INDIA'S CRUISE MISSILE : A VIEWPOINT PAGE 5

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Indian Navy's INS Sindhurakshak catches fire, 18 feared dead

A massive fire took place after a series of explosion onboard INS Sindhurakshak, a Kilo class submarine of the Indian Navy, shortly after midnight on August 14, 2013. The submarine sank and though fire tenders from the naval dockyard as well as the Mumbai Fire Brigade were immediately pressed into action, all 18 trapped personnel onboard at the time of the accident could not been sighted. A board of inquiry has been constituted to probe the reason behind the blasts and it is expected to submit its report within four weeks.

According to the Navy, diving efforts are being hampered because of poor visibility inside the submarine, restricted spaces and most of the equipment displaced from their original location. The heat of the explosion has melted parts of the internal hull deforming the submarine hatches and preventing access to compartments. Heavy duty pumps are being used to pump out the water from the submarine. There has been large scale ingress of sea water into the submarine due to the explosion. Diving and salvage operations are continuing round the clock.

The Chief of Naval Staff, Admiral D.K. Joshi briefing the Defence Minister A. K. Antony about the sinking of INS Sindhurakshak

PHOTOGRAPH: PIB

INS Sindhurakshak was commissioned in 1997 as part of a deal with Russia in the early 1980s. It was the ninth of the 10 Sindhugosh class diesel-electric vessels that the Navy has in its submarine fleet. In 2010, a fire on the submarine had killed a sailor while it was docked in Visakhapatnam, Andhra Pradesh. The submarine had undergone a major refit in Russia less than a year ago. The sinking of the submarine is a huge setback to the modernisation drive of the Indian Navy.

Defence Minister A.K. Antony described the incident as the greatest tragedy in recent times. Chief of the Naval Staff Admiral D.K. Joshi said that the three sailors, who were onboard and had jumped to safety, are not in a position to make any statements. SP

Cover:
INS Vikrant is the first ever aircraft carrier to be designed by the Directorate of Naval Design of the Indian Navy, the first warship to be built by CSL and the first warship to be built entirely using indigenously produced steel by SAIL.

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Strong response to Pakistan is urgent

The recent killing of five Indian soldiers by Pakistanis, irrespective of whether they were army regulars or non-state actors dressed in army fatigues, is highly condemnable, calling for severe action from India. The demand for a strong response from India is growing and rightly so, even as Pakistan continues to not only violate the ceasefire along the line of control, but also has a major hand in spawning cross-border terrorism.

The Prime Minister, Dr Manmohan Singh in his address to the Nation has said for relations with Pakistan to improve, it is essential that they prevent the use of their territory and territory under their control for any anti-India activity. He said that all possible steps will be taken to prevent incidents of the dastardly attack on our Jawans on the line of control with Pakistan.

While welcoming the Prime Minister's statement, we believe that India's response has to be indeed strong and on different fronts – diplomatic, trade and even military. Pakistan is a 'failed state' and it is keen on creating tensions not just on the Indian border but also in the mainland. Any peace and progress talks with Pakistan has to keep in mind the ground reality – how the neighbour has been covertly aiding cross-border terrorism. 26/11 is a grim reminder of that.

The international community is calling for resolving peacefully the hostilities, even though it knows that Pakistan is a 'rogue state' as Lt General (Retd) P.C. Katoch calls. In his forthright column, he has said the Indian Army needs to immediately review its counter-infiltration operating procedure on the LoC. In all likelihood commanders on ground are constrained by an overwhelming urge to look for signal from the brass before taking any tough step. They will have to revisit the old adage: what is militarily desirable is not necessarily politically correct. They must know that mixing political expediency with military action is suicidal. Only then Indian Army officers can regain the confidence of its men and thereby the Indian citizens.

India has the might to deal with any adverse situation. The armed forces are fighting fit and they are being equipped with the latest of equipment, technologies. As we write, we have the news of launch of Vikrant, India's first indigenous aircraft carrier (IAC). The Defence Minister Antony while congratulating the effort has said that we must continue the process of strengthening indigenous capability towards securing our maritime interests.

Inducting the most modern equipment, whether indigenous or from overseas, is key, and this brings us to the current debate on the basic trainer aircraft (BTA). Air Marshal (Retd) Anil Chopra mentions that the entire procurement process is handled by the Ministry of Defence with the support of the Air Headquarters and that the procurement procedures are followed meticulously in a transparent manner. Any insinuation of dilutions of specifications to favour a particular vendor or aircraft, are baseless and incorrect.

We need to move in the positive direction as we celebrate the 67th Independence Day.

Happy Independence Day !

Jayant Baranwal
Publisher & Editor-in-Chief

LT GENERAL (RETD)
P.C. KATOCH

India's cruise missile

BrahMos, the fastest cruise missile in operation in the world that travels at speeds of Mach 2.8 to 3.0, is an Indo-Russian joint venture that has been making headlines periodically. The land, ship-launched versions are already in service with the Indian military and the air-launched version would enter service shortly. On March 20, 2013, India achieved the stupendous feat of test firing the BrahMos supersonic cruise missile underwater. The submarine-launched variant of BrahMos was test fired successfully for the first time from a submerged pontoon near Visakhapatnam off the coast of Bay of Bengal. This was the first vertical launch of a supersonic missile from a submerged platform. The missile can be launched from a depth of 50 metres.

What India reportedly wanted for its armed forces was a medium-range cruise missile of 550-625 km range but Russia agreed to the 300 km range BrahMos complying with the Missile Technology Control Regime (MTCR). Present, the BrahMos-II is also under development. This is a hypersonic cruise missile with an estimated range of of 290 km again in accordance with the MTCR. However, this will have a speed of Mach 7, double the speed of the current BrahMos missile, becoming the fastest hypersonic missile in the world. It was quite apparent to India that to meet the operational need of a medium-range cruise missile, it will have to go the indigenous route, especially when the core technology of the BrahMos has not fully been shared by Russia, which is the norm with developed nations.

Significantly, Pakistan has already developed two versions of cruise missiles; the Ra'ad and Babur that has a range of 700 km, reverse engineering unexploded US Tomahawk cruise missiles lost over its territory in 1998, besides full assistance from China and North Korea through its overall missile development programme. They can carry both conventional and nuclear warheads. The air launched Ra'ad (Hatf-8) was tested for the fourth time on May 31, 2013, and will be introduced into service in the near future.

PHOTOGRAPH: PIB

It was quite apparent that to meet the operational need of a medium range cruise missile, India will have to go the indigenous route, especially when the core technology of the BrahMos has not fully been shared by Russia, which is the norm with developed nations

To this end, India's development of the indigenous medium-range cruise missile 'Nirbhay' is somewhat slow, though it does not mean it cannot catch up. The maiden test of Nirbhaya on March 12, 2013, had to be aborted after 20 minutes of flight since it had started deviating from its course. Originally, the maiden test was scheduled in late 2012, but was delayed because of technical reasons. Once operational, not only will the Nirbhay boost the strike range of India's cruise missiles, more significantly it will provide a terrific boost to India's nuclear triad especially in boosting our second strike capability through the combined punch of the submarine-launched K-15 ballistic missiles and Nirbhay cruise missiles. Nirbhay is designed to fly at an altitude of 500-1,000 metres at a speed of 0.67 Mach and is likely to have multiple warheads. It can carry both conventional and nuclear warheads, latter to be carried by Su-30MKI fighter aircraft while conventional warheads of 450 kg will be deployed on the Jaguar aircraft and Rafale MMRCA with a range of 750 km for use against land and surface targets at sea. The central error of probability is assessed to be around 20 metres but it should be possible to improve to pinpoint hits through better terminal guidance.

The naval version will have longer strike range for effective second strike capability in case of nuclear war, and will be booster equipped. The naval version will be capable of carrying a 250 kg nuclear warhead and have a strike range of 1,200 km travelling at a speed of Mach 07. It is obvious that the Nirbhay must progress from subsonic to supersonic and eventually to hypersonic versions to make it invincible. To this end, India has never followed the reverse engineering route as is diligently done by China and Pakistan, enabling leapfrogging of technology. It is time we ponder over it. SP

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

Indigenous aircraft carrier – A crowning glory

PHOTOGRAPHS: PIB

[By **Rear Admiral (Retd) Sushil Ramsay**]

The glorious moment in the annals of India's indigenous shipbuilding industry arrived amidst chanting of verses from the Vedas, at Cochin Shipyard Limited (CSL), Kochi on August 12, 2013, when indigenous aircraft carrier (IAC) was launched by Elizabeth Antony, wife of Defence Minister, A.K. Antony. In keeping with the glorious tradition of honouring its former illustrious warships, IAC was appropriately christened as Vikrant, India's first aircraft carrier which was decommissioned on January 31, 1997. For a path breaking project such as IAC no other name would have been appropriate but the 'Vikrant' which in Sanskrit means 'courageous' or 'victorious'.

The traditional ceremony resplendent with graceful pomp and fervour was presided over by Antony, and witnessed by the Minister for Shipping, G.K. Vasan, Admiral D.K. Joshi, the Chief of the Naval Staff, Vice Admiral Shekhar Sinha, the Flag Officer Commanding-in-Chief, Western Naval Command, Vice Admiral Satish Soni, the Flag Officer Commanding-in-Chief, Southern Naval Command, Commodore (Retd) K. Subramaniam, Chairman and Managing Director, CSL and other officials from the Ministries of Defence and Shipping. Also present on the occasion were numerous naval officers, shipyard staff and workers and the officials from the Steel Authority of India Limited (SAIL), the manufacturers of the indigenous warship grade steel.

The formidable profile of hull structure, imposing ramp for short take-off but arrested recovery (STOBAR) of 37,500 tonne-strong Vikrant proudly demonstrated the rare indigenous design and shipbuilding capabilities that India has acquired on its own. The designed length of the ship is 260 m and breadth of 60 m. Over 80 per cent of the structure, containing about 2,300 compartments has been fabricated, over 75 per cent has been erected, all the major machinery, such as the two LM2500 gas turbines developing a total power of 80 MW, the diesel alternators capable of producing about 24 MW and the main gear box have been fitted.

Defence Minister described the occasion as momentous and said, "Today's launching of the IAC marks just the first step in a long journey, but at the same time, an important one." He said it was indeed a proud moment for the country to witness our efforts at achieving self-reliance in the field of warship design and construc-

(Opposite page, far left) A.K. Antony, Elizabeth Antony, the Union Minister for Shipping G.K. Vasan and the Chief of Naval Staff Admiral D.K. Joshi, at the launch of the India's first indigenous aircraft carrier (IAC), at Kochi on August 12, 2013; (right top) The Defence Minister addressing at the launch of the IAC. (right bottom) A. K. Antony, Elizabeth Antony, G.K. Vasan, Admiral D.K. Joshi, Chitra Joshi, the CMD, Cochin Shipyard Limited, Commodore K. Subramaniam and the Acting Secretary, Shipping, Vijay Chibber at the launch.

tion, as only a very few advanced countries in the world possess the capability to design and build aircraft carriers.

Vikrant is the first ever aircraft carrier to be designed by the Directorate of Naval Design of the Indian Navy, the first warship to be built by CSL and the first warship to be built entirely using indigenously produced steel by SAIL. The construction of the ship is a truly pan Indian effort with active participation of private and public enterprises. The main switch board, steering gear and water tight hatches have been manufactured by Larsen and Toubro (L&T); the high capacity air conditioning and refrigeration systems have been manufactured by Kirloskars; most pumps have been supplied by Best and Crompton; Bharat Heavy Engineering Limited is supplying the integrated platform management system; gear box is supplied by Elecon in Gujarat; the tens of thousands of electrical cable is supplied by Nicco industries, Kolkata; the ship's anchor chain cable is manufactured in Kolkata.

Vikrant will be capable of operating an aircraft mix of the Russian MiG-29K and LCA (Navy) fighters being developed by Hindustan Aeronautics Ltd (HAL). Its helicopter component will include the Kamov 31 and the indigenously developed advanced light helicopters (ALH). The long range, surface to air missile systems with multi-function radar and close-in weapon system will form the protective suite of the ship.

An indigenous design and development of an aircraft carrier had been in the works of Directorate of Naval Design since the late 1970s. Initially the project was obliquely designated as the air defence ship to thwart possible hostility from the Indian Air Force. Since the induction of INS Vikrant in 1965, Indian Navy has operated only the off-the-shelf procured aircraft carriers duly modified and refurbished depending upon availability of fixed-wing aircraft to operate from its decks. In parallel the mission to design and develop indigenous aircraft carrier was relentlessly pursued. Phase I launch of re-christened Vikrant has turned a new leaf. Henceforth, India would not have to look to import options, other than collaborations and joint venture arrangements for transfer of technology, consultancies in specific areas where ab-initio research and development would not be cost effective and cause delays. However, the dependency for the carrier borne fighter and reconnaissance aircraft, weapon systems, controls, auxiliary and other niche areas would be unavoidable.

Vikrant will now enter the most vital Phase II of outfitting of the ship, fitment of various weapons and sensors, integration of the gigantic propulsion system and integration of the aircraft complex, with the assistance from Nevskii Design Bureau, St. Petersburg, Russia. The ship will then undergo extensive sea trials and the crucial aviation trials before she is operationally inducted by end 2018. Now it can safely be assumed that the imponderables in the programme have been effectively overcome. Commissioning of Vikramaditya by the end of the year should also provide desired impetus in the operationalisation of Vikrant. Two stupendous achievements accomplished two days apart; Arihant getting critical and launch of Vikrant, both heralding grand entry of India into two elitist groups of nuclear submarines and aircraft carriers; indeed a matter of national pride. SP

PHOTOGRAPH: Indian Navy

India celebrates 66 years of Independence

[By **R. Chandrakanth**]

It was at the Red Fort in Delhi, the first Indian Prime Minister Pandit Jawaharlal Nehru unfurled India's national flag on August 15, 1947, celebrating freedom from British rule. Since then, Independence Day festivities have been synonymous with the Prime Minister hoisting the tricolour (national flag) at the Red Fort and the nation paying homage to all those who laid down their lives winning independence for us.

This year too, India celebrated its 67th Independence Day on August 15 with great fervour, but amidst tight security arrangements. Reminding the nation of the sacrifices of soldiers and others, the President of India, Pranab Mukherjee while delivering the "Address to the Nation" on the eve of Independence Day said, "I applaud the courage and heroism of our security and armed forces who maintain eternal vigilance, and pay homage to those who have made the supreme sacrifice of the most precious gift of life in the service of the motherland."

"We have seen in the recent past grave challenges to our security, internal as well as external. The barbaric face of Maoist violence in Chhattisgarh led to a loss of many innocent lives. Despite India's consistent efforts to build friendly relations with neighbours, there have been tensions on the border and repeated violations of the ceasefire on the line of control, leading to tragic loss of lives. Our commitment to peace is unfailing but even our patience has limits. All steps necessary to ensure internal security and protect the territorial integrity of the nation will be taken."

Delivering his Independence Day address, Prime Minister Manmohan Singh, said, "Today is certainly a day of joy for us. But on this celebration of independence we also feel pain in our hearts that our brothers and sisters in Uttarakhand had to face devastation about two months back. Our deepest sympathies are with all the families that suffered loss of life or property. I want to assure the people of Uttarakhand today that the whole country stands with them in this moment of crisis. Our government is working with all the resources at its command to rehabilitate those whose houses have been destroyed and rebuild damaged infrastructure.

"Our Army, paramilitary forces and numerous officers and staff of the Central and state governments worked in difficult conditions in partnership with the common people to perform an outstanding task in providing relief to those who were stranded. We especially pay homage to the officers and men of the Air Force, Indo-Tibetan Border Police (ITBP) and National Disaster Response Force (NDRF) who sacrificed their lives to save others.

"We are also deeply pained that we lost the submarine, INS Sindurakshak in an accident yesterday. Eighteen brave sailors are feared to have lost their lives. The accident is all the more painful because the Navy had recently achieved two major successes in the form of its first nuclear submarine, INS Arihant and the aircraft carrier, INS Vikrant. We pay homage to the brave hearts we have lost. We also congratulate the Navy on its successes."

"Countries today are more integrated with each other than ever before. We have endeavoured that our foreign policy exploits this fully to India's benefit. In the last nine years, there has been a continuous improvement in our relations with the major powers of the world. Our 'Look East' policy in respect of 10 ASEAN countries in East and South-East Asia has borne good results, especially in economic matters. We have also strived for friendship with our neighbouring countries. However, for relations with Pakistan to improve, it is essential that they prevent the use of their territory and territory under their control for any anti-India activity.

"There has been improvement in the area of national security also. Despite some worrisome communal incidents in 2012 and this year, the last nine years have been good for communal harmony. There has been a reduction in terrorist and naxal violence also.

PHOTOGRAPH: PIB

However, the area of national security calls for constant vigil. We have not been successful in preventing naxal attacks that happen from time to time. The naxal violence in Chhatisgarh on 25 May was a frontal attack on our democracy. Recently, there was a dastardly attack on our Jawans on the line of control with Pakistan. We will take all possible steps to prevent such incidents in the future."

Singh said that every decade after independence has witnessed major changes in our country and we need to think today what changes we would like to see in the decade ahead.

"If in the future we can achieve the same kind of progress as in the last decade, the day is not far off when India will be rid of poverty, hunger, disease and ignorance. Our India will be prosperous and all its citizens will be equal partners in this prosperity, irrespective of their religion, caste, region or language. We will also need to build an environment of political stability, social cohesion and security for this to happen." SP

Nuclear reactor on INS Arihant goes critical

India recently activated the atomic reactor onboard the indigenous nuclear submarine INS Arihant paving way for its operational deployment by the Indian Navy soon, thus completing the capability on land, air and sea.

According to reports, all systems of the indigenously made nuclear reactor are on "go" and the submarine will soon be launched to sea on the Eastern coast. In May, the then Defence Research and Development Organisation (DRDO) Chief V.K.Saraswat had indicated that the sea trials of Arihant would be held soon.

Nuclear triad is the ability to fire nuclear-tipped missiles from land, air and sea. After the nuclear reactor is activated, the agencies concerned can work towards readying the warship for operational deployments soon.

The DRDO has also readied a medium-range nuclear missile BO-5 for deployment on the Arihant and its last developmental trial was held on January 27 off the coast of Vishakhapatnam. So far, the US, Russia, France, China, and the UK have the capability to launch a submarine-based ballistic missile.

Though this comes as good news for India's defence capabilities, there is some concern over the overall strength of India's submarine fleet. India has 14 conventional submarines that run on either battery or diesel and are aging and outdated. Each of them will have completed the standard life-span of 25 years by 2017. The nuclear submarine will help India achieve the capability of going into high seas without the need to surface the vessel for long durations.

The Prime Minister Dr Manmohan Singh said "I am delighted

to learn that the nuclear propulsion reactor onboard INS Arihant, India's first indigenous nuclear powered submarine, has now achieved criticality. I extend my congratulations to all those associated with this important milestone, particularly the Department of Atomic Energy, the Indian Navy and the Defence Research and Development Organisation.

"Today's development represents a giant stride in the progress of our indigenous technological capabilities. It is testimony to the ability of our scientists, technologists and defence personnel to work together for mastering complex technologies in the service of our nation's security. I look forward to the early commissioning of the INS Arihant." SP

Prithvi-II hits target in a flawless user mission

A missile unit of the Strategic Forces Command (SFC) recently launched the indigenously developed surface-to-surface/nuclear capable Prithvi II missile with a strike range of around 350 km, from the test range at Chandipur, off the Odisha Coast.

It was a perfect text-book launch and the missile equipped with advanced high accuracy indigenously developed navigation and manoeuvring system, the missile achieved all its targeting and technical parameters, set out for this launch. The missile trajectory was tracked by the DRDO radars, electro-optical tracking systems and telemetry stations located along the coast of Odisha. The downrange teams onboard the ship deployed near the designated impact point in the Bay of Bengal had monitored the terminal events and splashdown.

Inducted into India's Strategic Forces Command in 2003, the Prithvi II missile, the first missile to be developed by DRDO under India's prestigious Integrated Guided Missile Development Programme (IGMDP) is now a proven technology. The launch was part of a regular training exercise of the SFC and was monitored by DRDO scientists. Programme Director, AD Adalat Ali, N. Siva Subramanyam, Project Director and others were present to oversee the launch operations.

The missile being based on a mobile transporter erector launcher vehicle is versatile and designed for quick manoeuvrability and high operational flexibility on the battlefield.

A SFC spokesman said, "Such successful training launches clearly indicate our operational readiness to meet any eventuality as also establishes the reliability of this deterrent component of India's strategic arsenal." SP

PHOTOGRAPHS: MoD, PIB

Exelis to supply advanced jamming pods

Exelis has received a $68 million multiyear indefinite-delivery, indefinite-quantity contract to continue supplying the Advanced Capability Pod (ACaP) to the US Air Force and US Navy for use on F-15, F-16 and F/A-18 tactical aircraft.

Designed by ELTA Systems Ltd and produced by Exelis, the ACaP system provides the aircraft with a lightweight, cost-effective and fully-integrated electronic radio frequency countermeasures capability. The system offers simultaneous receive and jam coverage against multiple concurrent threats, acting fully autonomously while allowing for aircrew intervention when manual control is required.

"The ACaP jamming pod is the most effective radar jammer in its class, offering pilots unparalleled electronic protection and the ability to counter advanced anti-access/area denial strategies in hostile, high-threat environments," said Pete Martin, Director of Defense Systems for the Exelis Electronic Attack and Release Systems business. "This award further demonstrates Exelis' role as a global leader in electronic warfare." SP

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Dealing with rogue Pakistan

It was ironic that India's official statement on the brazen incident of killing five Indian soldiers through a cross border raid went through a series of flip flops before finally fixing the blame on the Pakistan Army. This was all the more pitiable when just days before Pakistan televised Naik Sule Khan bragging about how Captain Saurabh Kalia and his patrol were killed by the Pakistan Army with the usual lie that the Indian patrol had crossed over to the Pakistani side across the line of control (LoC). There should have been no hesitation in naming the Pakistani Army in the first instance during the recent cross border raid. Self respect of a nation cannot be sacrificed on the altar of politicking and Nehruvian utopia of non-existent peace. Witness the alacrity with which the US President Barack Obama has cancelled his summit with Russian President Vladamir Putin because of Russia having given asylum to Snowden for just one year. In this case, we have lost five Indian soldiers.

Indian Army must review its counter-infiltration operating procedure on the LoC. In all likelihood commanders on ground are constrained by an overwhelming urge to look for signal from the brass before taking any tough step.

Despite the recent barbaric cross border raid by Pakistan, our political hierarchy is eager to open immediate talks with Pakistan.

The ceasfire put in place at the line of control (LoC) between India and Pakistan in November 2003, is all but a charade now. Brutal killings, cross-border raids, medium and heavy firing with small arms and mortars have increased exponentially over the past couple of years. This calendar year alone, there have been 57 ceasfire violations by Pakistan, a whopping 80 per cent jump from 2012. The number of infiltration attempts have risen dramatically too. But more than anything else, it is the intention of the Pakistani Army and Inter-Services Intelligence (ISI) to keep the pot boiling in Kashmir that has not changed, ceasefire or no ceasefire.

Recall what the then Northern Army Commander Lt General K.T. Parnaik told me during an interview on June 17 less than two months ago: "We have to understand that the infrastructure that supports and propels this entire proxy war across the border is intact, whether they are the training camps or the launching pads or the communication facilities. Secondly, the continued efforts of the establishment in Pakistan to push the infiltrators across the LoC continues.

"The number of ceasefire violations that we have had and a large number of incidents in which they had tried to breach the LoC and the fence, has been detected in the past. So I feel as long as the intention on the infrastructure doesn't change, we cannot keep our guard down. While these figures have marginally changed over a period of time, it is not the numbers that are important, it is the fact that they continue to be there and every season these camps get activated for training and motivation. Intelligence agencies have confirmed that these camps continue to be active. So they are talking about 42 camps across and 4,000-5,000 is generally the strength. They come for training and go away, but the important part is why should the adversary maintain these camps, why should they give them the patronage? They get arms, equipment, state-of-the-art communication equipment and wherewithal to carry out infiltration. This itself highlights the problems that exist today. Despite a number of dialogues, there is no improvement, that's why we can't let our guard down."

Words of a true professional who foresaw what is in store.

Despite all the professed willingness showed by Prime Minister Nawaz Sharif to take the peace process with India forward, as long as the Pakistani Army and ISI along with groups like Lashkar-e-Toiba, remain inimical to India, no amount of dialogue will calm the situation on the LoC.

The Indian establishment, especially those pushing for talks with Pakistan at any cost must take this factor into account. Can Sharif ensure the closure of these camps? Can New Delhi hold Islamabad

accountable to the promise it made in January 2004 that Pakistan will not allow its territory or territory controlled by it to be used by terrorists for anti-India activities?

If there is no guarantee on this count, no amount of conferences on the sidelines of the UN General Assembly or otherwise, are going to bear any fruit.

That said, the Indian security establishment, especially the Indian Army will have to look within and review some of the procedures and tactics that are being employed along the LoC. When the January beheading of an Indian soldier happened, there were murmurs that there could have been tactical errors on the part of the patrol party that allowed the Pakistani Border Action Team (BAT) to kill the two Indian soldiers.

After the killing of five soldiers on Monday night-Tuesday morning, the murmurs have become louder. An initial internal assessment of the incident points to tactical lapses by the local unit. A couple of questions need quick answers for the situation to be rectified. One, why was the area domination patrol strenth only six and not a minimum of ten (a section) as is the standrad practice? Some reports have suggested that the outgoing ballation (21 Bihar) was showing the incoming unit (14 Maratha) the key locations and a bunker ahead of the fence but well within the LoC. If that be so, why take the new unit on a familiarisation exercise at night? Also was the patrolling pattern repeated without variation over a prolonged period giving the adversary the chance to observe it closely and then attack at a time and place of its choosing?

No doubt, all these possible shortcomings are being looked into. Surely the commanders on ground would know that the most vulnerable period on the LoC is during the change over of units. The old unit is in transfer mode, the new one is on unfamiliar territory. That's when the adversary is known to strike. In 2010, in the Uri sector, two Indian soldiers were beheaded in exactly these circumstances. That Indian troops hit back appropriately with similar tactics is also well known.

But there is a larger question here posed by veterans of Kashmir deployment: Have commanders on the ground lost the ability to take initiative and launch punitive action against raiding Pakistani forces? Has the leadership developed cold feet in taking actions that are well within its realm of responsibility?

Sample what one veteran e-mailed to me in the immediate aftermath of the killing of five soldiers: "If I were the CO, I would have launched a decisive counter attack to make the enemy pay with or without permission from my superiors and to hell with the consequences. Such actions are not without precedents. In the early 1960s, there was an incident of beheading in Blue Sector (J&K) which was answered by an immediate counter attack by the battalion after which there was no such incident till the battalion was de-inducted. The Company Commander later on rose to be an Army Commander. And then there was a Corps Commander (who later on became the Chief) who ordered punitive action with telling effect without any sanction from the Army Commander. When pulled up, he said that seeking permission for local actions would only result in delaying the response which would have finally ended in a stalemate. No further questions were asked. At present we only seem to be reacting instead of (pre-) acting and/or pro-acting. It's time we went on the offensive with a series of attacks which will give a clear message to the enemy that we mean business. Endless inaction on our part will certainly leave us in a demoralised state. If this course leads to war, so be it. Patience seems to be our only strong point at present."

2013, admittedly is not the 1960s but bold local commanders are known to be appropriately aggressive even in the past half a dozen years. Of late, however, there is a tendency to be ultra cautious, to look for directions from the top before taking any step considered out of the box.

After all is said and done, Indian Army must also review its counter-infiltration operating procedure on the LoC. In all likelihood, commanders on ground are constrained by an overwhelming urge to look for signal from the brass before taking any tough step.

They will have to revisit the old adage: what is militarily desirable is not necessarily politically correct. They must know that mixing political expediency with military action is suicidal. Only then Indian Army officers can regain the confidence of its men and thereby the Indian citizens. SP

PHOTOGRAPH: Indian Army

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Basic trainer aircraft: The facts

PHOTOGRAPH: Pilatus, IAF

[By **Air Marshal (Retd) Anil Chopra**]

The debate on whether the basic trainer aircraft (BTA) for the Indian Air Force (IAF) should be indigenously developed or procured from abroad, hit a new high after a report in the media alleging that the IAF was trying to scuttle the development of the BTA by Hindustan Aeronautics Limited (HAL). The article also pitted the Ministry of Defence (MoD), the IAF and HAL against each other. There is therefore a need to put the issues in correct perspective.

Urgent Requirement of Basic Trainer

The IAF had initially taken up a case for procurement of 181 BTA as 'Make, by HAL' draft preliminary staff qualitative requirements (PSQRs) were provided to HAL in February 2008. After discussions between the IAF and HAL, the PSQRs were mutually agreed upon and issued in March 2009. A fatal accident of HPT-32 in May 2009 resulted in grounding of the HPT-32 fleet in July that year. This somewhat sudden development created an unacceptable void in basic flying training that compelled the IAF to propose procurement of 75 BTA urgently from the global market. The balance of 106 BTA were to be indigenously designed, developed and produced by HAL as the Indian aerospace major was not inclined to license-manufacture the aircraft 75 of which were to be procured from a selected foreign vendor.

The Procurement Process

As per the defence procurement procedure (DPP) in vogue, the Air Staff Qualitative Requirements (ASQRs) were prepared and ratified by the Service Equipment Policy Committee (SEPC) in October 2009. Simultaneously the PSQRs issued to HAL earlier in March 2009 were also revised to align with the ASQR for BTA (Buy) and were reissued to HAL by December 2009. HAL submitted its first draft project report (DPR) in September 2010 based on the amended PSQRs. Thus, as on date, PSQRs and ASQRs are similar, the major difference being that PSQRs include both 'essential' and 'desirable' parameters whereas ASQRs include only 'essential' parameters. PSQRs being preliminary are provisional and subject to review/change during the development process. The desirable parameters are based on futuristic/emerging technologies whereas the essential parameters are to be of proven state-of-the-art technology available in India as also in the world market. The ASQRs cannot be reviewed once the request for proposal (RFP) is issued. The ASQRs are based on inputs obtained through request for information (RFI) so as to ensure a multi-vendor situation. The Defence Acquisition Council (DAC) then accorded acceptance of necessity (AON) for HAL in February 2010 to go ahead with the indigenous design and development of 106 BTA.

The RFP for BTA (Buy) was issued to 12 vendors of which nine responded, two vendors were disqualified due to non-submission of Integrity Pact and incomplete proposals. Of the seven vendors

remaining in the race, five cleared the technical evaluation committee (TEC) and three cleared the field evaluation trials (FET) after meeting with all ASQRs. This indicates that the ASQRs were broad-based and were not formulated to favour any specific vendor or product. The RFP for BTA received maximum response generating the largest competition in aircraft procurement in recent history. Pilatus of Switzerland emerged as the lowest bidder (L1) out of the three at contract negotiation stage.

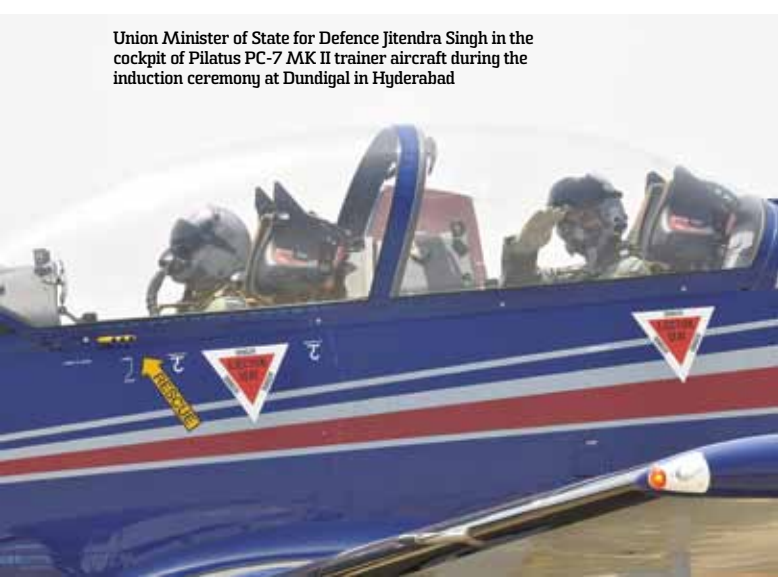
Staff Qualitative Requirements

Air HQ had not visualised the requirement of a zero-zero ejection seat while drafting PSQRs. However, HAL proposed to provide such an ejection seat and hence this was included in the PSQRs issued for the first time. When the ASQRs for the BTA (Buy) were being formulated, it was evident from the response to RFI that only two aircraft were available in the world market with a zero-zero ejection seat. This would have narrowed the competition to only two vendors. Further, a zero-zero ejection seat is not an essential requirement for a basic trainer class of aircraft, which has very low take-off/landing speeds and distances. Accordingly, the ASQR merely stated, "The aircraft should be fitted with an ejection seat." This ensured that more than seven vendors remained in the competition. The current PSQRs also stipulate that the aircraft should be fitted with an ejection seat.

Pressurisation of the cockpit for BTA, which has a service ceiling of six km, was never an IAF requirement. In their preliminary project report (PPR) on HTT-40 in January 2008, HAL had stated that "The option of cabin pressurisation will also be looked into during the detailed design stage". Accordingly, 'cockpit pressurisation' was included as a desirable parameter in the earlier PSQRs. Even the HTT-40 under the BTA (Make) does not have 'Cockpit Pressurisation'. The detailed project report (DPR) on HTT-40 submitted by HAL in September 2010 and approved by DG (Acquisition), did not include 'cockpit pressurisation'.

With regard to the external vision, both the ASQR and current PSQR have identical criteria. In the earlier PSQRs, the seating configuration was defined as tandem arrangement and therefore, it included the requirement for external vision from rear cockpit of minus eight degrees. From the response to request for information (RFI) it emerged that the world market had BTA with both 'tandem' and 'side-by-side' seating. Accordingly, the ASQRs stipulated that "the external vision requirement should be in accordance with the relevant specification. Additionally, for a tandem seating design, the instructor's cockpit in the rear should be sufficiently raised to allow safe flight instruction both by day and night." The rear cockpit of the PC-7 Mk II, is sufficiently raised to provide a minus 10 degrees vision over the aircraft nose. Both ASQRs and the current PSQRs specify that "The aircraft should have a glide ratio better than 10:1". The glide ratio of the PC-7 Mk II is in excess of 12:1. This means that while gliding with engine failed, the aircraft will traverse two nm on the ground for every 1000 feet of descent.

Both ASQRs and the current PSQRs do not specify any requirement for in-flight simulation. This requirement could be met with using the fixed base full mission simulator which was also being acquired and hence this requirement of a simulation panel on the aircraft was omitted as a considered decision while finalising ASQRs and the current PSQRs. Both the ASQRs and current PSQRs stipulate "the takeoff distance required should be less than 1000 m". The take-off distance of the PC-7 Mk II is 259 metres at sea level. Similarly, the requirement of maximum speed specified is 450 kmph and that of the PC-7 Mk II is 555 kmph.



Union Minister of State for Defence Jitendra Singh in the cockpit of Pilatus PC-7 MK II trainer aircraft during the induction ceremony at Dundigal in Hyderabad

Financial Paradigms

As per the Project Report submitted by HAL in May 2013, the projected unit cost of the HTT-40 was at 2011 price level and did not include a number of expenses such as costs of design and development, which IAF will need to pay upfront. After amortising these costs over 106 aircraft and applying the government approved escalation rates, the 'real' unit cost of the HTT-40 for the actual delivery period would be ₹59.31 crore in 2018 and ₹64.77 crore in 2020. As against this, the contracted unit cost of the PC-7 Mk II is 6.09 million Swiss Francs (₹40.27 crore). This price of the PC-7 Mk Il is frozen under the 'Option Clause' for deliveries up to 2017. Hence, even at 2011price level, the HTT-40 is substantially more expensive than PC-7 Mk II. Unlike the HAL HTT-40, deliveries of all 75 PC-7 Mk II would be completed by 2015 and if the Option Clause is exercised, 38 more PC-7 Mk II could be delivered by 2017 at the same price. Time frame for delivery by HAL of the indigenous BTA remains uncertain.

The draft PSQRs were prepared by thy IAF based on various options and inputs provided by HAL as the OEM for BTA (Make). The ASQRs for BTA (Buy) case were ratified by SEPC on October 9, 2009, in accordance with the DPP. The SEPC included representatives of MoD, DRDO, DGAQA, HQ IDS and Air HQ. The PSQRs for BTA (Make) were amended to align with the ASQRs for BTA (Buy). With regard to life-cycle costs (LCC), Pilatus emerged as the lowest bidder on the basis of the total cost of acquisition over 10,000 flying hours or 30 years of life. The LCC has actually been estimated based on the commercial proposal submitted by the vendor and not on speculative and arbitrary assessments. The Pilatus contract also includes transfer of maintenance technology (MToT). Once achieved, all subsequent requirements for spares and servicing/overhaul would be sourced from HAL. Even a BTA (Make) would continue to source a large number of spares from abroad as major components such as engine, propeller, ejection seat, avionics etc in the HTT-40 would be of foreign origin.

Final Word

The entire procurement process is handled by the Ministry of Defence (MoD) with support of Air HQ. The IAF and the MoD have followed the defence procurement procedures meticulously for both BTA (Buy) and BTA (Make) with full transparency and probity. Any insinuation of dilutions of specifications to favour a particular vendor or aircraft, is baseless and incorrect. SP

Navy's Boeing P-8I touches down at the Emerald Islands

The Boeing P-8I, a long-range maritime reconnaissance anti-submarine warfare (LRMR/ASW) aircraft of the Indian Navy, made its maiden landing at the INS Utkrosh airfield on August 6.

Piloted by the Squadron Commander (designate), Commander H.S. Jhajj, the aircraft under call sign 'IN 321' was welcomed to the islands by the Commander-in-Chief, Andaman and Nicobar Command, Air Marshal P.K. Roy, at an event that was attended by senior officers of the Unified Command. The aircraft that landed here is the same that arrived in India in May this year. It is the first of the eight aircraft that are being procured under a contract signed in 2009 and is based on the Boeing 737-800 platform. The aircraft is based at INS Rajali, Arakkonam.

The P-8I is the Indian naval variant of the P-8A 'Poseidon' aircraft that Boeing has developed for the US Navy and India is the first international customer of this aircraft. The aircraft is equipped with both foreign as well as indigenous sensors for maritime reconnaissance, anti-submarine operations and electronic intelligence missions. The aircraft is fully integrated with state-of-the-art sensors and highly potent anti-surface and anti-submarine weapons.

The induction of these aircraft into the Indian Navy has provided a quantum leap to India's maritime surveillance capability in the Indian Ocean Region and enhanced the Navy's strategic reach. SP

F-35B completes 500th vertical landing

The Lockheed Martin F-35B short take-off/vertical landing (STOVL) aircraft completed its 500th vertical landing on August 3. BF-1, the aircraft which completed this achievement, also accomplished the variant's first vertical landing in March 2010 at Naval Air Station Patuxent River.

Sea trials, known as Developmental Test 2 (DT-2) are scheduled to begin soon for the F-35B variant onboard the USS WASP. DT-2 is the second of three planned tests aimed at defining and expanding the F-35B's shipboard operating envelope for the US Marine Corps. The first shipboard testing phase was successfully completed in October 2011. The successful completion of the upcoming sea trials is key to declaring F-35 initial operational capability (IOC) for the US Marine Corps in 2015. SP

PHOTOGRAPHS: Indian Navy, US Army, Lockheed Martin

One million flight hours for Apache targeting and pilotage sensor

Lockheed Martin and the US Army celebrated one million flight hours for the modernised target acquisition designation sight/pilot night vision sensor (M-TADS/PNVS) during ceremonies held in early August at Lockheed Martin's Orlando, Florida, facility.

Fielded in 2005, M-TADS/PNVS is known as the eyes of the Apache attack helicopter. It provides Apache pilots with long-range, precision engagement and pilotage capabilities for mission success and flight safety in day, night and adverse weather missions. Forward-looking infrared sensors provide enhanced image resolution that enables Apache aircrews to engage targets and provide situational awareness in support of ground troops outside detection ranges.

"This system has been touted as a 'game changer' for our aviators and soldiers on the ground," said Colonel Jeff Hager, US Army Project Manager for Apache Attack Helicopters. "It has provided the Army with unprecedented situational awareness and targeting ability that has helped to save the lives of the US soldiers and our allies."

"This achievement is a testament to the US Army's and Lockheed Martin's commitment to keeping M-TADS/PNVS mission ready in support of warfighters' critical combat and training requirements," said Dave Belvin, Director of Apache Programmes at Lockheed Martin Missiles and Fire Control. "Years of innovation and engineering enhancements, combined with the dedication of Army aircrews and maintainers, have ensured outstanding M-TADS/PNVS reliability and maintainability performance."

M-TADS/PNVS, an award-winning performance based logistics programme, enhances system performance and reliability by more than 150 per cent, reduces maintenance actions by nearly 60 per cent, and will save the US Army nearly $1 billion in operation and support costs over its 40-year system life.

Lockheed Martin has delivered more than 1,200 M-TADS/PNVS systems to the US Army and 12 international customers. Electronics assembly of M-TADS/PNVS is performed at Lockheed Martin's facility in Ocala, Florida, and final assembly is performed at its Orlando facility. SP

Fire Scout surpasses flight hour record aboard USS Samuel B. Roberts

Helicopter Strike Maritime Squadron (HSM) 46, Det. 9 recently surpassed the MQ-8B Fire Scout's previous monthly flight hour record while performing operations at sea aboard USS Samuel B. Roberts (FFG 58).

In June, four Fire Scouts that embarked on the frigate flew 333 flight hours, exceeding the unmanned helicopter's previously monthly operational flight time record by more than 110 hours.

While at sea, the Fire Scouts regularly fly 18 hours per day while providing a 12-hour real-time intelligence, surveillance and reconnaissance (ISR) orbit to combatant commanders.

"The teams from USS Samuel B. Roberts and HSM-46 have built on the great success of earlier deployed operators," said Captain Patrick Smith, Fire Scout Programme Manager. "Their perseverance and mission effectiveness have demonstrated the real difference that maritime-based ISR can make to combatant commanders."

This is the Fire Scout's sixth under way deployment aboard a US Navy frigate. Just like earlier deployments, the ship receives communication upgrades that allow the aircraft's full motion video (FMV) camera feed to be distributed to the ship's Combat Information Center (CIC) and to commanders at military installations throughout the world.

"None of these achievements would be possible without the hard work and efforts by the entire team aboard USS Samuel B Roberts," said Lt Cmdr Mike Gerhart, HSM-46, Det. 9 officer in charge. "We are just two months into our six-month deployment, but the operators and maintainers have put in significant hours supporting the needs of the warfare commanders. They can be justly proud of setting a new standard for embarked operations of the Fire Scout." SP

T-20 UAV flies high

The Arcturus T-20 unmanned aerial vehicle flew to an altitude of 23,500'MSL during a training flight at Camp Guernsey Joint Training Center, Wyoming. The previous altitude record for the T-20 was 15,000 MSL set at Edwards AFB California. No special modifications to the aircraft were needed. The T-20 UAV was catapult launched and landed safely after the eight-hour flight. Another high altitude flight with second T-20 was also successful, reaching the top of the restricted military airspace.

A team of pilots, controllers and engineers from the manufacturer, Arcturus-UAV, were allowed to take the T-20 to the record altitude as part of an acceptance test for a new fleet of aircraft.

Manufactured in the USA, the T-20 is a runway independent, Tier II class, small tactical unmanned aerial vehicle. The primary mission of the T-20 is intelligence, surveillance and reconnaissance. Typical missions include aerial mapping, drug interdiction, border patrol, force protection, search and rescue, as well as military ISR. The T-20 is also being studied for use in fighting wild fires.

The T-20 payload consists of a gimbal sensor that provides full motion video from daylight and infrared cameras. Video is transmitted by secure data link to mission commanders on the ground. An onboard GPS autopilot with waypoint navigation accepts multiple flight plans from the ground control station, allowing the T-20 to fly missions up to 16 hours, and return to a specified location autonomously. The T-20 is powered by a 190cc an air-cooled, four-stroke, fuel injected engine. Carbon fiber composite construction used in the T-20 airframe allows the UAV to carry payloads up to 65 lbs.

The first flight of the T-20 UAV took place January 20, 2009, at Edwards AFB California. SP

TOR Robotics introduces Q-4 Drone

TOR Robotics, a San Francisco, California based manufacturer, has introduced the Q-4, a fully autonomous robotic VTOL drone. The Q-4 Drone is designed to enhance efficiency and expand capabilities in both private and public applications.

The Q-4 drone is a lightweight robust multi-rotor platform designed to fly missions in difficult to reach locations like building rooftops, pipelines, electrical networks, livestock, boarders, recreational areas, etc. Utilising cameras and other optical and sensory devices, the drone is able to provide a variety of cost effective solutions to customers.

Q-4 drones are able to work 24 hours a day and operate at speeds of over 45 MPH (20 meters/second). Designed to work in many different environments and climate conditions with a lightweight aerodynamic structure, the Q-4 quietly performs its duties.

The TOR Robotics team has put together a system capable of piloting detailed missions without a pilot from takeoff to landing. SP

PHOTOGRAPHS: US Navy, TOR Robotics, Arcturus

Home Minister lists out security initiatives taken during the year

The Home Minister, Sushil Kumar Shinde who has completed one year as Home Minister, in his report has listed out various initiatives taken by the ministry to ensure that India becomes a secure nation.

With regard to internal security, he said that terrorist activities in the hinterland continue to remain a threat. During the period from August 2012 to July 2013, four incidents of bomb blasts took place. In 2013, there have been three incidents of bomb blasts: first in Hyderabad in which 17 persons died, the second in Bengaluru in which there was no casualty and the third in Bodh Gaya in which no casualty was reported. We have agreed to the request of the Bihar Chief Minister for handing over the security of Bodh Gaya Complex to Central industrial Security Force (CISF).

The National Investigating Agency (NIA) has been asked/entrusted to investigate 30 cases relating to terrorist activities/bomb blasts. Out of these 30 cases, the government has issued sanction of prosecution in 19 cases. Also during this period, two NIA Special Courts have been notified by the Ministry of Home Affairs (MHA).

Northeast initiatives

He said that in July 2012, an unfortunate incident of violence took place between two communities in July. More than 4.85 lakh persons, who were staying in 340 camps due to violence, were rehabilitated and all camps were closed by March 31, 2013. Talks on the demands of ULFA are being held on regular basis. Talks with NDFB (P) are continuing. Talks with NDFB (RD Group) are also continuing.

In Meghalaya, he said an agreement has been reached with the Achik National Volunteer Council (ANVC) mainly enhancing autonomy of the existing Garo Hills Autonomous District Council in Meghalaya. The agreement is being placed before the government for approval. In Manipur, a new special scheme for surrender-cum-rehabilitation of militants in the state of Manipur has been framed and implemented from December 1, 2012. The benefits/incentives include immediate grant of ₹2.5 lakh, monthly stipend of ₹4000 for 36 months, incentives for surrendered weapons, imparting vocational training to those surrendering and establishment of rehabilitation camps. Three Meitei insurgent groups in Manipur have signed a memorandum of understanding (MoU) with the Government of India and the state government of Manipur and laid down their arms.

Left-Wing Extremism

The Minister said in the current year (up to June 30), 591 incidents of LWE violence occurred with 202 resultant deaths, as against 883 incidents with 245 deaths reported during the corresponding period of 2012. Construction/strengthening of Fortified Police Stations Scheme is under implementation in LWE affected states, under which 400 police stations/outposts have been sanctioned in the 9 LWE affected states at ₹2 crore per police station on 80:20 (Centre share: state share) basis. Under the scheme, an amount of ₹370 crore have so far been released to nine naxal affected states. The construction work has started in almost 300 locations. Keeping in view the prevalence of usage of improvised explosive devices (IEDs) by the CPI (Maoist) and the resultant damage involved in such incidents, a standard operating procedure (SOP) on issues related to explosives/IEDs/landmines in naxal affected areas has been prepared in consultation with agencies concerned and has been shared with LWE affected states and CAPFs in June 2013.

Security Situation in Jammu and Kashmir

"The security situation in J&K has improved," he said. The number of terrorist incidents upto June this year has declined over the previous year. There is however increase in the casualties of security forces as well as in casualities of the civilians. In a major setback to the terrorists, Army and security forces, in joint operations in December 2012 eliminated 14 terrorists (including eight foreign terrorists) operating in Jammu and Kashmir.

Coastal security

The MHA has been implementing Coastal Security Scheme in phases (Phase-I -2005-11 and Phase-II – 2011–15) with a view to strengthen the infrastructure of the Marine Police Force and patrolling and surveillance of coastal areas, particularly shallow areas close to the coast. The scheme also aims at establishing institutional arrangements at state and district level for coordination among various agencies including the Coast Guard and the Navy. Under the Phase-II of the Scheme (over a period of five years at a cost of ₹1,580 crore), it has been proposed to provide 131 Marine Police Stations, 60 jetties, 10 Marine Operation Centres, 150 boats (12 tonnes), 20 boats (5 tonnes), 20 (19 m) boats, 35 rigid inflatable boats, 10 large vessels (for Andaman and Nicobar Islands), 131 four wheelers and 242 motorcycles. Against an allocation of ₹1,580 crore for five years under Phase-II, ₹97.57 crore has already been released to coastal states/union territories (UTs) for starting the construction work, purchase of vehicles and operationalisation of coastal police stations.

Border security issues

The Minister said that the government has sanctioned 27 ITBP priority roads along Indo-China border totalling 805 km, against which 564.90 km formation and 273.61 km surfacing has been completed. Against the sanctioned 3,359.59 km of fencing along Indo-Bangladesh border, 2,784.41 km of fencing has been completed. Against the sanctioned 2,840.90 km of floodlighting along Indo-Bangladesh border, 1,535 km of flood lighting has been completed. Against the sanctioned 4,407.11 km of roads along Indo-Bangladesh border, 3,585.53 km has been completed. The government has sanctioned 2,043.63 km of fencing along Indo-Pakistan border, out of which 1,958.50 km has been completed. Similarly, of the 2,009.52 km of floodlighting along Indo-Pak border, 1,900.92 km has been completed. SP

PHOTOGRAPH: PIB

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Session 3— Modern Trends in Weapons/Sensors/C4ISR
Sept 24—Naval Aviation
Session 4—Creation of Repair Support in Key Areas
Session 5— Key Areas for Joint Ventures
Session 6— Avenues for Indian Industry in providing enhanced support for Naval and Maritime Aviation
Sept 25
Workshop— Opportunities for Indian MSMEs
Workshop—Weather Forecast and IMD Services
Sept 26
Interactions with Maritime Institutes and Training Commands of Indian Navy and Indian Coast Guards

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HAL signs MoU with Transparency International India

Hindustan Aeronautics Limited (HAL) has signed a memorandum of understanding (MoU) with the Transparency International India (TII) for adoption of integrity pact (IP). "Considering that HAL deals with number of domestic and international business partners for goods and services, the MoU will go a long way in establishing higher standards in our operations," said Dr R.K. Tyagi, Chairman, HAL.

The MoU was signed by Dr Tyagi and Justice Kamleshwar Nath, Chairman, TII, at a function in New Delhi recently. HAL has so far signed "integrity pact" with 115 vendors (85 foreign and 30 Indian).

"Integrity pact" is a tool developed to ensure that all activities and transactions between companies or government departments and their suppliers are handled in a fair and transparent manner. TII will support HAL by providing advice and resources to implement the integrity pact programme successfully. Incidentally, HAL is the first defence public sector undertaking to sign such an MoU with TII. SP

ATK announces new appointments

ATK has announced that its Board of Directors has elected Stephen M. Nolan as Senior Vice President, Strategy and Business Development. Nolan (right top) was previously interim Senior Vice President of Business Development. The Board also elected Jay Tibbets as Senior Vice President and President Sporting Group. Tibbets (right bottom) previously served as Senior Vice President and interim Sporting Group President.

As Senior Vice President of Strategy and Business Development, Nolan will be responsible for the formulation of ATK's corporate strategy and will lead the company's business development activities across the organisation. He joined ATK in 2006 and has held a series of increasingly responsible positions during his tenure, including Vice President and General Manager of the Advanced Systems division. Prior to that, he was the Vice President and Deputy General Manager of the Aerospace Structures division.

"Stephen is a result-oriented, experienced and knowledgeable executive. His understanding of ATK, our competitors and the global marketplace will serve our company well as he takes on this new position," said Mark DeYoung, ATK's President and CEO. "His insights and experience with business development will open new doors of opportunity for the company, help us continue to grow our businesses, and allow us to better meet the emerging needs of our customers."

Tibbets has served as interim President of ATK's Sporting Group since February of 2013 and previously served as Senior Vice President for Business Development since 2010. He also served as Vice President of Strategy and Business Development for ATK Armament Systems and as Director of Business Development for ATK Conventional Munitions.

"Jay has a long history of involvement with ATK's Sporting Group and has recently provided excellent leadership for the Sporting Group during a time of high demand for our products," said DeYoung. "I am confident that he will continue to grow our sporting business, while enhancing our ability to deliver affordable innovation and execution excellence." SP

Polaris India donates five vehicles to Uttarakhand Government

Polaris India Pvt. Ltd, the world leader in off-road and all-terrain vehicles has donated five off road vehicles to Uttarakhand Government, to assist in relief efforts after the state was hit by floods recently. Polaris Industries Inc., US has also supported this cause.

Polaris has donated one Sportsman Big Boss 6X6 800, one Sportsman 550 Hunter EPS, one RZR S 800 EFI and two Ranger 900 Diesel. The vehicles were handed over to Uttarakhand Chief Minister Vijay Bahuguna at his residence in Dehradun. Adding to the gesture of commitment to stand by the government in this social cause, Polaris has also offered to maintain these vehicles for a period of two years with full service and repair at no cost to the government.

"We are moved by the magnitude of the recent tragedy in Uttarakhand. With the entire network of roads in and around the states destroyed and non-existent now, apart from debris on the ground from thousands of destroyed homes, we feel that Polaris India can extend a hand of support to help expedite the relief operations. These specialised off road vehicles will help in making these areas accessible," said Pankaj Dubey, MD, Polaris India.

Polaris vehicles are specially designed to manoeuvre around rough terrain where best of vehicles fail to run. The vehicles are widely used by defence, paramilitary forces and police, and disaster management, tourism and forest departments.

"Polaris has long supported charitable efforts, and we hope the donation of these vehicles will assist the relief efforts as they provide the affected communities with the relief they desperately need. We also offer to help train the rescue and relief teams about the usage of these vehicles and educate them about their capabilities," added Dubey. SP

PHOTOGRAPHS: HAL, ATK

ARL, Purdue University research of 3-D printing to fix damaged on-the-spot in combat zones

New technology being developed by research engineers at the US Army Research Laboratory and Purdue University will soon help just about any soldier deployed in far-off locations to immediately spot and fix damaged aircraft and ground vehicle parts.

Researchers found that combining the general purpose, finite-element analysis software ABAQUS with Python, an open-source code used to optimise logical structures such as topologically interlocked structures, improves energy absorption and dissipation, productivity and lower maintenance costs.

The combination of ABAQUS and Python provides an automated process for auto-generation of the geometries, models, materials assignments and code execution, said Ed Habtour, a research engineer with ARL's Vehicle Technology Directorate at Aberdeen Proving Ground.

He said the code is developed to assist designers with tools to model the new generation of 3-D additive manufactured and TISs structures.

"The benefit for the soldier is an after-effect. The TIS would provide an excellent energy absorption and dissipation mechanism for future vehicles using additive manufacturing, Habtour said. "Subsequently, the soldier can print these structures in the field using additive manufacturing by simply downloading the model generated by the designer/vendor."

The research team developed logical structures from the mini-composition of tetrahedron-shaped cells in existing materialsan approach ARL research engineers say is a vast departure from the military's tendency to build new materials to meet existing problems.

"Traditionally, every time the US Army encounters a problem in the field the default has been to develop new and exotic materials. Using logical structures can be effective in solving some critical and challenging problems, like the costly and time-consuming certification process that all new materials must face," Habtour said.

This logical structure is based on principles of segmentation and assembly, where the structure is segmented into independent unit elements then reconfigured/assembled logically and interlocked in an optimal orientation to enhance the overall properties of the structure, Habtour explained.

The researchers are focusing on topologically interlocked structures using VTD's 3-D additive manufacturing approach to build 2-D and 3-D structures based on cells in the shape of Platonic solids.

Habtour said new structures created from this process are designed to be adaptive and configurable to the harsh conditions like random and harmonic vibrations, thermal loads, repetitive shocks due to road bumps, crash and acoustic attenuation. An added bonus he said is that these structures are configured to prevent crack propagation.

"Sometime in the near future, soldiers would be able to fabricate and repair these segmented structures very easily in the front lines or Forward Operating Bases, so instead of moving damaged ground or air vehicles to a main base camp for repair, an in-field repair approach would essentially mean vehicles would be fixed and accessible to warfighters much faster at lower costs," said Habtour. "We want to change the conventional thinking by taking advantage of exciting materials and manipulating the structure based on the principle of segmentation and assembly."

ARL is working closely with project managers at the US Army Aviation and Missile Research Development and Engineering Center. Discussions are already under way to transition this work to AMRDEC and Tank Automotive Research, Development and Engineering Center developmental programmes. SP

Harnessing new ideas

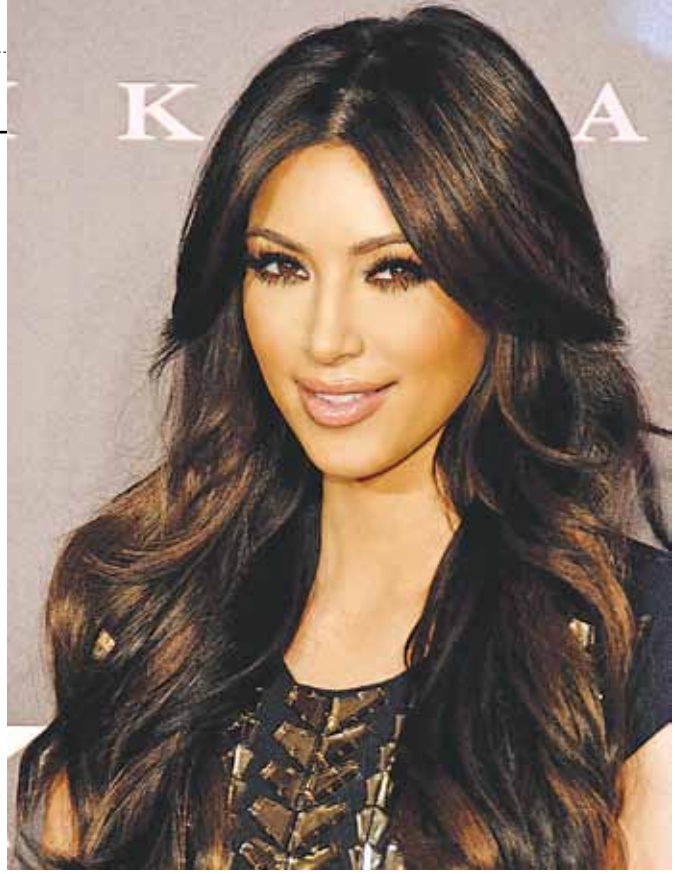
Gunners, patrol personnel, cooks, medics and other soldiers who wear helmets for long periods of time could get much needed head and neck relief from a revolutionary device developed by US Army Research Laboratory researchers, a new study found.

The vertical load offset system—or VLOS, a prototype exoskeletal device designed to displace the static load of the helmet onto the shoulders, proved in recent studies to reduce apparent strain overall on a soldier's head and neck. Some soldiers reported both the sensation of lighter head-borne weight and more helmet stability. Achieving these results—given the dynamic movement of the head in combination with helmets loaded with equipment such as night vision devices, batteries and other equipment—is a major step forward, researchers said.

Soldiers at Aberdeen Proving Ground reported these and other immediate benefits of the archetype during a week-long human-factors evaluation conducted earlier this summer on the soldier performance equipment advanced research (SPEAR) obstacle course and at the SPEAR Biomechanics Laboratory.

Dr Shawn Walsh, principal investigator for VLOS concept development, said VLOS potentially could "serve as a technology solution that makes helmets with more ballistic coverage and head-borne electronic hardware more tolerable." SP

PHOTOGRAPH: ARL



Kim Kardashian records 'accessed'

Six workers at Cedars-Sinai Medical Center have been fired after it was discovered that patient records were "inappropriately accessed" between June 18 and 24, and Kim Kardashian may have been one of the patients. First reported by the *Los Angeles Times*, the breach would have happened during the time when the reality star was recovering at the medical center after giving birth to her daughter North West on June 15.

Though hospital spokespersons refused to identify the victims of the access, TMZ has claimed that Kim was one of the people contacted in connection with the privacy invasion. The Kardashian clan reportedly suspected a problem when certain information about their newest family member was leaked after the birth. SP

PHOTOGRAPHS: Wikipedia

Security lapses hit tourism in Lebanon

The recent kidnappings of two Turkish pilots will weigh heavily on Lebanon's tourism sector, which has already lost $40 million in revenues during the Eid al-Fitr holiday, industry experts told *The Daily Star*. However, other ventures between Lebanon and Turkey are unlikely to be affected in the short term, experts say.

Tourism Minister Fadi Abboud, said the incident as "one of many nails in the sector's coffin. Despite discounts of up to 40 per cent in Beirut hotels, they had failed to attract more tourists during the holiday, with occupancy rates down compared to the same period last year.

In previous years, hotel occupancy reached full capacity for almost two weeks over the Eid al-Fitr period. This year, hotels were at 70 per cent capacity for just two days. This alone amounts to at least a $40 million decline in revenues. Lebanese hotels and resorts have traditionally depended on wealthy Gulf Arab tourists, but this has dried up due to several travel bans on Lebanon following a series of kidnappings in 2012. SP

US survey finds 9,600 cases of security misconduct

Transportation Security Administration officers were cited for more than 9,600 cases of misconduct from 2010 to 2012, according to a new government report that shows agency employees often received light punishments for sneaking prohibited items past scanners or napping on the job.

The report, released by the Government Accountability Office, found nearly 2,000 cases of screeners who were sleeping, not following procedures or allowing relatives to bypass security checkpoints. More than 3,000 screeners showed up late, not at all or left the job without permission, GAO reported.

In one instance of misconduct, a security officer left a checkpoint to help a relative check in and then came back with the family member's bag and allowed it to go around security. A TSA supervisor saw the misconduct and insisted the bag be screened, according to the report. The bag contained "prohibited items" after it was finally screened. The report did not elaborate on the nature of the items in the bag. The screener was eventually suspended for seven days.

The report also cited 56 cases of theft during the three-year span. In an undercover investigation by ABC News in 2012, 10 iPads were left at airport security checkpoints throughout the nation with a history of theft. Nine out of ten were returned, but one TSA officer, who was later fired, denied he stole an iPad when ABC News tracked the device to his home in Orlando. SP

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