speeds. The details were revealed at a briefing held in London today.

The findings from the aircraft's flight prove that the UK has developed a significant lead in understanding unmanned aircraft which could strike with precision over a long range whilst remaining undetected. The technological advances made through Taranis will also help the MOD and Royal Air Force make decisions on the future mix of manned and unmanned fast jet aircraft and how they will operate together in a safe and effective manner for the UK's defences.

Costing £185 million and funded jointly by the MOD and UK industry, the Taranis demonstrator aircraft was formally unveiled in July 2010 but only a very limited number of scientists and engineers have ever been given full access to the top secret aircraft. Initial 'power-up' or ground testing commenced later in 2010 at BAE Systems' military aircraft factory in Warton, Lancashire, followed by a comprehensive and highly detailed programme of pre-first flight milestones including unmanned pilot training, radar cross section measurements, ground station system integration and, in April 2013 taxi trials on the runway at Warton. SP

PHOTOGRAPHS: US Army, BAE Systems

International Seminar on Terrorists' Weapon of Choice: Improvised Explosive Devices

An international seminar on "Terrorists Weapon of Choice: Improvised Explosive Devices" organised by the National Bomb Data Centre of National Security Guard (NSG), was held in New Delhi recently.

In his opening remarks, Jayanto Narayan Choudhury, Director General, NSG said that scourge of terrorism can only be defeated by a sustained and comprehensive approach, involving the active participation and collaboration of all states and relevant organisation and civil society. He said: "The danger of usages of improvised explosive devices (IEDs) is not disappearing, rather proliferating. Seamless flow of intelligence is a pre-requisite. Unless, intelligence is collected, collated and disseminated in an institutionalised manner, the success of operations against the terrorist network will always suffer. Once that happens, achieving coordination between various agencies operating in the field becomes the next aim."

The Director General said: "If we can work out these aspects, then attacking the terrorist network will become an achievable target, thus reducing the incidence of IEDs attacks. We also need to ensure our countermeasures also work in the most likely urban battle zone of future and left-wing extremist (LWE)-affected areas."

Delivering the key note address, Nehchal Sandhu, Deputy National Security Adviser, spoke about a series of deadly incidents the world over, which makes everyone sit back and review the security threat situation. He emphasised that left-wing extremists are not just increasing the power of the devices but also showing a grim cleverness in delivery system, hinting at the surgically implanted explosive devices. Further he added the importance of the IED in the conflict zones and defeating this threat has become a herculean effort in itself, for the security forces world over. Sandhu emphasised that security forces and civil society is not immune to the acts of terrorism and it's imperative to integrate all stake holders fighting against terrorism/LWE.

Nearly 200 delegates representing Australia, Canada, France, Israel, UK, USA, Vietnam, Central Armed Police Forces, State Police organisations, research institutions, Army, Air Force and others discussed IED-related issues, including an examination of conditions conducive for usages of IEDs, promoting education to present the bombing incidents, sharing best practices for operating in LWE environment.

Brig John Shanahan from Australia presented the experience of Australian forces in Afghanistan. Col. Geoff Stevens, Director Asia-Pacific Command, presented a detailed IED analysis of the region, wherein he highlighted the few of unconventional usages of IED by the terror organisation, while the speakers from France, Israel and Canada presented their countries counter IED capabilities. The participants said that it was important for international community to counter the spread of IEDs and bombing incidents, which it noted, has been growing in the recent years around the globe. The two-day seminar brought together national and international experts to share their experience in the field of IEDs and how to increase level of assistance with each other. SP

India, Israel sign bilateral security relations pact

The Ministry of Home Affairs (MHA) signed three agreements to further strengthen the bilateral security relations with Israel here recently.

These agreements are Mutual Legal Assistance Treaty in Criminal Matters; Agreement on Protection of Classified Material and Agreement on Cooperation in Homeland and Public Security.

The agreements were signed on behalf of the MHA by Rajiv Sharma, Additional Secretary. On behalf of the Government of Israel, two agreements were signed by Alon Ushpiz, Ambassador of Israel in India, and one agreement by Amir Kain, Director, Ministry of Defence. SP

Officiating DC of BSF

D.K. Pathak, IPS, presently Special Director General, Border Security Force (BSF) will look after the duties of Director General, BSF with effect from 01.03.2014 and till an officer is appointed to the post of Director General, BSF on regular basis, or until further orders. SP

Indo-US cooperation to crack terror funding

India and the United States have agreed to work together to crack the financial network and fund-raising activities of Pakistan based terror outfits and individual terrorists associated with these organisations under the framework of Indo-US (Ministry of Home Affairs and Department of Homeland Security) bilateral discussions.

PHOTOGRAPH: PIB

Indo-US bilateral meeting held in October 2013 facilitated exchange of such information between concerned agencies of both the countries. India and the United States have agreed to have cooperation between their agencies in fighting against counterfeit currency and illegal financial transactions under the aegis of Indo-US Homeland Security dialogue. A sub-group on "illicit finance, illegal smuggling of cash, financial fraud and counterfeiting" has been formed to work with the areas of information exchange, capacity building and technical/research cooperation. US Homeland Security and Indian agencies are working together to investigate sources of material and technologies used in the production of FICN.

Financial Intelligence Unit-India (FIU-IND) and FinCEN (FIU of the USA) have also signed a memorandum of understanding (MoU) for cooperation and exchange of information in March 2010, as members of the Egmont Group of FIUs which covers as wide range of offences, including counterfeiting of currency and illegal financial transactions.

This was stated by R.P.N. Singh, Minister of State in the Ministry of Home Affairs, in a written reply to a question by M. Anandan in the Lok Sabha recently. SP

Cisco states shortage of four lakh cyber security experts in India

A recent study conducted by Cisco has revealed that India is facing with a shortage of over four lakh cyber security professionals and this could develop into a serious situation. Even as 2013 was marked by an unprecedented growth in malicious traffic, firms globally are grappling with a shortage of over a million cyber security professionals as they try to monitor and secure networks, according to a study by Cisco.

According to the networking solutions major, overall vulnerability and threat levels reached their highest in 2013, ever since it began tracking in May 2000. Its 2014 Annual Security Report reveals that 2013 was a "particularly bad year", with cumulative annual threat alert levels increasing 14 per cent since 2012.

The report also revealed that hackers are increasing attacks on the core of the Internet – servers of web hosting providers, name servers and data centres – to spread exploits. Thousands of web hosting centres are now acting as launchpads for such attacks. Android and Java are top security targets for malware and hacks, the report said adding Android also has a large install base and is therefore an attractive target for hackers.

It's an open platform with innumerable iterations and hence is easier to exploit compared to a closed operating systems. Ninety-nine per cent of all mobile malware in 2013 targeted Android devices, it added. SP

IAI developing cyber defence-related activities

In recent months the Israel Aerospace Industries (IAI) has increased its cyber defence-related activities. Esti Peshin, director of the company's cyber section and a veteran of the IDF's hush-hush sigint Unit 8200, has been quoted that IAI is now developing solutions for clients in Israel and abroad.

The cyber section, based at the IAI subsidiary Elta, was launched in August 2013. "We have a national responsibility to be independent in this area. Israeli defence industries have to take lead role. We have the infrastructure and platforms to take the lead."

Peshin told *The Turkish Weekly* that Israel's – and other countries' — critical networks were vulnerable even if not linked to the Internet. "A disk-on-key can be given to an employee, who then plugs it into a system. It can broadcast information. It takes less than 30 seconds for a disk-on-key to go through all of the contents of a computer."

Peshin warned that cyber threats have become more substantial, and that a competent and well-organised attacker can bring a country to a standstill, shutting off its power grid and traffic lights, or paralysing an airport. Such cyber attacks can be launched without the perpetrator being traced, thus making effective deterrence impossible. SP

Parliamentary committee suggests central agency to deal with cyber crime

A parliamentary committee has recommended that a centralised agency be setup to deal with cyber crime as the country has been witnessing a sharp increase in such cases over the past few years. The Standing Committee on Information Technology, chaired by Rao Inderjit Singh, pointed out that there are several agencies involved in maintaining separate data on cyber crime cases in India.

"The committee fail to understand as to how the Department of Electronics and Information Technology (DEITy) concertises its cyber security strategies when so many agencies are involved in data collection and maintenance and when there is absence of any centralised monitoring system and centralised maintenance of data relating cyber fraud," the panel said.

Presently, the national Crime Records Bureau (NCRB) maintains data on cyber fraud, while data related to internet financial frauds along with the quantum is maintained by the Reserve Band and the CBI.

The committee said it has been informed that DEITy regularly interacts with the banks, RBI and CBI regarding cyber fraud-related actions like prevention, investigation, support, technical advisories, promotion of best practices and compliances. "The committee feel that there should be one single, centralised cell/agency to deal with all cases of cyber crime/ threat in the country. This will not only help the department in knowing the pattern of the crime, but also prevent recurrence of same kind of crimes with newer strategies," it added.

The number of incidents of website compromise in India has grown 5.5 times during the last five years (2007-08 to 2013-14) putting it amongst the top 5 countries with respect to spam mails.

The panel said it was "highly perturbed" to note that 3,911 Indian websites were defaced/hacked up to June 2013 and majority (around 2,667) of these attacks occurred in the '.in' domain, whose servers are in India. SP

HAL takes lead in establishing first Aerospace University in India

An Aerospace Industry-Academia Conclave was organised at the Hindustan Aeronautics Limited (HAL) under the chairmanship of Prof S.G. Dhande, former Director, IIT Kanpur on February 17. HAL aims to pursue its leading role in the Indian aerospace industry through this conclave and create an ecosystem for enhancing the capabilities of this sector.

Considering the long-term needs of the aeronautical sector growth, expert group on restructuring of HAL, headed by B.K. Chaturvedi, former Cabinet Secretary and Member, Planning Commission, recommended the establishment of an Aerospace University or collaboration with some universities for expansion of aviation sector capabilities. In his message, Dr R.K. Tyagi, Chairman HAL, said: "Let us give our best for the future through a fertile landscape of aerospace technologies and knowledge which will make India more self-reliant, competitive and develop leaders for giving shape to our national aerospace strategies", while urging the Conclave to think as one community. SP

Airbus Defence and Space: ESA contract for next-generation telecom satellite platform

Airbus Defence and Space, No. 2 worldwide in space technologies, has been awarded the phase B contract for initial design work on the European Space Agency (ESA) next-generation satellite platforms. The contract, in conjunction with Thales Alenia Space (TAS), is worth 18.2 million euros.

The new platform of Airbus Defence and Space will be designed for telecommunications satellites of between three and six tonnes. Lighter and smaller than the current platforms, it will feature an all-electric version and, in response to customer requirements, will also be available with a chemical propulsion system. This next generation Airbus Defence and Space platform is expected to enter into service in 2019 as the subsequent Phase-C/D will start in 2015 for the development and manufacture of the first two prototype flight platforms.

"Our aim is to provide telecommunications satellites that deliver even more in the way of performance and are 30 per cent more competitive," explained François Auque, Head of Space Systems. "The increased competitiveness of our next-generation satellite, which will be designed predominantly at our design offices in Toulouse and Stevenage, will be made possible thanks to substantial technical innovation as well as innovative industrial organisation."

The contract comes 10 years after the launch of the first Eurostar E3000; since then, 31 satellites have been launched, all of them achieving 100 per cent operational service in orbit. SP

Nexter Systems and DCI agreement based on capability approach

The CEOs of Nexter Systems and Défense Conseil International (DCI) have signed a memorandum of understanding on the joint promotion of capability offers for the benefit of forces in France and abroad.

This move encourages joint projects built around Nexter systems combined with the provision of training, consultancy and operational assistance services that DCI can provide. Where appropriate, the services will be integrated in the field of simulation and on-board simulation.

The Nexter Group and DCI are also planning to explore subcontracting partnership solutions for the benefit of the French Army. Both companies propose to reinforce with education and training tools, such as generic virtual training (GVT), the DCI structures that make up part of Draguignan military schools, and to share them with said schools. Nexter and DCI have already demonstrated the complementary nature of their offer in a conclusive training project with a country in the Middle East.

Nexter applies its expertise in land defence systems to meet the needs of the French Army and other forces internationally. The scope of its business includes the supply of weapons systems and munitions for rmy, air force, navy and law enforcement applications. In 2012, Nexter reported revenue of 742 million euros, of which 18 per cent were allocated to research and development. SP

Saab Australia announces opening of Advanced Maritime Systems Centre

Defence and security company Saab Australia is pleased to announce the creation of the Advanced Maritime Systems Centre (AMSC), located in Technology Park, Adelaide.

The purpose-built facility will bring together all of the resources, skills and expertise which has made Saab Australia a world leader in naval combat systems. It will also ensure the continued growth of local skills and expertise for the Royal Australian Navy's combat systems.

"The development of the AMSC will ensure that Saab Australia continues to be at the cutting edge of future naval combat systems. Through the AMSC Saab will be able to continue to develop and support naval combat systems of the highest quality for the Australian Defence Force," said Dean Rosenfield, Managing Director Saab Australia.

The AMSC will employ over 100 local combat systems engineers, project managers, and software engineers. This is planned to expand to over 200 employees by 2020.

"Saab Australia has a long history of developing world-beating naval systems," Rosenfield said. "In addition to serving the Royal Australian Navy, the AMSC will also provide us with the opportunity to grow our export capability in established and developing markets such as Canada and India."

The centre will include Saab Australia's 9LV Combat Management System Development and Integration programme, Submarine Ship Control Systems Laboratory, Training and Simulation Node, Future Combat Systems Laboratory, and Missile and Fire Control Systems Laboratory, which is the only facility of its kind in Australia.

Based in Mawson Lakes, Adelaide, the AMSC is located next to other key defence research and development hubs, including the Defence Science and Technology Organisation's offices at Edinburgh and the University of South Australia.

The AMSC will be officially opened by the Minister for Defence David Johnston later this year. SP

DARPA seeking automated decision aids for pilots and battle managers in contested environments

Advanced algorithms, software and human-machine interfaces are needed to help operators manage the scale and complexity of operations in near-peer contested environments.

As commercial technologies become more advanced and widely available, adversaries are rapidly developing capabilities that put our forces at risk. To counter these threats, the US military is developing systems-of-systems concepts in which networks of manned and unmanned platforms, weapons, sensors, and electronic warfare systems interact over robust satellite and tactical communications links.

These approaches offer flexible and powerful options to the warfighter, but the complexity introduced by the increase in the number of employment alternatives creates a battle management challenge. Current battle management systems often lack the benefit of automated aids to help comprehend and adapt to dynamic situations. Further complicating matters, in future conflicts US forces may face degradation or denial of critical communications capabilities essential for coordination and shared situation understanding. With both the complexity of coordinating innovative systems of systems, and the sophistication of adversary capabilities expected to grow, automated decision aids become vital.

The Defense Advanced Research Projects Agency's (DARPA) Distributed Battle Management (DBM) programme aims to address these challenges. The programme aims to develop control algorithms and demonstrate robust decision-aid software for battle management at the tactical edge. "We're looking for innovative algorithms from the planning and control theory communities that go beyond current algorithms, many of which assume assured communications in the tactical environment," said Craid Lawrence, DARPA Program Manager. "Advanced human-machine interaction technologies for cockpits and battle manager stations are also an area where we're looking for novel approaches to enable greater comprehension and quick decision-making in an increasingly contested and complex battlespace."

PHOTOGRAPH: US Army

The programme envisions two phases. Phase-1 focuses on technology development—planning, control, and situation understanding algorithms, and design of appropriate human-machine interfaces—and system engineering. Phase-2 plans for a team to build an integrated DBM capability to manage air-to-air and air-to-ground combat in a contested environment and to demonstrate that capability in large-scale simulation and live fly events. SP

Inhibit the Calpain to climb the mountain

Scientists at Defence Institute of Physiology and Allied Sciences (DIPAS), Defence Research and Development Organisation (DRDO) have identified a novel mechanism for thrombosis induced by high altitude environment. The thrombosis developed at regions like Siachin Glaciers may lead to life-threatening events such as pulmonary embolism, stroke, and limb amputation.

Director, DIPAS, Dr Shashi Bala Singh, describes this work as a key step towards understanding such disorders. The study by the Genomics lab, DIPAS, led by Dr Zahid Ashraf using proteomic analysis of platelets and animal models elegantly demonstrated that enhanced activity of an enzyme 'calpain' significantly contributes to thrombosis under hypoxic conditions. Interestingly, the investigations on the soldiers who developed thrombosis while serving at extreme altitude also revealed an increased activity of calpain confirming the relevance of the novel preclinical findings for clinical applications.

The findings have been published in current February 20, issue of medical weekly *Blood*, official journal of American Society of Hematology with editorial commentary. The novel findings could lead to development of therapeutics aimed at specifically preventing or treating thrombotic disorders induced at high altitude regions. The simple bioanalytic assay of 'calpain' could be developed for an early diagnosis test for such disorders.

Interestingly, Air Marshal D.P. Joshi, Director General Armed Forces Medical Services, has commissioned a study on epidemiology of venous thrombotic disorders in lowlanders at high altitude. Major General Velu Nair, Dean AFMC, Pune is supervising this ongoing multicentric study in collaboration with DIPAS. A cohort of more than 600 soldiers is being studied longitudinally during their induction and subsequent posting at extreme altitudes. SP

PHOTOGRAPH: Wikipedia

Data breach of giant retailers

The US Secret Service is reportedly looking into yet another data breach of a giant retailer. However, the retailer Sears has denied any breach.

News of the investigation follows several security breaches at US retailers, beginning with news that roughly 70 million credit- and debit-card customers had had personal information exposed to hackers from November 27 to December 15, 2013.

Since then, Neiman Marcus and Michaels Stores revealed their security systems had been compromised. Investigations are going on to confirm the extent of damage as well as those affected. SP

Fort Hood shootings and security lapse

The November 2009 shootings of more than 40 people by an Army psychiatrist at Fort Hood, Texas, revealed a wide range of security lapses at US military bases, including a failure to consider the possibility that a threat might come from an "insider," according to a Pentagon report .

The 23-page document makes 47 different recommendations on how to improve security in the aftermath of the attack, which left 13 people dead. The report provides scant information, however, on how the security lapses contributed to the Fort Hood shootings. Pentagon officials continue to refuse to release the actual report of an independent panel into the shootings.

The recommendations include:

- Better screening of military personnel for signs that they may become violent. Currently, the report said, there's no requirement to screen soldiers for violent tendencies prior to their deployment, and post-deployment screenings rely primarily on soldiers to report their own symptoms on questionnaires. Major Nidal Hasan, who's accused in the Fort Hood shootings, was about to be deployed to Afghanistan when he allegedly opened fire on his fellow soldiers.
- Improved 911 emergency call systems. An independent Pentagon review after the Fort Hood shootings determined that emergency phone systems on most military bases were not as sophisticated as those in neighbouring civilian communities and couldn't, for example, tell dispatchers a caller's location. The report called for the installation of better 911 systems by 2014.
- Tougher screening of civilians working at US military facilities and of non-citizens working on military bases overseas. The report said that background checks on US citizen civilians "may be incomplete, limited in scope or not conducted at all."

Hasan, 39, who faces 13 murder charges and as many charges of attempted murder, was paralysed during the shooting by return fire in the worst shooting incident ever at a US military installation. He's being held in a Texas jail. An Army psychiatrist, Hasan served at Walter Reed Army Medical Center and was sent to the military's largest installation to address the mental health needs of soldiers returning from Iraq and Afghanistan, but officials at Walter Reed questioned his abilities. SP

Significant lapses led to attack on military base in Afghanistan

The top US commanders of a coalition base in southern Afghanistan "failed to take adequate force protection" measures prior to a September 2012 attack by the Taliban that led to the deaths of two Marines and the destruction of military aircraft, according to a report on the incident.

Marine Commandant General James Amos fired the two senior commanders of the base at the time, Major General Charles Gurganus and Major General Gregg Sturdevant, essentially forcing them into retirement. The investigation was directed by Army General Lloyd J. Austin III, who leads Central Command, to determine any potential accountability for the attack.

Fifteen Taliban insurgents, dressed in US Army uniforms, went undetected as they breached the eastern perimeter of the complex, and then split into three separate teams to conduct the assault on the base.

According to the report, Gurganus, who maintained overall command of security at the American base, "knew, or should have known" about persistent risks to the compound's security, and "underestimated the threat posed by the enemy's capabilities." Several factors, from inadequate patrolling of the base perimeter, to a faulty assessment of the threat posed by potential enemy infiltrators, contributed to security shortcomings at the complex, the report said. SP

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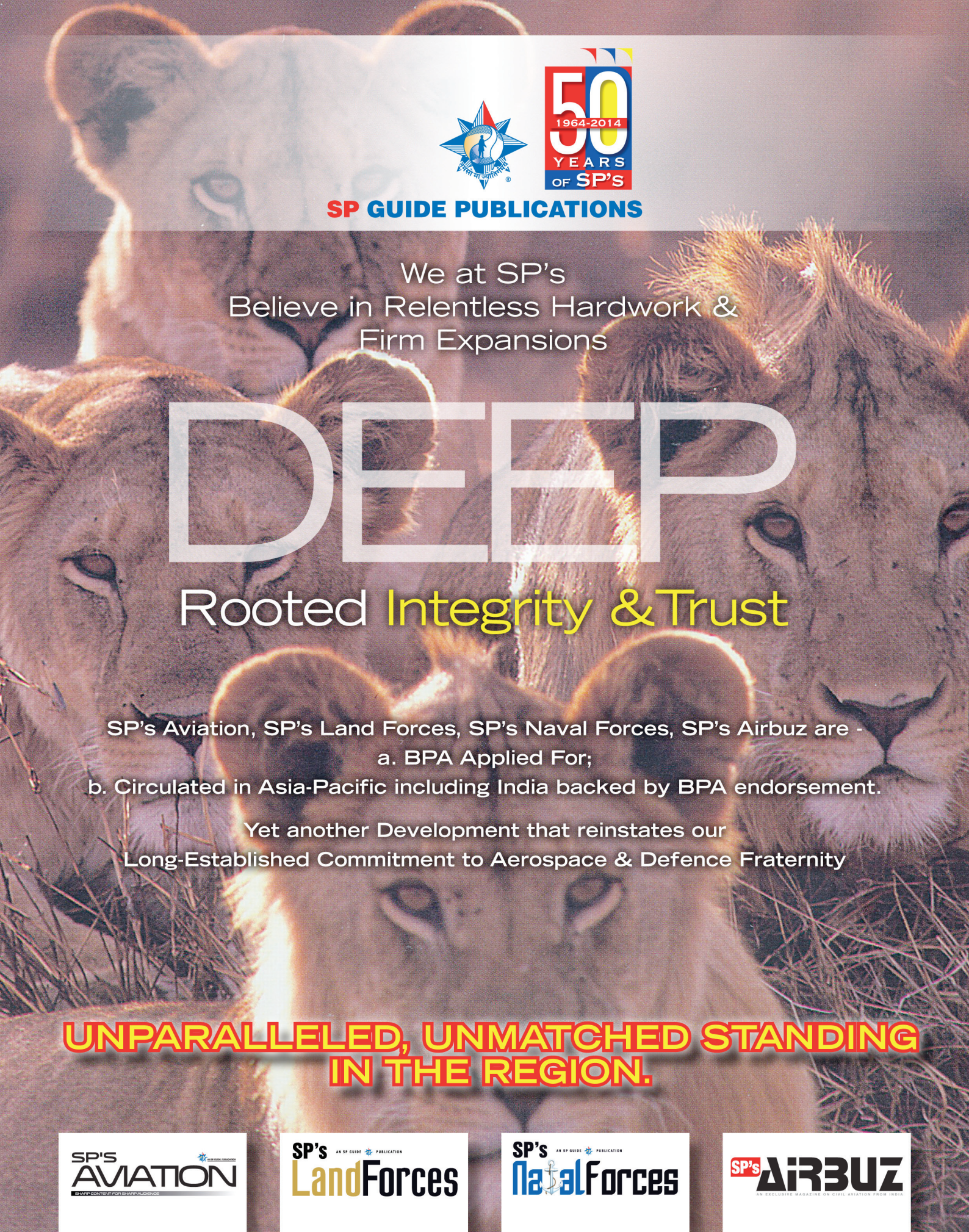
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