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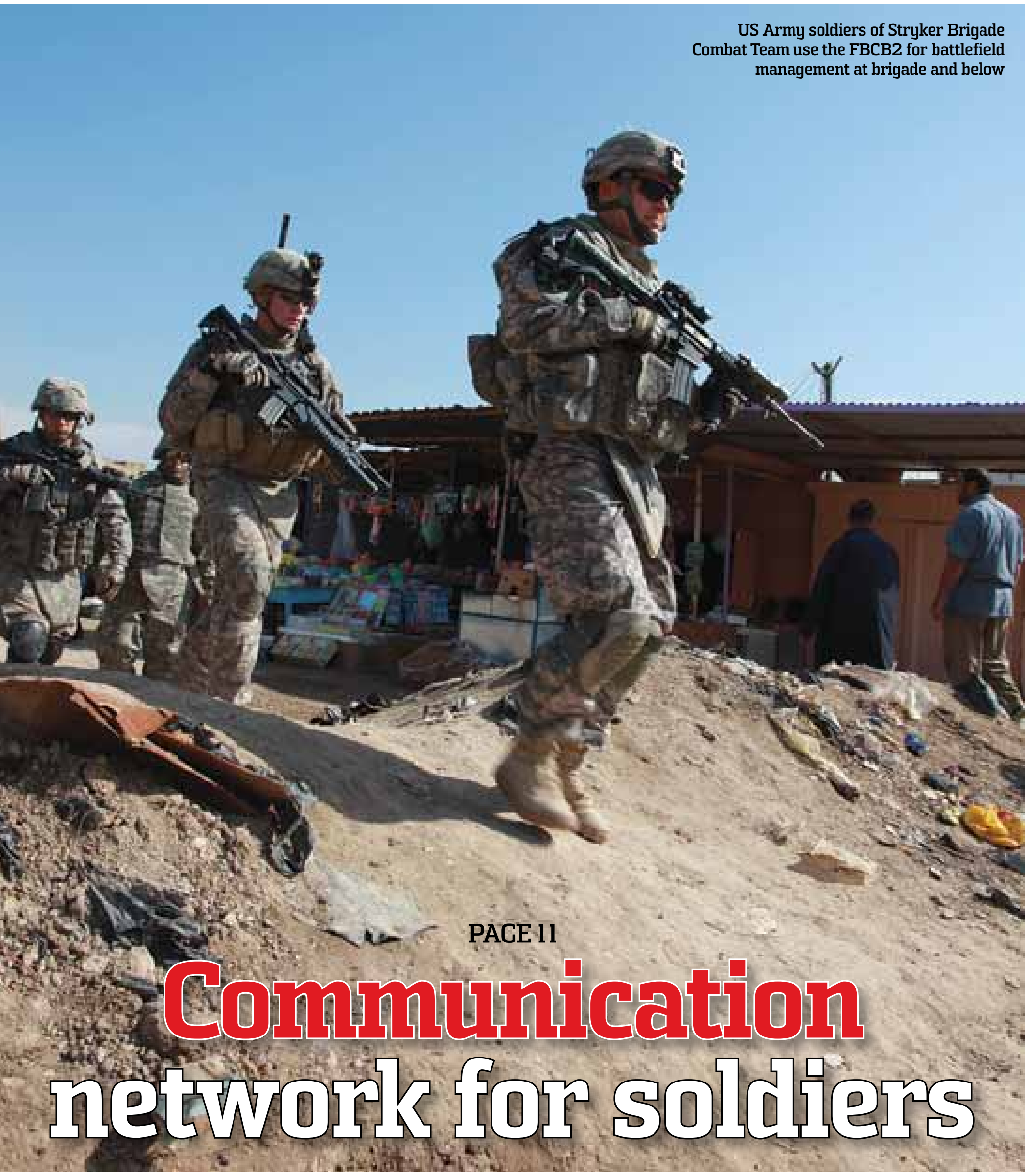

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Lt General (Retd) P.C. Katoch handing over a memento to Brigadier R.K. Sharma. Brigadier Sanjay Ahuja and Major General K.J. Singh are seated in fore ground.

Digitisation of Battlefield: Seminar report

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IAF inducts latest SU-30 MKI variant

SU-30 MKI aircraft was inducted into Western Air Command in a formal ceremony at Air Force Station Halwara on September 25, 2012. Air Marshal Arup Raha, AOC-in-C Western Air Command IAF was the chief guest for the induction ceremony.

While the first batch of SU-30 MKI was inducted into IAF in September 2002, the 220 Squadron at Halwara, known as 'Desert Tigers', which flew the MiG-23 aircraft till 2005, is now resurrected with the latest SU-30 MKI Squadron in Western Air Command. The SU-30 MKI is a frontline all-weather air-dominance fighter with multi-role capability, which can undertake varied air combat and ground attack missions.

Air Force Station Halwara witnessed a well-coordinated ceremony on this occasion. Guests from Western Air Command graced the event. The chief guest was received by Air Officer Commanding Air Force

PHOTOGRAPH: PIB

Station Halwara, Air Commodore R.G.K. Kapoor. An impressive parade contingent presented a general salute to the AOC-in-C. Later the Commanding Officer of the Squadron, Wing Commander Sharad Aneja took permission from the Air Marshal to get airborne in a SU-30 MKI aircraft. The ceremony included an impressive flypast by the SU-30s of 220 Squadron.

The pilots of the Squadron executed the characteristic 'Trishul' formation in a spectacular manner signifying their formal induction into the premier Air Command of the IAF.

Air Marshal Arup Raha in his address congratulated the air warriors of Halwara airbase for successful induction of SU-30 MKI. He appreciated the tireless efforts put in by all personnel in operationalising the Squadron within a very short period. The Squadron has enhanced the operational capability of the Western Air Command in a substantial manner. The Air Marshal and his wife interacted with the officers and their spouses during the social get-together organised at the Officers' Mess. SP

Cover:
US Army soldiers of Stryker Brigade Combat Team use the FBCB2 for battlefield management at brigade and below.

Cover image: www.def.gov

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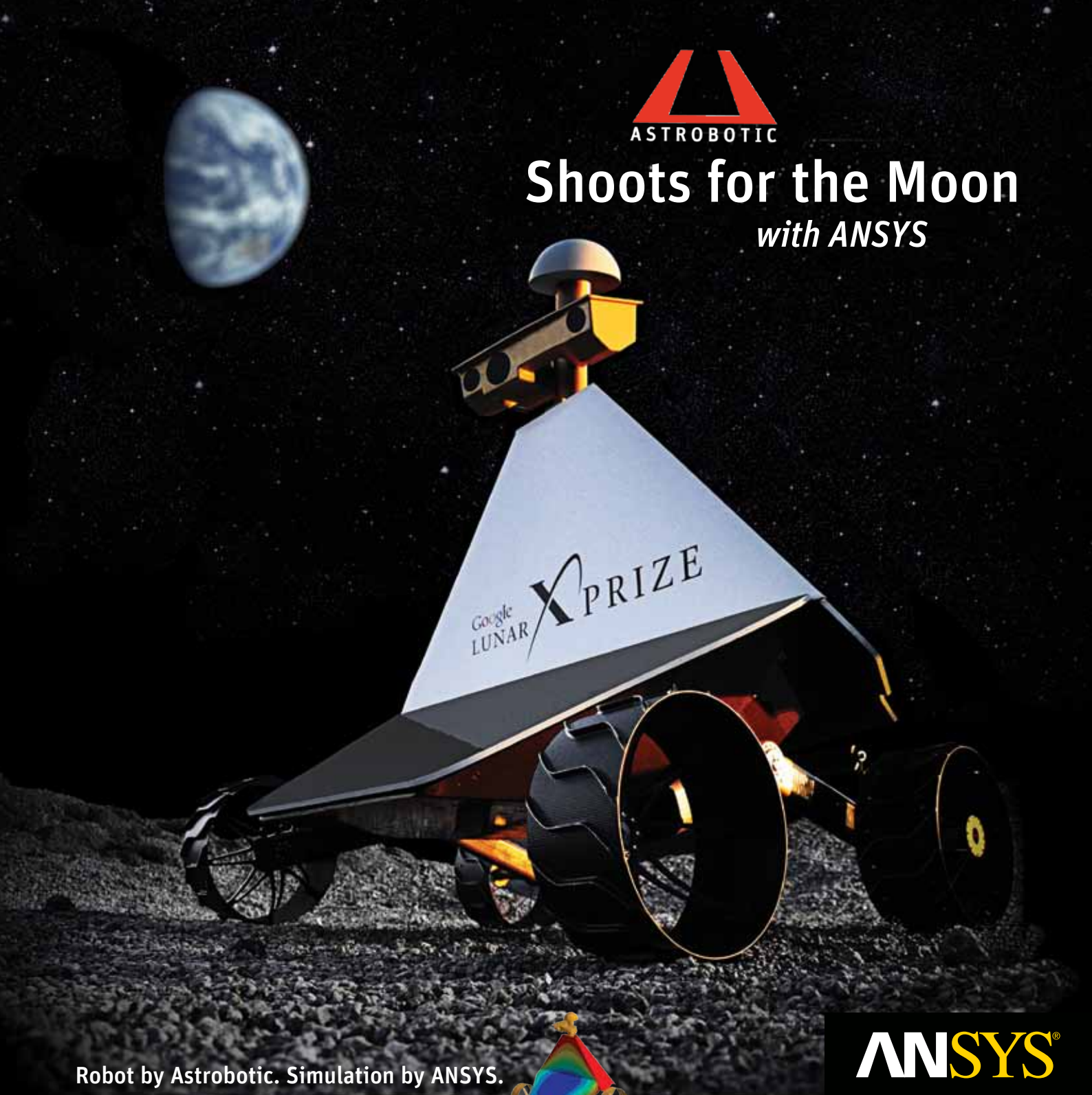

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Moving ahead...

That India's Coast Guard is rapidly building up capabilities to prevent a repeat of 26/11 type of situation was more than evident from what transpired during the 31st Coast Guard Commanders' Conference held in Delhi. Inaugurating the three-day conference on August 31, Defence Minister A.K. Antony highlighted the expansion and strengthening of the Coast Guard. He revealed that the Coast Guard Development Plan has been approved and adequate funds have been provided. The 'service' is indeed on course to double its assets and capacity building by the end of the 12th Five Year Plan period. A new Coast Guard Regional Headquarters and five Coast Guard Stations have been established. By the end of the current financial year, another six (already sanctioned) stations are also likely to be established. The Phase-I of the Coastal Surveillance Network project is nearing completion and the system will provide additional measures towards electronic surveillance.

However Antony asserted, "We aim to achieve near-gap-free electronic surveillance along our coasts", it is hoped that a whole gamut of technology absorption, training, human resource management, inter-service and inter-departmental issues to provide the necessary synergy and the all important 'command and control' issues would be successfully tackled to make the country's maritime borders impregnable to undesired elements. The Indian Coast Guard will have to play its role to perfection so that the nation doesn't face the ignominy of 26/11 ever again.

With contract negotiations are in full swing, the Indian Air Force (IAF) is hopeful that its multibillion-dollar deal for 126 Rafale fighters would soon move towards a logical conclusion. A recent statement by the IAF Chief Air Chief Marshal N.A.K. Browne that while the issues pertaining to offsets, transfer of technology, HAL's role and costs were indeed complex, the entire process was progressing smoothly and he hoped the deal will be signed somewhere around the end of the current financial year. It is hoped that the Air Chief's words will put an end to unnecessary rumour-mongering and provide comforting balm to the 'frayed-with-anxiety' nerves of the winning OEM's officials.

And, what is happening on the Indian Army's front whose modernisation plans continue to be in a state of slumber. Recent developments indicate that all may not be lost with the Army's massive $6 billion very short range air defence system (VSHORADS), which looks to connect nearly 1,000 launcher systems and over 6,000 missiles, having progressed into a crucial phase involving quality assurance tests at Bangalore and a check-out the electronic systems in Ladakh. According to the latest buzz, the big-ticket bid is currently a three-way fight between the French MBDA Mistral, Sweden's Saab RBS 70 NG and Russia's KBM new generation Igla-S. Field evaluation trials of all three VSHORADS platforms were conducted under different conditions in Rajasthan (hot-weather), Visakhapatnam (coastal) and Ladakh (high altitude). So far, all three seemed to have performed to specifications. The competition could go either way and, understandably, the fight is going to be fierce with each team extolling its product to the hilt.

An article by Lt General (Retd) P.C. Katoch on Communication Network for Soldiers deliberates on some of the latest trends and evolving technologies.

As the saying goes, "May the best win" but win, it must. Army cannot any longer allow its projects to keep floundering on the rocks of uncertainties and vested interests.

Jayant Baranwal
Publisher and Editor-in-Chief

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Indian VSHORADS competition progresses

Russia's KBM new generation Igla-S


French MBDA Mistral


Sweden's Saab RBS 70 NG

The massive $6-billion Indian Army very short range air defence system (VSHORADS) competition, which looks to contract nearly 1,000 launcher systems and over 6,000 missiles, has progressed into a crucial phase which involves quality assurance tests at Bangalore and a check-out of the electronics systems on the three remaining contenders in Ladakh. The big-ticket bid is currently a three-way fight between the French MBDA Mistral, Sweden's Saab RBS 70 NG and Russia's KBM new generation Igla-S. Field evaluation trials of all three VSHORADS platforms were conducted in May in Rajasthan (hot weather trials), Visakhapatnam (coastal environmental trials) and Ladakh (high altitude, cold weather trials). All three teams are simultaneously in country for the critical phases in Bangalore and Ladakh. Discussions will also be conducted on transfer of technology to default licence manufacturing partner the Bharat Dynamics Ltd (BDL). So far, all three systems have performed to specifications and expectations, sources say. The Army is looking for a system that can be deployed in multiple configurations including man-portable, fitted on a twin-launcher, based on a high-mobility vehicle, ship-based and submarine based. The weapon systems fielded have so far demonstrated several capabilities during trials, including multiple target detection and tracking by day and night, providing target acquisition to the munition, engagement of aerial targets, etc.

As things stand, the competition could go either way, and the fight is fierce. Rosoboronexport, which displayed its Igla-S system at Defexpo 2012 is confident that its new generation system is a fitting replacement for the legacy MANPADS Igla currently in service with the Indian Army, and that type commonality could be a game-changer.

According to MBDA, "India is looking to replace its old Igla systems. With Mistral MANPADS in their inventory, India's armed forces would have a system that weighs less than 19 kgs rendering it easily portable by two operators, rapidly brought into action and fired. Being a fire-and-forget system, once the immediate threat has been engaged, attention can then be turned towards other targets, a crucial advantage that man-in-the-loop laser beam riding systems do not have. For an enemy pilot, at ranges of up to 6 km and beyond, Mistral's passive IR seeker means that it is very hard to detect and defend against."

Saab contends, "The RBS 70 NG is on offer to the Indian Army to fill a crucial need gap. The all-new RBS 70 NG VSHORAD system is a versatile battlefield game changer and will offer critical edge in the spectrum of deployment. We believe that the RBS 70 NG meets and exceeds the requirements of the Indian Army for a system that has multiple target seeking and tracking capabilities, multi-launcher capability, ability to deploy from high mobility vehicles and ship and submarine naval vessels, ability to engage aerial targets by day and night and aerial target detection capability." SP

PHOTOGRAPH: Rosoboronexport, MBDA, Saab

IAF chief inspects first indigenous AEW&C aircraft

India's first indigenous AEW&C system has been formally received by the Bangalore-based Centre for Airborne Systems (CABS), which along with CEMILAC, DGAQA and an IAF/Embraer team, will now put the aircraft through crucial systems and flight trials. IAF chief Air Chief Marshal N.A.K. Browne, who was chief guest at the ceremony, had his first chance to inspect the new platform. Speaking on the occasion, he said the AEW&C programme is the starting point for much larger, more complex projects such as AWACS India programme. "The world is watching this programme with bated breath. Its success will put our country into the elite group which can develop and deliver such complex state-of-the-art systems," said Dr Vijay Kumar Saraswat, Director General, DRDO. The indigenous AEW&C system based on projections by the IAF and built on the EMB-145I by DRDO has incorporated more operational capabilities than contemporary systems of its class". According to the makers, the indigenous AEW&C system is a multi-sensor system providing for all aspects of airborne early warning & control in today's defence scenario. The aircraft is scheduled to proceed to 'shake down' trials shortly, and spend a year in integration and development flight trials. SP

HAL scouts cockpit display systems for light choppers

HAL has announced interest in sourcing AMLCD-based display systems to replace the conventional cockpits of Cheetah, Chetak and Cheetal light helicopters in service with the armed forces. HAL has said it would prefer off-the-shelf systems for rapid evaluation and installation. It is looking for 50 sets for the Cheetal fleet and 200 sets for the Cheetah and Chetak fleets combined. The scope of work defined by the EoI invitation includes delivery of certified off-the-shelf engine display and other display systems, conducting of required modifications to hardware and software, support during integration, ground and flight testing of helicopters up to full certification. The Engine Display

System is to be installed on the helicopter cockpit to provide man machine interface and to display engine and other parameters. HAL stipulates that it needs to be full colour NVG compatible AMLCD type with LED backlighting. Two SMFDs will be required to be installed in each helicopter cockpit to provide man machine interface and to display primary flight, navigational and helicopter data. SP

PHOTOGRAPHS: DRDO, Irkut, HAL

New generation Su-30 unveiled

The brand new Su-30SM, the latest variant of the Su-30 series, developed by JSC Sukhoi Design Bureau and designed for the Russian Ministry of Defence, made its debut flight at the airfield of Irkutsk Aviation Plant in Russia. The Russian Air Force has ordered 30 Su-30SMs (deal signed in March this year), now likely to enter service earlier than expected. The new variant is an evolution of the MK series of Flanker jets supplied to India as well. The variant has a new radar system, IFF and ejection seats,

in addition to a list of other equipment stipulated in requirements drawn up by the Russian Air Force. According to an Irkuts statement, at the contract signing Anatoly Serdyukov, the Russian Defence Minister, noted that the upcoming entry of the modern two-seat supermanoeuvrable aircraft into the Russian armed forces significantly increases the combat power of the Russian Air Force. "Moreover, technical capabilities of the fighter allow achieving a higher level of pilot's training, which is especially important due to the increasing procurement of new generation combat aircraft," the statement said. The IAF is also in the process of evaluating an upgrade of its Su-30MKI fleet. The Su-30SM debut flight was piloted by JSC Sukhoi Design Bureau test pilots Sergey Kostin and Pavel Malovechko. The flight lasted two hours and is said to have "passed flawlessly". SP

Trouble in Vikramaditya trials, delivery delayed

The refurbished, refitted Russian-built aircraft carrier for the Indian Navy, Vikramaditya, has run into serious trouble with propulsion-related equipment malfunctioning during high-speed trials in the Barents Sea this month, raising serious questions on the quality of the refurbishment and, perhaps more importantly, the possibility that the ship has major design flaws that saw it out of action starting the early 1990s. The former Admiral Gorshkov, contracted by the Indian Government in January 2004, and expected to be delivered to the Indian Navy in December this year to coincide with the Navy Day, is now unlikely to change hands before April 2013, perhaps even later. The Indian Navy has pointed to problems with an unspecified number of boilers on the old warship that shut down during high-power trials when the ship was pushed to its maximum speed of about 29 knots. The Indian Government was forced to more than double its contracted cost for the ship to $2.3 billion three years ago after it was jointly decided that the scope of work had been monumentally underestimated. Delays in the Vikramaditya come shortly after India's own aircraft carrier, the under-construction Vikrant, has also gone slow, with no possibility of induction before 2018. SP

PHOTOGRAPHS: Indian Navy, Dassault Aviation

Indian Navy inducts first catamaran survey vessel

Heralding a new, albeit small, chapter in Indian shipbuilding, the Indian Navy has inducted its first catamaran hydrographic survey vessel, INS Makar, the first of its kind to be inducted. The ship has been built by Alcock Ashdown Gujarat Ltd. The ship is propelled by four Cummins-built engines and two bow thrusters. With two onboard survey motor boats, the entire propulsion, navigational and power management systems on the INS Makar have been integrated into a single state-of-the-art system called Integrated Platform Management System, now standard on all indigenously built ships for the Navy and Coast Guard. The equipment on INS Makar includes autonomous underwater vehicles (AUVs) and remotely operated vehicles (ROVs) for specific investigations, an advanced Electronic Positioning System, Multibeam Swath Sounding Systems and Sub Bottom Profiler. The vessel also has a full range of latest oceanographic and land survey equipment. INS Makar accommodates six officers and 44 sailors. According to the Navy, "The ship has enhanced Indian Navy's already existing world class sea/ocean survey capability. INS Makar also marks a new chapter in the annals of hydrography in our country. The primary role of the ship is to undertake hydrographic surveys, required for production of nautical charts and publications aimed at improving navigational safety at sea. She is equipped with an array of modern surveying equipment and also undertake limited oceanographic surveys towards providing marine environmental data." SP

IAF hopeful of Rafale deal this year

With contract negotiations on in full swing, the Indian Air Force is hopeful that a multibillion-dollar deal for 126 Rafale fighters will be signed before the end of this financial year. IAF chief Air Chief Marshal N.A.K. Browne, in Bangalore, said, "Negotiations are on. We should be able to finish the contract this financial year. It is a complex process. We are discussing offsets, transfer of technology, HAL's role and the cost. It is progressing well." The Air Chief's words will come as comfort to Dassault Aviation at a time when there has been some speculation about Eurofighter making an effort to get back into the competition. Any reopening of the competition has been categorically ruled out by the MoD and IAF at this time. The MoD recently said that its officials were not in discussion — official or unofficial — with any company other than Dassault, in an attempt to quell speculation that Eurofighter and Rosoboronexport had both said that they were in discussions with the MoD and had reason to believe that the MMRCA competition could be rebooted. According to sources, negotiations with Dassault are progressing smoothly, even though there are several points that still need clarification. Sources in Dassault said they were confident that a deal would be signed before the year was out. SP

Decision on heavylift copter competition this month

The government is expected to open bids to select a new heavylift helicopter for the IAF — a choice between the Boeing CH-47F Chinook and the Russian Mi-26T2. The competition looks to contract for 15 helicopters to augment and replace the small number of older generation Mi-26 choppers that currently operate from the IAF's Chandigarh air base. Trials on both platforms took place in India and abroad in 2010-11. While Boeing has all but been officially declared winner in a parallel attack helicopter bid (it's AH-64D Apache Block III has reportedly defeated the Russian Mi-28NE Night Hunter), the competition for the heavylift contract is still a hot one that could wing either way. The IAF has stressed this time on a high-altitude bad weather capability, something that both helicopters have been able to demonstrate. Sources indicate that the Boeing team made full use of combat videos of the Chinook in the highlands of Afghanistan to stress the platform's high altitude prowess. The Mi-26T2 team has stressed platform commonality with what the IAF already operates and assured a lifetime supply of spares and support to assuage any concerns on that front, in addition to fielding an upgraded helicopters with much more advanced onboard and navigation systems than its earlier avatar in service with the IAF. SP

Rheinmetall Air Defence fights blacklist

Fighting a 10-year blacklist that came into effect earlier on March 5 this year, Rheinmetall Air Defence (RAD), Zurich, has sought legal recourse against the order debarring the company from doing business with India's Ordnance Factory Board (OFB) for a decade. A writ petition filed by the company came up for hearing in a Delhi court last week. In a statement, Rheinmetall Air Defence said, "The company is determined to prove in India's courts that allegations which led to RAD's blacklisting in March 2012 are false and that RAD and its employees acted in full compliance with the law. Notwithstanding its decision to seek redress through India's legal system, RAD remains committed to a close dialogue with Indian authorities and is ready to cooperate with them in order to clear its name with regard to the blacklisting. As a matter of principle, RAD binds itself and its employees to strict compliance standards. The company enjoys an excellent track record in meeting these standards in all markets where it operates." RAD was one of six firms blacklisted for a period of 10 years in March, which included ST Kinetics Corporation Defence Russia and Israel's IMI. SP

PHOTOGRAPHS: US Army, Airbus, DPR Defence

Decision on tanker competition next month

A crucial competition to select a new mid-air tanker for the Indian Air Force is likely to end next month with the opening of bids. EADS, which fields the Airbus A330 multi-role tanker transport, will be watching with baited breath, having burnt its fingers once before: in late 2009, the competition's first attempt was scrapped after EADS emerged a front-runner on the matter of high fly-away cost, despite a strenuous effort by the IAF to convince the MoD not to cancel the tender. The company is understood to have reworked its strategy in the refloated competition with the same platform, and will make use of the new focus on ownership/life-cycle cost, rather than platform cost. It competes against the Russian Ilyushin-78M, six of which are already operational with the IAF. Following the floating of a fresh tender in 2010, field evaluation trials were conducted in Spain in July that year, followed by Indian trials in Gwalior. Both tankers are understood to have met all requirements. The IAF is understood to have once again stated its preference for the A330 MRTT, though it remains to be seen how the mathematics work out at the MoD. SP

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With Tatra deals on hold, BEML revving up on other army projects


StryKer armoured fighting vehicle

It has been a turbulent year for the defence PSU Bharat Earth Movers Ltd (BEML), with its Tatra truck line coming under the spotlight of allegations, and an ongoing CBI probe into the entire programme. Having risked its relationship with one of its largest customers, the Indian Army, the company has now lined up a raft of programmes it is interested in participating in as a developer and supplier. Many of these programmes are critical to continued modernisation of the Army's infantry units. The requirements run into thousands of speciality vehicles for the Army's infantry and special forces units. BEML has invited global expressions of interest to cater to Army requirements for 3,500 light bullet proof vehicles (LBPV), 2,500 infantry mobility vehicles, an unspecified number of light armoured multipurpose vehicles, 500-600 light speciality strike specialist vehicles and 228 light strike vehicles – a total of over 7,000 vehicles at the very least. BEML will be looking to acquire technology through a partner and build the vehicles at dedicated lines in country for the Army. The state-owned firm will, of course, compete against private competitors like Tata, Mahindra and others. BEML requires interested vendors or partners to express interest formally by October 9.

The Army has outlined a requirement of 500-600 light specialist vehicles – basically agile infantry vehicles with protection against small arms fire. The Army is looking for a vehicle with a minimum payload of 1,000 kg, and an unladen weight that cannot exceed 3,750 kg. The vehicle must have ground clearance not less than 250mm fully laden, and powered by a turbo-charged diesel engine with a minimum operating life of 1,00,000 km. BEML is looking for vendors who can field platforms with power to weight ratio not less than 25 kW/tonne fully laden with the air-conditioner on, sand and off-road tyres, self-sealing fuel tank with fire suppression features, stowage for 18 belt boxes of 7.62mm belted ammunition or six advanced rifle grade munitions (ARGMs). The vehicle also needs to be able to store at least 120 litres of water in two tanks. The Army also insists on power steering, automatic 4x4 transmission with an internal shift mode to 4x2 mode four forward gears and one reverse. As with most speciality vehicles, the Army requires independent suspension on all four wheels. The light speciality vehicle will need to be capable of operations in ambient temperatures ranging from freezing temperatures to 40 degrees Celsius. The Army wants to be able to push the vehicles to a maximum speed of 100 kmph on level highways and 60 km/h in desert/off-road conditions, with an acceleration of 0-60 km/h in 12 seconds. The vehicle needs to have a range of operation of minimum 400 km for cross country, and a gradeability of 30 degrees fully laden. Obviously, the Army has stipulated protection – stanag 1 on all sides and bullet-proof glass. Each light specialist vehicle will need to carry five passengers apart from the driver.

The largest requirement in the current list is for 3,500 LBPV. With a crew of 2+4 and a payload of 1,500 kg, the LBPV needs to have a kerb weight of not more than 7,500 kg. Operating range of vehicle designs fielded will be similar to the specialist vehicles, at 400 km. The vehicle will need 6-kg under vehicle blast protection in addition to bullet-proofing on all sides. The Army would like space to transport six anti-tank guided munitions (ATGMs). Transmission needs to encompass six forward gears and one reverse.

Another larger requirement is for 2,500 infantry mobility vehicles, with a seating capacity of 1+5. This will be a vehicle of not more than 9,000 kg unladen, and a payload of 1,800 kg (including 250 litres of drinking water). Similar bullet-proofing requirements apply to the IMV as well — stanag 1 and bullet-proof glass. Most other parameters run similar to the LBPV qualitative requirements.

The Army is also looking at an unspecified number of light armoured multipurpose vehicles (LAM). Pre-requisites on this vehicle include mobility, firepower and protection for reconnaissance missions – the LAM need to be equipped with observation, surveillance and communication equipment, and built with a modular upgradable design. Importantly, the LAM needs to have stretch potential to incorporate imperative upgrades and retain functional superiority, according to BEML, which states in its invitation to potential partners, "The future battlefield will be characterised by fast movements and engagements over all types of terrain with fluid and rapidly changing situations. Real time surveillance, integrared C4I2 and precision weapon systems will be the mainstay of forces in conflict. Rapid deployment forces transportable by sea and air. The LAM should allow the mechanised forces to operate in such a wide spectrum of conflict." The LAM will be a six-tonne (plus payload of 1.5 tonnes) vehicle with a crew of four including the driver. Crucially, the LAM needs to be transportable by air, sea and rail without modifications. For operations, the vehicle needs to have a sensor module incorporating a retractable mast holding a thermal imager and a day camera + GPS equipment. The Army wants the LAM to sport a weapon mount for one 12.7mm machine gun with a 180 degree swivel with front protection for the gunner. BEML has identified critical equipment on the LAM as: automotive systems including engine, drive train and suspension, protection – better metallurgy/armour technology to reduce weight, surveillance – thermal imager-based observation equipment – retractable/telescopic mast and controls, electronics sub-system management, communication, navigation, vehicle diagnostics etc and their integration, design – in-built growth/stretch potential and upgrades.

Finally, the Army is also looking to acquire at least 228 light strike vehicles (LSVs) for its Para (Special Forces) units, to "operate in hostile environment as an offensive weapon platform – in all terrains". Configured as a 1+5 crew vehicle, the LSV will be a 3,000-kg vehicle with a 950-kg payload. The LSV's range of operations will be 600 km at a cruising speed of not less than 110 km/h. A weapon mount in the co-driver's seat for a 7.62mm general purpose machine gun and a weapon mount for a MBDA-BDL MILAN anti-tank missile must be included on the platform. The vehicle also needs to be capable of operations at high altitude without modifications. SP

Communication network for soldiers

[By **Lt General (Retd) P.C. Katoch**]

Communications for soldiers have undergone rapid changes. It is possible to deploy even independent sub-squad elements and coordinate their activity and firepower as they remain networked into the Battlefield Management System (BMS).

Modern intra-squad specialised radios offer effective communications within the squad and between combat teams, enabling effective operations. Digital information through hand-held computer displays provide unprecedented situational awareness and information combining integrated navigation, observation and orientation devices, optimising optronics, digital compass, GPS systems and laser rangefinders for combat orientation and coordination. Maps, sketches, overlays, aerial imagery, sensor data, intelligence information and standard reports are shared/generated. Soldiers can communicate with UAVs and call for air strikes and other remote controlled weapon platforms.

US Army uses the FBCB2 for battlefield management at brigade and below. The system is deployed in Stryker Brigades. It has demonstrated improvements in combat effectiveness and is leading the endeavour to digitise the US Army's battlefield for 21st Century Soldier. Important features include, near real time, accuracy of locations, automated icons and ubiquitous platforms — expanded range of operation, reduced communication time, coordinated manouvre capability by night/bad weather, faster decision making, better certainty, reduced fratricide and increased lethality. The Land Warrior programme was launched in 1994 to build initial capability and then a Land Warrior Stryker Interoperable.

The first interoperable systems were delivered in 2005 for testing and assessment after which it was decided to merge the programme with the Future Force Warrior to enable more efficient spiral development of new technologies and eventually develop the Ground Soldier System (GSS); the next generation of Land Warrior. 900 Land Warrior systems and 300 vehicle-integration kits were received by 2009. The system is modular and tailored for the soldier's task and mission. The unit commander decides the components of Land Warrior that will be deployed for a mission. The two main Land Warrior configurations are for the soldier and the squad leader. The soldier version includes a radio with short range inter-squad voice and data communications. A squad leader's system includes a multi-band inter- and intra-team SINCGARS compatible radio, a keyboard and hand-held flat panel display.

The British Army has the P-BISA – Bowman as BMS based on tactical and secure voice and data communications. Soldier modernisation is being progressed under the FIST (Future Infantry Soldier Technology) Program. Five main areas of capability identified are C4I (command, control, communications, computers and intelligence), lethality (weapons and sights), mobility (navigation, size, weight), survivability (clothing, stealth, body armour) and sustainability (logistical considerations).

Every infantry soldier may have FIST. Unit commanders will specify equipping tailored to operational and mission requirements. Soldiers will have a small encrypted radio that operates over a line-of-sight, short range to other members of his unit. The patrol leader's radio will communicate with forward operating base. The network system will reroute automatically to allow continuity of operation when a communications link is broken. Voice and data communications can be relayed to the soldier directly or via drone relay links from HQs, which have downloaded battlefield commands, information and images from forward observers, UAVs, remote sensors and other airborne or satellite surveillance assets. Soldiers will have a GPS, a dead reckoner and map displays to increase situational awareness. Helmet displays, wrist-mounted displays, hand-held and laptop computers and communications systems are being considered. 35,000 sets of FIST kits are expected to be procured and the systems will be deployed in the British Army, Royal Air Force Regiment and Royal Marines entering service between 2015 and 2020.

The French Army has deployed some 1,500 systems of T-BMS – Commander Battle in their Special Forces, Intelligence, Mountain Infantry, Parachute, Light Manouvre Brigade and French-German Brigades. Sub-systems include GIS Information System (vector, raster, elevation maps, synchronised 2D/3D view, navigation aids, etc), situational display services (tactical editor, military symbols, order of battle, ID cards), messaging services, mission preparatory services (map workshop – terrain study and interpretation of the battlefield, plans and orders preparation, itinerary planning, radio network configuration etc), mission executive services (situational awareness including blue force tracking, automated sharing, graphics and alerts, orders and reports generation, logistics status management), and after action review services (replay of operational sequence, recall/review tactical changes, messages received, etc). Israeli Defence Forces have the 'Hunter' system combining all C4I efforts in the ground forces to achieve full operability, synergising doctrine, manpower, planning, development and training. Platform integration includes the non-line of sight platforms (mortars, artillery, MLRS), manoeuvre platforms (tanks, Infantry, reconnaissance elements, Engineers, logistic elements, intelligence elements), airborne platforms and air defence. The project to integrate vari-

Users can trade chat messages with an operator on FBCB2, which enables warfighters in vehicles and aircraft to exchange messages – such as the location of an enemy or an improvised explosive device – and share a common operating picture of the battlefield

PHOTOGRAPH: US Army

Soldato Futuro:

With the signature of the contract for 92 preproduction sets, the Italian Future Soldier programme is developed by a team of five companies led by Selex Communications, the other four being Selex Galileo and Larimart both part of Finmeccanica as the prime contractor, Beretta and Aero Sekur.

Italy's Future Soldier system's pivotal element is the command and control system whose software is provided by Selex Comms and Selex Galileo and which runs on a Larimart computer using a standard man machine interface (MMI) 4-inch touch-screen, which allows the user to receive and send pre-formatted and free text messages and to show digital maps, navigation menus and GPS grids. The computer, together with batteries and other electronic components, such as the GPS, are installed on the soldier's back and linked through the so-called "e-vest" which contains all connecting cables, wireless links having been reduced to a minimum in order to minimise electromagnetic signature and jamming problems.

ous media for seamless connectivity is called Tiger. Future Tactical Combat Radio (FTCR) and Secure Cellular through IP routers and Gateways are part of the project.

The Indian Army is progressing with soldier modernisation through Projects BMS and F-INSAS. The BMS will comprise of a tactical hand-held computer with individual soldiers and tactical computers at battle group HQ and combat vehicles. Computers will be integrated employing application and database servers connected on a data enabled communication network. The system will enable generation of common operational picture by integrating inputs from all relevant sources within a battle group by integrated use of GIS and GPS. It will be a highly mobile system which is able to network itself by integration of components and provide a high data rate.

Communications should not interfere with legacy communication equipment, optimally utilise available bandwidth involving voice, data, video streaming and imageries and scalable to ensure its availability to all elements and range from being man-portable to retro-fitting in combat vehicles. The Army would seeking long ranges, high bandwidth data transmission facilitating messaging including voice mail, quickly deployable, self configuring and self healing networks, easy to customise, rolling coverage and interoperability. Focus will have to be on change in network topology, non-line of sight communications, spectrum management, network management systems, Quality of Service, security of communications, networks and storage, robustness and authentication. Compression technologies for passage of information and Software Defined Radios (SDRs) must be capitalised. The F-INSAS programme, which is to ensure a dramatic increase in lethality, survivability and mobility while making the infantry soldier "a self-contained fighting machine", is based on the Land Warrior system of the US Army and Future Soldier Programs of other nations. This is being developed in three phases. Phase 1 comprises weapons, body armour, clothing and individual equipment. Phase 2 is the Target Acquisition System. Phase 3 comprises Computer Sub-System, Radio Sub-System, Software and Software Integration. F-INSAS will provide the infantryman with latest weaponry, communication network and instant access to information on the battlefield. It will include a fully networked all-terrain, all-weather personal-equipment platform, enhanced firepower and mobility for the digitised battlefield. Soldiers will be equipped with mission-oriented equipment integrated with his buddy soldier team, the sub-unit, as also the overall C4I2 (command, control, communications, computers, information and intelligence) system. Fielding in all infantry and RR units is likely to be complete by 2020-25 or so.

Weight has always been a problem for the foot soldier. BAE Systems has developed a series of Body Wearable Antennas (BWA) which will reduce weight while providing high level of battlefield information and connectivity. BWA allows soldiers to communicate without conventional radio whip-antennas as the antennas are woven into the fibre of the uniform, technology allowing effective communication with improved agility. A concept demonstrator has already been developed to showcase the capability of this technology which transmits voice, video data (from a helmet-mounted camera) and GPS location via the same antenna. The Indian Army should be looking at such technologies. SP

The author is a veteran Lieutenant General of the Indian Army

PHOTOGRAPH: Selex Galileo

A seminar on Digitisation of Battlefield

Organised by SP Guide Publications in collaboration with the Centre for Land Warfare Studies (CLAWS), the seminar witnessed serving and retired senior Army officials and industry representatives deliberating and discussing on various aspects of battlefield, challenges and solutions

Major General (Retd) D.C. Katoch welcoming the participants and audience of the seminar; Special address by Lt General Narendra Singh, DCOAS (P&S), Indian Army and SP's CMD and Editor-in-Chief Jayant Baranwal expressing his vote of thanks.

[By **Sucheta Das Mohapatra**]

Both serving and retired Indian Army officers and representatives from the industry assembled in large numbers at the Hotel Oberoi in New Delhi on September 20, debating, deliberating and articulating on the technology requirements of the Indian Army. The occasion was a seminar on "Digitisation of Battlefield", organised by SP Guide Publications in collaboration with the Centre for Land Warfare Studies (CLAWS). The aim of the seminar was to highlight and review the magnitude and complexity of the programme and to outline the role the industry could play in assisting the Indian Army, but interestingly discussions about the flaws in the Defence Procurement Procedure, bureaucratic red tape and government's indifference towards private sector participation, ruled the roost.

The day-long seminar began with Major General (Retd) D.C. Katoch, Additional Director, CLAWS, giving his welcome remarks followed by the keynote address by Lt General Narendra Singh, Deputy Chief of Army Staff (Planning & Systems). Stating that the battlespace today is a composite whole and the challenges are enormous, Singh said that the Indian Army is marching slowly but surely towards a 21st century force.

Session I

The first session on "Techno-centric Future Battlefield" was chaired by Lt General (Retd) P.C. Katoch, Former Director General, Information System, Indian Army. Major General K.J. Singh, Additional Director General, Perspective Planning (ADG PP), Indian Army, gave a presentation on "Mechanised Forces in Future Conflict" and spoke on digitisation of armoured fighting vehicles (AFV) platforms; digitisation and its impact on mechanised forces, opportunities and challenges in transitioning to digitisation. Stating the advantages, he said that digitisation facilitates miniaturisation; integrates information and communication devices; redefine data/information storage capabilities; enhanced speed and accuracy; protection and sense of autonomy.

Brigadier R.K. Sharma, Deputy Director General (DDG), Project Management Office (PMO), Artillery Combat Command and Control System (ACCCS), Directorate General Artillery, said that in traditional systems there was disorientation and lack of control, whereas with technology there is increased intelligence and surveillance capability; enhanced weapon, lethality, rockets, precision guided munitions (PGMs), increased data transmission, situational awareness, etc. "The communication architecture is most important in artillery system: the capability of interfacing with legacy and future communication system; communication on the grid network and integrated with other C3I components, etc." He threw light on mini unmanned aerial vehicles (UAVs), surveillance radars, future infantry soldier as a system (F-INSAAS), etc and ended with the Sanskrit words *charaveti charaveti* (keep moving, keep moving).

Amit Dakshini, Vice President and Head of Business, Classic Stripes, spoke about "Camouflage and Concealment in the Digital Age" and gave out details about his company and its products. It was followed by a presentation by Pummy Chicker, Vice President and Head of Defence Business, Classic Strips, on the company's iPAT camouflage solution. "We need camouflage solution that are simple and can provide a cover to the soldier who is fighting. The key areas where iPAT camouflage can be used include watch towers, air strips, radars, buildings, bridges, stores, automation depots." Chicker said that iPAT can be customised for all types of surfaces.

"Signature Management" was the subject on which Naresh Ummat, Director Marketing, India Saab Barracuda, a company within Saab Technologies spoke about. He informed that every tank used in Afghanistan has Saab Barracuda camouflage and the company is trying to acquire as much sophistication as it could. "We have 100 per cent in-house research and development (R&D) and five per cent of the company's revenue is spent on R&D." The company has varied solutions like mobile camouflage, static camouflage, special application camouflage, force protection, engineering services, miniature UAVs, etc. Ummat said that the best way to avoid from being killed is to avoid from getting detected.

The question and answer session that followed witnessed burning deliberations on government's defence procurement procedure and the industry expressed its dissatisfaction with the present system and demanded a clear structured policy. Jayant Baranwal, Edi-

PHOTOGRAPHS: SP Guide Pubns






Session I: (Top row, left to right) Lt General (Retd) P.C. Katoch chairing the first session; Major General K.J. Singh, ADG PP addressing the seminar, Brigadier R.K. Sharma, DDG, PMO, ACCCS, DG Artillery, speaking on Artillery Command and Control System; (Above left to right) Brigadier Sanjay Ahuja, DDG(C), Directorate General Infantry; Amit Dakshini, Vice President and Head of Business, Classic Stripes; Pummy Chicker, Vice President and Head of Defence Business, Classic Stripes and (bottom row) Naresh Ummat of Saab India Technologies addressing the seminar.

(Opposite page)
Session II: (Top row, left to right) Lt General Sunit Kumar, DG, IS, Indian Army chaired the second session; Lt General (Retd) Devinder Kumar, former SO-in-C; Lt General Rajesh Pant, Commandant, MCTE; (Middle row) Arif Shouqi, Chief Defence Architect, Cisco Systems; Jay Shah, Senior Principal Engineer, DRS Tactical Systems and Air Vice Marshal (Retd) A.K. Tiwary.

Session III: (Middle row, right) Lt General Philip Campose, DG PP, Indian Army giving valedictory address; (Bottom row, left to right) Lt General (Retd) V.K. Kapoor giving the vote of thanks and Indian Army officials attending the seminar.

tor-in-Chief, *SP's M.A.I.* questioned whether we are taking modernisation to the next level we deserve and we aim at, to which the ADG (PP) replied that modernisation initiatives are being undertaken according to a structured plan, the long-term integrated perspective plan-2027 and there is the five-year defence plan which is further divided annually, though the Army works under a biannual plan cycle. "We are making considerable progress, though we have not achieved what we had aimed at." Singh recommended the industry to work on quality control. "Quality control should be the mantra."

The Editor-in-Chief of *SP's M.A.I.* asked Classic Stripes representatives whether the company is planning on collaborations with industries abroad. Dakshini said that the company is happy to partner with any efficient foreign player, but at present they are not looking at any collaboration. He further added that the company is confident that it can provide right quality standard. The chair said that the problem in DPP is because the think-tank and private industry are not coming together. An enraged Ashok Kannodia, Chairman and Managing Director, Precision Electronics Limited, queried, what is the government doing to promote private industry? "Nothing is impossible, we can do anything," he said and gave the example of the Indian Army's tactical communication system (TCS), wherein the Indian industry was involved. Similarly, there were other delegates from the industry who wanted to know what the way forward is? While the chair said that DPP is not conducive to private sector participation, but initiatives like in the case of TCS can be taken; Singh said that to totally condemn DPP would be wrong. "India is an elephant and it takes time to dance. It may take some time but effort is on." To this the industry reacted and said that for a business men, both government and user (Indian Army) are one entity and hence a mechanism needs to be created wherein industry and government work together.

Session II

The second session was on "Space and Ground-Based Assets" and was presided by Lt General Sunit Kumar, Director General, Information System, Indian Army. Lt General (Retd) Davinder Kumar, former Signal Officer-in-Chief spoke on "Challenges of a Digitised Battlefield" and said that it is centric to the network-centric paradigm. "The whole nation is the virtual battlefield today." He said that the challenges are unique and enormous, and are basically with regard to vision, policy and roadways. "We need to have a comprehensive roadmap, approved by the government and backed by budget." Lt General Rajesh Pant, Commandant, Military College of Telecommunication Engineering (MCTE), spoke on "Security of Network Systems", the vulnerabilities and solutions, many perspectives and emerging trends. The vulnerabilities he said

PHOTOGRAPHS: SP Guide Pubns




are lack of policy at user end which leads to insider threat, lack of physical security, weakness in the operating system, network management, etc. Arif Shouqi, Chief Defence Architect, Cisco Systems APJC spoke on "Tactical Communication System" and gave out an integrated view of the "Tactical C3I and Sub-System:"

Jay Shah, Senior Principal Engineer, DRS Tactical Systems, gave a presentation on the subject "Enhancing Battle Management on the Move". He beamed on the challenges faced in integration of technology and gave details of the Force XXI Battle Command Brigade (FBCB) programme, the battlefield management system (BMS) of the US Army. "The programme is evolving and DRS has provided the rugged hardware systems." The last to speak in the session was Air Vice Marshal (Retd) A.K. Tiwary on "UAVs and Unmanned Combat Aerial Vehicles (UCAVS)", the opportunities and threats, the problems and remedies. He emphasised on the need for firewalls as a remedy for vulnerabilities.

The Q&A session which followed witnessed discussions on different aspects of digitisation. Jayant Baranwal questioned on why aren't chips not being manufactured in India, while the country's technically skilled workforce is moving abroad, the chairperson said it is a strategic, systemic deficiency, but things are improving. "The problem is being addressed and it will be in the public domain when time comes." To another query by the *SP's M.A.I.* Editor-in-Chief whether DRS provides training as part of the solutions they offer and how would they impart training to Indian soldiers, which may vary from what they provide to US soldiers, Jay Shah said that they absolutely do it. They train the soldiers on the equipment and as of now the training is in English and if there is a request for any other language, they would be able to do it too. Replying to a question on Cisco's involvement with the Indian Army, Arif Shouqi said that they are involved in many programmes with the armed forces, for example TCS of Indian Army and Air Force Net.

Lt General Philip Compose, Director General, Perspective Planning, gave the valedictory address and said that future war will be multifaceted, probably short and swift, from radically similar to radically dissimilar, shifting emphasis from symmetric to asymmetric. "The need is to execute a single information system and development of independent custom-made integration system." The day ended with vote of thanks by Lt General (Retd) V.K. Kapoor, Editor, *SP's Land Forces*, who pointed out why isn't the Indian Army not able to get its cases through the Ministry the Defence (MoD). "The Indian Army has great resilience in fighting and is spectacular in defensive warfare. But where does it go when we can't get our cases through MoD." He further asked why the Indian Army cannot have a test bed like the US Army, though it is good at conceptualising. Kapoor ended with the statement that it is high time to think on investments and in fact give the industry funds for R&D. SP

Agni-IV successful flight

DRDO developed the 4,000-km range nuclear capable ballistic missile Agni-IV, was successfully flight-tested recently from Wheeler's Island in Odisha. This long-range missile propelled by composite rocket motor technology, was tested for its full capability.

The Agni-IV, launched from the road mobile launcher, reached the pre-defined target in about 20 minutes. The missile equipped with state-of-the-art avionics, fifth-generation on board computer and with distributed architecture has the latest features to correct and guide for inflight disturbances.

The most accurate ring laser gyro-based inertial navigation system (RINS) and supported by highly reliable redundant micro navigation system (MINGS), ensured the missile reach the target within two digit accuracy. The re-entry heat shield withstood temperatures of more than 3,000 degrees Celsius and made sure the avionics function normally with inside temperature less than 50 degree Celsius.

Dr Vijay Kumar Saraswat, Scientific Adviser to Raksha Mantri, Secretary Department of Defence R&D and Director General DRDO; Avinash Chander, Programme Director Agni, DS & CC R&D (MSS) reviewed the launch activities. Tessy Thomas, Project Director Agni-IV led the team of scientists during the operation. SP

Navistar Defense to upgrade 2,300 MRAPs to defend against evolving threats

Navistar Defense received a delivery order for up to $282 million to provide more than 2,300 survivability upgrade retrofit kits for International MaxxPro Dash mine resistant ambush protected (MRAP) vehicles.

The order from the US Army TACOM Life Cycle Management Command will upgrade MaxxPro Dash vehicles in theatre with additional protection in response to evolving threats in Afghanistan. The order also includes parts and service.

The MaxxPro family of vehicles was originally designed to accommodate rapid vehicle enhancements as threats evolved in theatre. Since 2007, the company has provided enhancements to both survivability and mobility through its work on its rolling chassis body swap, DXM independent suspension retrofit kits, armour kits and more.

Work for the survivability upgrade will be done in Afghanistan beginning in December 2012. The order is scheduled to be completed by July 2013. SP

BAE Systems debuts RG35 multi-role fighting vehicle

BAE Systems launched the latest 6x6 variant of the RG35 family of vehicles – the RG35 multi-purpose blast protected fighting vehicle – at the 2012 Africa Aerospace and Defence (AAD) exhibition.

The RG35 6x6 has an 8.5-tonne payload, a 12-cubic metre volume under armor, can seat up to 14 crew members, and carry light and medium remote controlled weapon stations. Like the 4x4 variant, the latest 6x6 variant includes independent suspension and a side mounted power-pack that can be replaced in less than one hour.

The RG35 family of vehicles can be deployed in many different roles and offers a choice of variants and configurations while maintaining 80 per cent vehicle commonality. RG35 combines the high levels of survivability of the RG31 mine protected vehicle with the tactical capability of an infantry fighting vehicle.

Integrated onto the vehicle at AAD was the TRT-B25 (tactical remote turret) also from Land Systems South Africa. SP

ITT Exelis capability in GPS interference, detection and geolocation

ITT Exelis (XLS) has announced a significant development in the field of GPS technology. To be known as the Exelis GPS interference, detection and geolocation (IDG), it will provide near real-time geolocation of intentional and unintentional GPS jamming sources through a network of sensors and advanced geolocation technology.

Mark Pisani, Vice President and General Manager, Precision Instruments and Positioning, Navigation and Timing Systems, ITT Exelis Geospatial Systems said "As GPS jamming devices become cheaper and more accessible, there is a greater need to protect military, commercial and industrial systems from a diverse range of threats. This technology is a major step forward in delivering actionable interference intelligence to an array of GPS users."

IDG technology is based upon a network of threat detection sensors that are networked to a centralised server running Exelis-developed geolocation algorithms. These sensors would be strategically located around high-risk areas, such as airports or utility grids, to instantaneously sense and triangulate the location of the jamming source. Should a threat be detected, users would receive pinpoint geolocation information and actionable intelligence in order to respond. SP

PHOTOGRAPHS: PIB, Navistar Defense, BAE Systems

LT GENERAL (RETD)
P.C. KATOCH

Beyond 1962

Before Defence Minister A.K. Anthony met his Chinese counterpart Liang Guanglie, New Delhi reportedly asked Beijing to limit its footprints in POK. Not that China will pay any heed but it is a beginning. It would have been equally good not to restrict Tibetan students during Guanlie's visit. Why bend backwards when Zhang Yan, Chinese Ambassador, tells an Indian journalist to "shut up" when asked why Chinese maps depicted entire J&K as Pakistani territory".

Guanglie's poser that China is concerned about US build up in Asia-Pacific should be seen in the light that once China deploys SLBMs' with second strike capability and deploys a carrier group in Hainan coupled with weapons in space and cyber capability to kill critical networks, US may find it a problem to defend Taiwan with China's AA/AD (anti-access/area-denial) strategy.

Forget the cliché that the West wants us to have a war with China. The fact is that when China wants to attack us it will. The hype about Guanglie wanting to upgrade military ties with us could be the perfect ruse, his visit more likely to assess first-hand the mood in India. The fact is that the PLA is getting more and more say in foreign policy, control of CCCP is shifting shortly to hardliner 'princelings' and the generation five years hence will be even more assertive.

The 1962 invasion was timed to coincide with the Cuban Missile Crisis. Next conflict with India maybe timed with another US engagement in the Middle East, attacking Taiwan. Or conflict in Asia-Pacific. PLA wanting good relations and the communist hierarchy not listening to them is bunkum; stapled visas issue, denying visa to Northern Army Commander, sportsmen from Arunachal etc. Surprise, deception and pre-emption have been hallmarks of Chinese strategy. The US strategy of 'Asia Pivot' was perhaps foreseen by China much earlier and counters established by way of North Korea, Pakistan, Iran, Libya, Syria, Sudan, Yemen and Somalia.

China's peace homilies are exposed with her training, arming and advising the Taliban how to fight in Afghanistan, supporting Pakistan's anti-India jihadi policy, providing sanctuaries/training/arming ULFA, supporting Nepalese Maoists and now arming our Northeast terrorist organisations including Maoists. China's increasing encirclement of India and claims to more Indian territory does not imply China will never attack us. We would be naive if we can't see through the gains that China will have through demilitarisation of Siachen while already sitting in POK (Gilgit-Baltistan), Aksai Chin and Shaksgam. It is foolish if we do not recognise multiple indicators that China and Pakistan want to balkanise India.

We fought a superior enemy in 1962 not because of its size but because we lacked strategic forethought, could not read the enemy, had poor political and military leadership and had an army that was armed, equipped and trained very poorly. What we must do is dispassionately appraise our state today with that of 1962. 21st century wars are quite different from those of 1962 era. Both China and Pakistan have been waging asymmetric wars against us for past several years and we are yet to develop deterrence even against irregular forces.

Any future conflict with China will not only witness an 'informised' PLA in action with optimum use of rapid reaction forces (including third dimension) and network-centric warfare but fully activated domains of space, cyberspace and the electromagnetic. Cyber attacks to kill critical networks and multiple missile and EMP attacks coupled with laser and plasma weapons can be expected. Use of tactical nuclear weapons should not be totally discounted. We may not have matching economy or military forces but we must focus on hitting the enemy critical areas conventionally, unconventionally and asymmetrically. SP

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

China's peace homilies are exposed with her training, arming and advising the Taliban how to fight in Afghanistan, supporting Pakistan's anti-India jihadi policy, providing sanctuaries/ training/ arming ULFA, supporting Nepalese Maoists and now arming our Northeast terrorist organisations including Maoists

PHOTOGRAPH: PIB

Eurocopter to supply four EC725 helicopters to Thailand

A contract has been signed between Eurocopter and the Royal Thai Air Force for the supply of four EC725 helicopters, configured for search and rescue missions. Air Marshal Paiboon Singhamat of the Royal Thai Air Force, and Olivier Lambert, Eurocopter's Senior Vice President for Sales and Customer Relations.

"This latest endorsement underscores the role of our EC725/EC225 family as the helicopters of reference in Asia for search & rescue," Lambert said. "It also marks a new step in Eurocopter's expansion of its ties with Thailand as the country moves ahead with the modernisation programmes for its helicopter fleets."

Deliveries of the EC725, the twin-engine tactical rotorcraft from Eurocopter's successful Cougar family, will be in 2015.

"This contract for the EC725 will greatly enhance the capabilities of the Royal Thai Air Force, giving us added reach and effectiveness in search and rescue missions," stated Air Marshal Paiboon Singhamat, Chairman of the Purchasing Committee.

The twin-engine EC725/EC225 rotary-wing aircraft family features high-performance navigation and mission systems, including a unique digital four-axis autopilot. Offering excellent flight autonomy, this powerful machine is also great for tactical transport

as it has a large cabin with seating for 25 persons. As a result, the EC725 military version and its EC225 civilian/parapublic variant have become the reference for civil and military search and rescue, offshore and passenger transport missions around the world.

Eurocopter already is a helicopter supplier in Thailand for military and law enforcement, having been selected for acquisitions by the Royal Thai Army and Royal Thai Police. SP

Indonesia takes delivery of two Airbus Military C295 aircraft

Indonesia has taken delivery of two Airbus Military C295 transport aircraft ordered in February this year. The aircraft are the first of nine to be delivered to the Indonesian Ministry of Defence under the terms of a contract signed by Airbus Military and PT Dirgantara Indonesia (PT DI).

The delivery took place in the Airbus Military San Pablo site in Seville, where the C295 final assembly line is located, at a ceremony attended by the Indonesian Vice Minister of Defence, Lt General (Retd) Sjafrie Sjamsoeddin, and Airbus Military Vice President Head of Program Light & Medium and Derivatives, Rafael Tentor.

The aircraft will be operated by the Indonesian Air Force and known in service as the CN295. It will perform a wide variety of roles including military, logistical, humanitarian and medical evacuation missions throughout the huge territory of Indonesia, which includes around 17,000 islands. The delivery of the ninth and last aircraft ordered is scheduled for summer 2014.

Rafael Tentor said: "The delivery of these aircraft is an important step in Airbus Military´s collaboration with the Indonesian aerospace industry and we greatly look forward to increasing our level of cooperation in the years ahead."

To date, Airbus Military has sold 114 C295s. After the entry in service of these aircraft there will be 88 C295s in operation in 15 countries all over the world. SP

Turbomeca renews contract with France, covering the engines powering helicopters

Turbomeca has renewed the MCO (global support package) contract, entitled MCO 2, with the French Government. The first contract, MCO 1, was signed in 2001 with the DGA.

Turbomeca undertakes, under the terms of this contract, to ensure availability of the 1,408 turbo-shaft engines equipping French Government helicopters for a 10-year period.

These helicopters are used for military and paragovernmental missions of the French Air Force, Army, Navy Police, Civil Security and DGA flight-testing.

The main services included in MCO 2 are overhaul and repair of engines and accessories; on-site technical support; supply of spares; implementation of a stock of fungible parts and accessories; user training in equipment maintenance and supply of maintenance documentation.

Olivier Andriès, Turbomeca Chairman and CEO, said "The MCO 1 contract was exemplary with maximised availability for our engines. We are proud of the renewed confidence of the French Government in our capability to support the fleets of the French Army and French Government services." SP

Eglin F-35 fleet at 20 and growing

The 20th Lockheed Martin F-35 Lightning II was delivered recently to Eglin Air Force Base, Florida, to support F-35 pilot and maintainer training taking place on the Emerald Coast.

The F-35B short takeoff/vertical landing (STOVL) jet is the fourteenth F-35 to ferry there this year. BF-15 is now assigned to the 2nd Marine Aircraft Wing's Marine Fighter/Attack Training Squadron 501 with the host 33d Fighter Wing. SP

PHOTOGRAPHS: Eurocopter, Airbus Military

Predator B demonstrates automatic takeoff and landing capability

General Atomics Aeronautical Systems, Inc. announced that its Predator B/MQ-9 Reaper RPA has successfully completed 106 full-stop automatic takeoff and landing capability (ATLC) landings, a first for the multi-mission aircraft.

The milestone was first achieved with four ATLC landings on June 27 at the company's Gray Butte Flight Operations Facility in Palmdale, California.

"We are pleased that all landings have been textbook in execution with no issues," said Frank Pace, President, Aircraft Systems Group, GA-ASI. "The addition of ATLC will greatly reduce the land incident rate and the training expenditures for our customers."

During the landings, the aircraft tracked the centerline, decelerated smoothly, and applied reverse thrust and full brakes at the appropriate ground speeds to a complete stop.

Envelope expansion for takeoffs and landings at higher wind limits, maximum aircraft gross weight, differential GPS (dGPS) enhancements, and terrain avoidance with adjustable glideslope has now begun.

The design of the ATLC system was leveraged directly from the highly successful and proven Automatic Takeoff and Landing System (ATLS) developed by GA-ASI for its Gray Eagle unmanned aircraft system, which has reached a record of 10,000-plus successful automatic takeoff and landings.

A technologically advanced derivative of the combat-proven predator, the multi-mission Predator B provides essential situational awareness for warfighters, excelling in combat missions focusing on intelligence, surveillance, and reconnaissance (ISR), precision strike on time-sensitive targets, close air support, laser designation and illumination, signals intelligence, forward air control, convoy protection, improvised explosive device (IED) detection, and bomb damage assessment. SP

APKWS to be integrated on unmanned aircraft

For the first time, the Advanced Precision Kill Weapon System (APKWS) will be integrated onto an unmanned aerial vehicle, BAE Systems has announced. The company, which designed and manufactures the guidance section of the laser-guided rocket, was recently awarded a US Navy contract to add the APKWS onto the MQ-8B Fire Scout UAV.

"APKWS' precision firepower will soon be available on a UAV platform," said Roy Rumbaugh, APKWS programme manager at BAE Systems. "With BAE Systems' innovative technologies, the Fire Scout will engage targets on land or at sea with laser-guided accuracy while keeping our warfighters out of harm's way."

The system is being integrated onto the Fire Scout in response to an urgent operational need and is being prepared for rapid deployment. BAE Systems will support this rapid APKWS integration by performing system analyses and modelling based on its high fidelity, integrated flight simulator.

"This expansion onto unmanned aircraft is the next exciting step after demonstrating performance on both rotary and fixed-wing manned aircraft," Rumbaugh said.

Unmanned aircraft can operate in regimes that are considered too hazardous for manned aircraft and dramatically expand the types of missions that can be conducted from surface ships. The APKWS is the US Government's only programme of record for the semi-active laser-guided 2.75-inch rocket. SP

DARPA selects Rockwell Collins for cyber security programme

Rockwell Collins has been selected as the prime contractor for the unmanned air vehicle portion of the high-assurance cyber military systems (HACMS) programme sponsored by the Defense Advanced Research Projects Agency (DARPA). The four-and-half-year contract calls for Rockwell Collins to develop cyber security solutions for unmanned air vehicles, with applicability to other network-enabled military vehicles.

John Borghese, Vice President of the Rockwell Collins Advanced Technology Center, said the company's expertise in security certification of complex systems and the use of formal methods was a key in acquiring the contract. Formal methods are the application of rigorous mathematical reasoning and advanced analysis tools to prove relevant properties about a system.

"Making sure software is designed correctly from the beginning is paramount to guarantee the security of military computing platforms," added Borghese.

Rockwell Collins is leading a team that includes Boeing, Galois, National ICT Australia (NICTA), and the University of Minnesota.

The goal of the HACMS programme is to create technology for the construction of high-assurance cyber-physical systems. These systems must be functionally correct and satisfy appropriate safety and security properties. HACMS will adopt a clean-slate, formal methods-based approach to enable semi-automated code synthesis from executable, formal specifications. SP

PHOTOGRAPHS: GA-AS, BAE Systems

Defence Minister A.K. Antony addressing the 31st Annual Coast Guard Commanders' Conference in New Delhi on September 20, 2012. Defence Secretary Shashikant Sharma and Director General Coast Guard, Vice Admiral M.P. Muralidharan are also seen.

PHOTOGRAPH: PIB

Antony inaugurates 31st Coast Guard Commanders' Conference

Defence Minister A.K. Antony has said that the role of fishing community is vital in strengthening of coastal security mechanism. Inaugurating the three-day 31st Annual Coast Guard Commanders' Conference in New Delhi, he said that community interaction programme is to be given impetus in order to sensitise the fishing community on the prevailing security situation and to develop them to be the "eyes and ears" for intelligence gathering.

Highlighting the expansion and strengthening of the Coast Guard, he said, the Coast Guard Development Plan has been approved and adequate funds have been provided. "The service is on course to double its assets and capacity building in the next four-five years. A Coast Guard Regional Headquarters (North East) and five Coast Guard Stations have been established. By the end of the current financial year, another six sanctioned stations are also likely to be established". The Phase-I of the Coastal Surveillance Network project is nearing completion and the system will indeed provide additional measures towards electronic surveillance.

"We aim to achieve near-gap-free electronic surveillance along our coasts and towards this end, Phase-II of the project will be started soon after the completion of the first phase." He commended all the Coast Guard personnel for their commitment, courage and involvement while discharging their duties and said "maritime security infrastructure, as it stands today, is quite robust and capable of handling various security challenges at sea".

The Director General, Indian Coast Guard, Vice Admiral M.P. Muralidharan, highlighted the progress made by the Coast Guard in acquisition cases of various types of ships and aircrafts, development of infrastructure, induction of manpower in the service and enhanced efforts for surveillance of the coast and the sea areas. One pollution control vessel, four inshore patrol vessels, two air cushion vessels, one interceptor boat and four interceptor crafts have been inducted into the service. He said that the Coast Guard aims to achieve a force level of 150 surface platforms by the year 2018.

One Dornier Squadron has been established at Porbandar since the last Commanders` Conference. Establishing of two Air Stations, five Air Enclaves and four Dornier Squadrons has also been prioritised.

The conference will help the Coast Guard Commanders in analysis of the operational capabilities, deployment of forces and preparations for the future challenges. It will also provide an opportunity to the Commanders to introspect the standards achieved in the wide spectrum of Coast Guard responsibilities. SP

Saab setting up new markets

Defence and security company Saab is strengthening its business operations by setting up two new market areas – Europe & Greater Middle East as well as Nordic & Baltic – both starting January 1, 2013. The market areas will be headed by Tomas Samuelsson and Anders Carp respectively. Tomas Samuelsson will hence leave his present position as Senior Vice President and Head of Business Area Dynamics at the same time and Anders Carp will leave his position as Head of Region Middle East.

In order to create profitable and long-term growth, Saab has placed clear focus on increasing its international presence and its sales outside Sweden. The expansion is directed at markets with strong demand and with the right conditions for profitable growth. With the two new additional market areas, Saab takes the final step in the strategy to establishing a clearer local focus and presence.

These markets have for many years been strategically important for Saab and will continue to be so in the foreseeable future. Market Area Europe & Greater Middle East will have its head office in London, UK and Market Area Nordic & Baltic will have its head office in Stockholm, Sweden.

"We are now building further on our success with previous market areas and establish an even stronger international foothold outside the Swedish borders. At the same time I can announce that we have chosen Tomas Samuelsson and Anders Carp to head the two new operations," said Saab's President and CEO Håkan Buskhe.

At the present time, Tomas Samuelsson and Anders Carp's successors are not known but recruitment processes have begun. The future Head of Business Area Dynamics will, however, continue to be located in Karlskoga, Sweden.

In India, Saab is headed by Lars-Olof Lindgren. SP

Raytheon joins hand with Monument Capital Group

Raytheon has entered into a distribution agreement with Monument Capital Group (MCG). Under the agreement, MCG will engage potential Indian partners to provide mass notification and non-lethal systems to solve challenging security problems and emerging safety requirements. Applications of these products include high-value asset and critical infrastructure security, protection against terrorism and piracy, explosives detection, and innovative emergency response solutions for natural disaster management. Security solutions are aimed at enhancing border, port, maritime and aviation security.

"Our agreement with MCG will help to expand Raytheon's global reach in homeland security, national defence and commercial security markets," said Mike Booen, Raytheon Missile Systems' vice president of Advanced Security and Directed Energy Systems. "The agreement also enables our customers to set up local operations for full services, installation and maintenance of cutting-edge security technology products, ensuring customers receive full and long-term value from their technology purchases."

Raytheon will leverage MCG's prospective strategic partnerships with leading international companies in high-growth security markets to provide indigenous country full-service support and business expertise. Customers will have access to new security technologies that safeguard security in civil, defence and critical infrastructure, and increase emergency and disaster management capabilities.

"For nearly a century, Raytheon has created an international brand known for its leadership in technology and innovation," said Robert Dunn, MCG Managing Director. "We look forward to working with the company to secure opportunities for its products in the global security market." SP

Atlas Elektronik now in Canada

The Atlas Elektronik Group, a worldwide-acting company for maritime defence electronics, has founded a subsidiary in Canada. Atlas Elektronik Canada Ltd has been set up to establish a strong and reliable partnership with the Royal Canadian Navy and Canadian authorities. As potential main contractor, Atlas Elektronik Canada will provide Atlas products and solutions for current and future Canadian users.

For decades, now Atlas has been offering a broad range of sonars and sensors, command and control systems for submarines and surface combatants, heavyweight torpedoes and corresponding countermeasures, mine warfare systems, unmanned underwater vehicles, as well as coastal surveillance systems. To round off its broad palette, Atlas offers a comprehensive range of support services, both before and after delivery of the products.

Dieter Rottsieper and Volker Paltzo, Managing Directors of the Atlas Elektronik Group, stated: "We believe in a strong demand for Atlas products and capabilities to support Royal Canadian Navy. We are happy to extend our presence in Canada and to establish a subsidiary. We look forward to creating new partnerships with Canadian authorities and companies".

Rick Gerbrecht, Head of Atlas Elektronik Canada said: "The Atlas Elektronik Group possesses a proud heritage in serving navies with quality-assured products delivered within a firm fixed-price environment. Our product portfolio will offer the Royal Canadian Navy both 'non-orphan' and mature capability into either warships or crafts of opportunity. We are positioned to deliver proven and leading solutions in areas such as mine detection and disposal, sonar, command and control in support of the Royal Canadian Navy and the National Shipbuilding as well as Procurement Strategy effort." SP

Denel, Airbus sign agreement

Denel and Airbus Military have signed an agreement with revised terms for manufacturing aircraft components on the A400M, in a development that will contribute significantly to the financial turnaround of the South African company.

The renegotiated agreement was signed recently at a function attended by the Public Enterprises Minister Malusi Gigaba, Senior Vice President of Airbus Military Antonio Rodriguez-Barberán and the Chairman of the Board of Denel SOC, N.R. Zoli Kunene.

Gigaba said the new agreement demonstrated the confidence of major global aerospace companies in the abilities of the local manufacturing sector. "The relationship between Airbus and Denel takes us to another step further towards the growth of a fully-fledged South African aerospace industry."

Group Chief Executive of Denel SOC Riaz Saloojee said the relationship with Airbus positions Denel Aerostructures (DAe) as an established supplier of high-tech aircraft parts and strengthens South Africa's position in the global aerospace industry.

Airbus Military Senior Vice President Commercial, Antonio Rodriguez-Barberan, said the agreement "re-affirmed Airbus Military's commitment to South Africa and its industrial partners and suppliers in the country.

"With production of the A400M ramping up ahead of the first deliveries next year, it is comforting to know that we have a dependable partner in DAe which can be relied upon to provide top quality work, on time and within budget," he said. SP

US Ambassador's killing in Libya, a security breach

Media reports have cited that the killings of the US ambassador to Libya and three of his staff were likely to have been the result of a serious and continuing security breach. US officials are of the view that the attack was planned, but Chris Stevens had been back in the country only a short while and the details of his visit to Benghazi, where he and his staff died, were meant to be confidential.

Added to this, it is reported that sensitive documents have gone missing from the US Consulate in Benghazi and the supposedly secret location of the "safe house" in the city, where the staff had retreated, came under sustained mortar attack. Other such refuges across the country are no longer deemed "safe". SP

Security breach at ISRO, woman posing as scientist arrested

A 41-year-old woman created a scare after she breached layers of security to gain entry into the headquarters of the Indian Space Research Organisation in Bangalore using a fake identity before being arrested, ISRO sources said.

Presenting the fake ID, Buela M. Sam from Ahmedabad stayed at the ISRO Satellite Centre guest-house at Jeevanbheema Nagar in Bangalore. for two days from September 19. Two days later, she also gained entry into the high-security Anthariksh Bhavan, the ISRO headquarters, they said.

ISRO sources said she may not have swiped her card to enter as requried. In all probability, she may have just waved her card to the Central Industrial Security Force (CISF) personnel, who apparently allowed her in around 11 a.m. on September 21.

She roamed around in the building premises for four hours before some ISRO staff grew suspicious and reported the matter to the security, they said.

CISF personnel questioned her but her answers were totally inconsistent. Intelligence Bureau sleuths questioned her the next day but could not get consistent response from her.

Her fake card said she worked at "ISRO Mangalore", while the space agency has no unit there.

Inquiries revealed that she is from Ahmedabad, from where her husband, Alexander, was summoned and questioned. During interrogation, he claimed that his wife is "mentally ill" and the family was unaware that she had travelled to Bangalore, the sources said.

Key question as to how she gained entry using a fake card remains unanswered. City Police Commissioner Jyotiprakash Mirji said she was arrested after she attempted to enter the ISRO headquarters on the pretext of attending a conference.

CISF personnel at the gate grew suspicious when the woman enquired about the conference, which was not scheduled for the day. After a preliminary inquiry, she was handed over to police. SP

Nuke protestors knock on wall, security fails to notice

In a recent incident in the US, nuclear protestors hammered on the wall of America's premier storage vault for nuclear-weapons grade uranium in pitch-darkness, but security guards thought it was the workmen working late night.

Prior to that, a perimeter camera had caught an image of intruders — not workmen — breaching an eight-foot-high security fence around the sensitive facility outside Knoxville, Tennessee. The guard operating the camera missed it and another camera was out of order.

But what has worried US security authorities is that anyone can get in and do damage to the high enriched uranium materials facility, a half-billion-dollar vault that stores the makings of more than 10,000 nuclear bombs. Instead, it was a group of three peace activists, including an 82-year-old nun, armed only with flashlights, binoculars, bolt cutters, bread, flowers, a Bible, and several hammers.

The casual and relatively swift penetration of the site's defences on July 28 by the activists has provoked their felony indictment on federal charges. SP

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