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AN SP GUIDE PUBLICATION

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ISSN 2230-9268

₹55.00 (INDIA-BASED BUYER ONLY)

Vol: 7 Issue 7-8 | April 1-30 • 2017

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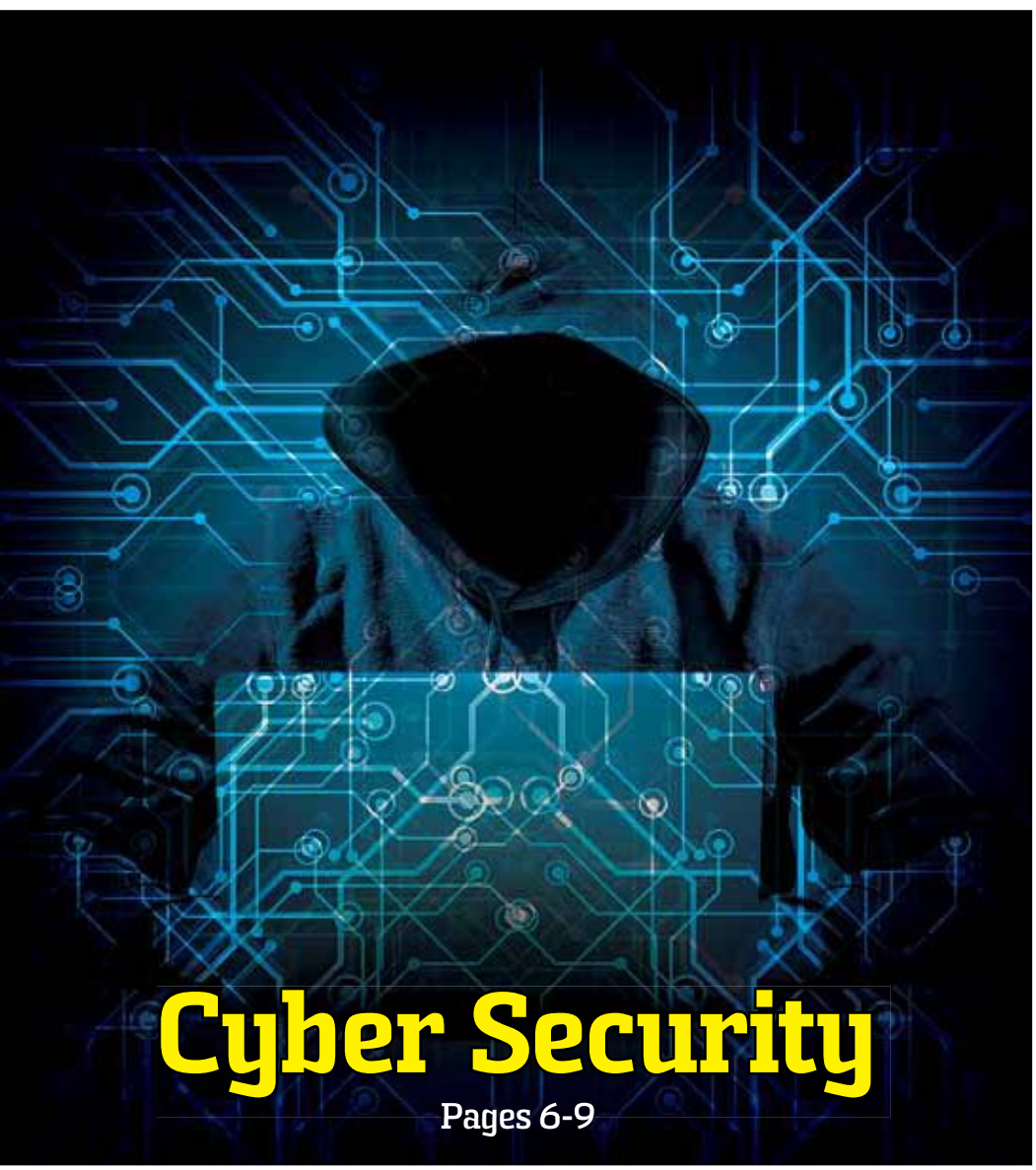

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"In a country like India with limited support from the industry and market, initiating 50 years ago (in 1964) publishing magazines relating to Army, Navy and Aviation sectors without any interruption is a commendable job on the part of SP Guide Publications. By this, SP Guide Publications has established the fact that continuing quality work in any field would result in success."

Narendra Modi, Hon'ble Prime Minister of India (*message received in 2014)

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Admiral Sunil Lanba, Chief of Naval Staff and Chairman COSC releases Joint Doctrine Indian Armed Forces – 2017

Admiral Sunil Lanba, Chairman, Chiefs of Staff Committee (COSC) and Chief of the Naval Staff released a revised version of Joint Doctrine Indian Armed Forces - 2017 in the presence of Chief of the Army Staff, Chief of the Air Staff and Offg Chief of the Integrated Defence Staff to the Chairman COSC. "Jointness and Integration" in the Armed Forces is the order of the day like any other facet of life and therefore release of this Doctrine could not have come at a more opportune time.

The Joint Doctrine Indian Armed Forces will serve as a cornerstone document for application of Military Power in a synergized manner leading to enhanced efficiency, optimum utilization of resources and financial savings. It will also establish a broad framework of concepts and principles to understand our approach to Joint Planning and conduct of operations across all the domains of conflict ie land, air, sea, space and cyber-space, In addition, the Doctrine will also serve as a reference document for all the three Services to plan integrated operations. SP

PHOTOGRAPHS: Indian Navy

Cover:
While cyber criminals cater for almost 98 per cent of these attacks, the issue of concern is the methodical manner in which terrorists are using the Internet for radicalisation, recruitment and in some extreme cases even terrorist activities.

Cover images: Anoop Kamath, PIB, FICCI

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Owned, published and printed by Jayant Baranwal, printed at Kala Jyothi Process Pvt Ltd and published at A-133, Arjun Nagar (Opposite Defence Colony), New Delhi 110003, India.
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Cyber warfare the next big threat

With Internet having collapsed boundaries, cyber warfare can happen anywhere, from anywhere and anytime. Its potential to disrupt systems is all too known and it is encompassing almost all fields. Even the US presidential elections have come under that cloud with alleged involvement of Russia. Cyber warfare is for real and the next big threat.

Online terrorism is gaining ground at gigabit speed. In this issue Lt General (Dr) Rajesh Pant (Retd) writes about how cyber criminals cater for almost 98 per cent of the online attacks. However, of greater concern is the methodical manner in which terrorists are using the Internet for radicalisation, recruitment and in some extreme cases even terrorist activities. This indoctrination is global from some godforsaken place, thus becoming difficult to track the activities going on in the dark web.

In another article, Lt General P.C. Katoch (Retd) talks about how the Indian military is kept away from the cyber warfare programme. He says little progress has been made with respect of the Naresh Chandra Committee recommendation of 2012 for establishing a cyber command in the military. General Katoch mentions that in the US the counter extremism project works with governments exploiting the Internet to mobilise social media to counter extremist ideology by exposing the threat of extremists and mounting a global counter narrative. India needs similar public-private partnership to tackle this mammoth problem.

Defence partnerships are significant for countering terrorism. The UK Secretary of State for Defence Sir Michael Fallon was on a four-day visit to India wherein he had meetings with the Indian Defence Minister Arun Jaitley. This enduring defence partnership will encompass not only cooperation in defence industry but also stronger military to military engagement, including training and advanced joint exercises.

Another such cooperation has been with India's close neighbour, Bangladesh. There is no doubt that Sheikh Hasina has been the best friend of India, going all out against terrorist networks that has a direct bearing on India. It would be good if the Narendra Modi government is able to push through a mutually beneficial Teesta water sharing agreement before the general elections in Bangladesh in 2018. That would really take Indo-Bangladesh relations to the next level.

While diplomacy is the way forward, the need to keep the Indian armed forces modern and well-equipped goes without saying. There are many equipment gaps and one such that is coming up is in minesweepers. As per media reports quoting the Parliamentary Standing Committee on Defence, the existing fleet of six minesweeping vessels with the Indian Navy will be de-commissioned next year. General Katoch mentions that building mine countermeasure vehicles will take considerable time. There is urgent need to get this cleared to equip the Indian Navy with the critical capability. The worrying part now is that the Navy is likely to be without minesweeping capability till year 2021.

Defence technologies are making fast inroads. The US Defense Advanced Research Projects Agency (DARPA) has completed flight-testing of a subscale version of a novel aircraft design as part of its vertical take-off and landing (VTOL) X-Plane programme, and is proceeding withwork to develop a full-scale version of the ground-breaking plane.

Happy reading!

Jayant Baranwal
Publisher & Editor-in-Chief

Indo-Bangla relations at all-time high – Teesta should be next step

LT GENERAL
P.C. KATOCH (RETD)

The four-day visit of Bangladesh Prime Minister Sheikh Hasina (April 7-10) has taken Indo-Bangladesh relations to an all-time high. Just before her visit, Bangladesh Foreign Minister A.H. Mahmood Ali had said, "The relation between the two countries has reached a new height." At New Delih, Prime Minister Narendra Modi received Sheikh Hasina at the airport. President Pranab Mukherjee said Bangladesh and India have succeeded in enhancing and intensifying their cooperation in areas of two countries' shared interest, while Prime Minister Modi described India as a "strong ally and good friend" of Bangladesh.

The two Prime Ministers held bilateral talks and signed 22 agreements in various key sectors, including a civil nuclear agreement and two memorandums of understanding (MoUs) on defence cooperation. India has extended a credit line of $4.5 billion for implementation of projects in Bangladesh. Prime Minister Modi announced a concessional line of credit of $4.5 billion for investment in priority sectors in Bangladesh, as also a $500-million credit line towards our eastern nation's military budget.

The 22 MoUs signed included: Defence Cooperation Framework between India's Defence Services Staff College and Dhaka's Defence Services Command and Staff College for enhancing cooperation in the field of strategic and operational studies; between Dhaka's National Defence College and India's National Defence College for enhancing cooperation in the field of national security, development and strategic studies; cooperation in the peaceful uses of outer space; peaceful uses of nuclear energy; exchange of technical information and cooperation in the regulation of nuclear safety and radiation protection; cooperation regarding nuclear power plant projects in Bangladesh; field of information technology and electronics; cooperation in the area of cyber security; establishing border *haats* (markets) across India and Bangladesh border; bilateral judicial sector cooperation; training and capacity building programme for Bangladeshi judicial officers in India; cooperation on aids to navigation; mutual scientific cooperation in the field of earth sciences for R&D; passenger and cruise services on the coastal and protocol route; development of fairway from Sirajganj to Daikhowa and Ashuganj to Zakiganj on Indo-Bangladesh protocol route; cooperation in the field of mass media.

Companies of both countries signed pacts worth over $9 billion aimed at deepening partnership in various sectors, including power, oil and gas. These included: facility agreement between Bangladesh-India Friendship Power Company (BIFPCL) and Exim Bank of India for debt financing for construction of 1,320 mw Maitree Power Project in Rampal in Bangladesh ($1.6 billion); implementation and power purchase agreement between Reliance Power and the Ministry of Power, Energy and Mineral Resources for the first phase (718 mw) of the 3,000 mw power project at Meghnaghat, entailing $1 billion (out of a total proposed investment of $3 billion); agreement between NTPC Vidyut Vyapar Nigam (NVVN) and Bangladesh Power Development Board for supply of power from Nepal envisaged an investment of $3.15 billion; pact between Adani Power (Jharkhand) and the Bangladesh Power Development Board entailing an investment of $2 billion and a power purchase agreement between Adani Power and the Power Grid Company of Bangladesh; LNG terminal use between Petronet LNG, India and Bangladesh Oil, Gas and Mineral Corporation (Petrobangla).

Agreement on sharing of Teesta River waters, which Sheikh Hasina was apparently looking forward to, however, did not materialise. Though Prime Minister Modi did reiterate his government's strong resolve to conclude the water sharing treaty soon, Sheikh Hasina said the resolution of the long-pending Teesta water-sharing issue would transform bilateral ties with India, adding "Once it happens, the face of Indo-Bangladesh relations would undergo another transformation. We strongly believe our common water resources must act as a uniting force. A comprehensive, basin-wide solution with in-built solution to water sharing of all common rivers holds the key to our common future".

Speaking on her interaction with West Bengal Chief Minister Mamata Banjerjee on the issue, Sheikh Hasina said, "In my talks with her she gave a new twist, but Modiji has assured that we are here to look after it. We had asked for water but she is giving us electricity. At least we got something." Apparently, an agreement on sharing of the Teesta waters was drafted ahead of then Prime Minister Manmohan Singh's visit to Bangladesh in 2011, but was withdrawn last moment because of protests by Banerjee. Teesta's floodplain covers some 2,750 sq km in Bangladesh; catchment area supporting 8.5 per cent of its population (some 10 million) and 14 per cent of crop production. Over one lakh hectares of land across five districts are severely impacted by upstream withdrawals of Teesta's waters in India and face acute shortages during the dry season. Mamata Banerjee's position is that the treaty would render north Bengal dry and affect farmers. During her February 2015 Dhaka visit, Mamata Banerjee promised to play a "positive role" in resolving the outstanding issue, protecting interests of both Bangladesh and West Bengal. Ironically, federal political dynamics has prevented the Modi government from resolving the issue of water-sharing. It is essential to speedily resolve this sticking sore point. Surely the Centre would not take decisions that put the farmers of West Bengal to disadvantage.

Besides, federal politics is internal wrangle of India and Indo-Bangladesh relations should not be hostage to a stubborn Chief Minister. There is no doubt that Sheikh Hasina has been the best friend of India, also going all out against terrorist networks that has a direct bearing on India. It would be good if the Modi government is able to push through a mutually beneficial Teesta water sharing agreement before the general elections in Bangladesh in 2018. That would really take Indo-Bangladesh relations to the next level. SP

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

Death by a thousand clicks: Online terrorism

LT GENERAL (DR)
RAJESH PANT (RETD)

ILLUSTRATION: Anoop Kamath

In March 2017, the Indian anti-terrorist force (ATF) raided a house in Lucknow and killed Saifullah, head of an Islamic State of Iraq and Syria (ISIS) sleeper cell. Surprisingly, the terrorist had never ventured out of the country but was radicalised through the Internet.

Bangladeshi authorities were astonished to find that the terrorists involved in the Holey Artisan Bakery attack in Dhaka were not radicalised in madrasas but were Internet savvy and educated in top schools of the nation.

Three sisters aged 15, 16 and 17 went missing from their home in Denver, Colorado, United States. On investigation the police discovered that they had received step by step instructions through the Internet on how to provide direct support to ISIS. Fortunately the three were apprehended in Germany while they were boarding a flight to Syria.

The International Law Commission of the United Nations defines 'Terrorism' as the use of intentionally indiscriminate violence as a means to create terror or fear, in order to achieve a political, religious or ideological aim.

While all these years it was felt that violence can only be created through physical means, the cyber attack which crippled the Natanz nuclear facility in Iran shook the world out of its stupor. And presently a growing trend in the cyber domain pertains to the misuse of the Internet in promoting this dark world of terrorism. At an average about 4,00,000 cyber attacks take place daily over the Internet, which originate from either cyber criminals, hacktivists, terrorists or government agencies. While cyber criminals cater for almost 98 per cent of these attacks, the issue of concern is the methodical manner in which terrorists are using the Internet for radicalisation, recruitment and in some extreme cases even terrorist activities.

Recruitment and Radicalisation

The sophistication with which online literature is being created for radicalisation by terrorist organisations clearly outshines the counter propaganda being done by the government. Take a look at the ePublication called Dabiq which is published by the Islamic State. Dabiq is a town in northern Syria; there exists a tradition that this will be the site of a final battle between the forces of Islam and the forces of 'Rome,' which ISIS interprets to mean the forces of Christianity and/or America, where they will achieve final victory. Dabiq is an online magazine used by the Islamic State of Iraq and the Levant (ISIL) for propaganda and recruitment. It was first published in July 2014 in a number of different languages including English. Dabiq itself states that the magazine is for the purposes of unitarianism, truth-seeking, migration, holy war and community.

The battle of online publications is a battle of ideas between the radicals and the moderates, and how convincingly their views are presented. It also depends on the number of publications being put out on the Internet. As of now, if Daesh puts out 10 videos, there is only one counter from the side of the government. Hence the chances of hitting a terrorism inspiring video are today better, and one has to acknowledge that these terrorist organisations have been able to market their literature better on the Internet. In fact even the quality of their publications is very impressive and it appears that they are employing the services of highly creative and professional cadres. This is also a silent and safe form of support to the terrorist ideology. Imagine an old teacher who wishes to contribute towards such an organisation — well what better than write instigating literature being published online by someone else or help create a YouTube video in which the impact is made in the first few seconds. This is how unsuspecting, pliable and fallible young persons are being recruited around the world.

To promote terrorism, Pakistan has created about 17,000 fake social media websites in order to influence youth in Kashmir as well as other young minds. Some web service providers like Cloudflare and Limestone are also being used by Jaish-e-Mohammed (JeM) and Jamaat-ud-Dawa (JuD) as a means of providing training workshops and also for recruiting youth.

While cyber criminals cater for almost 98 per cent of these attacks, the issue of concern is the methodical manner in which terrorists are using the Internet for radicalisation, recruitment and in some extreme cases even terrorist activities

Ransomware

The technique of Ransomware is another creation of the devilish minds lurking in the dark and deep web. The method is simple — first send a malware to the target which would encrypt his important files or the entire desktop or my data, etc. Then ask for the ransom which is linked to a timer and down counter to exert pressure on the target that if he does not comply then his files will be deleted. The selection of target is also done carefully to extract the maximum mileage, and one can visualise the pressure if the target files are the research data of a scientist or the financial data compiled over a number of years. In cases related to terrorism, the terrorist can now demand an action that may be directly linked to an act of terrorism. For example, the terrorist may force the target to dial a number from his mobile which may trigger an explosive device. Or the terrorist could force someone with security clearance to commit an act inside a high security zone. In fact Ransomware has taken a new twist now with the attacker demanding that the target sends an e-mail with his malware attachment to at least two other people. Now a good cyber hygiene has told us not to open e-mails from unknown persons, but if a person is known to you then we will definitely open his e-mail and voila — now the attacker has doubled his target numbers!

Violent Acts

Various stories abound the Internet on hard attacks due to software. This issue gained importance from the famous Stuxnet attack which crippled the Iranian nuclear facility. The Shamoon virus was stated as its counter attack. Since then there have been innumerable cases of violent acts through the Internet platform. There are reports of attacks on the pacemakers of persons, often fatal. This scenario is bound to get grimmer with the possibilities of planes, drones and driverless cars being e-jacked. And if one tries to visualise the 50 billion devices being connected in the Internet of Things era by 2020, the consequences are potentially disastrous!

Countermeasures

As international outrage grows against terrorism related sites, the major players such as Google and Facebook have taken up a serious campaign with the help of the public to stop the uploading of 'objectionable' material on the Internet.

The police are also active in tackling online radicalisation and many extremist websites are removed by agencies such as the British Counter Terrorism Internet Referral Unit (CTIRU). The availability of this type of material on the Internet is being reduced all the time and with large increases in referrals from the public, more and more sites will be taken down in the future. The Internet provides a discreet opportunity for extremists to target young, vulnerable individuals within their own homes which means the work of such agencies is crucially important in the fight against terrorism. During an average week, the CTIRU is removing over 1,000 pieces of content that breach terrorism legislation. Approximately 800 of these are Syria and Iraq related and have been posted on multiple platforms. In the last 12 months, around 38,889 Internet takedowns were undertaken by the CTIRU reducing extremist material available on the Internet. That is over 1,00,000 since the unit was set up in 2010. Much of this has been achieved by forming working relationships with key social media outlets.

Conclusion

On February 18, 2017, at the Munich Security Conference, Vice President Mike Pence highlighted the growing importance of cyber security and terrorism. A few days earlier the Global RSA Cyber Security Conference in the United States witnessed growing concerns on the issue of cyber security, estimated to become a $3-trillion business by 2020. Similar concerns were raised during The Raisina Dialogues held in India during January 2017. Stakeholders are today demanding a Digital United Nations which can issue laws and regulations to bring some method to the madness sweeping the cyber world. The time to act was yesterday, and as India recently took the Paris Initiative for solar energy, can it take the lead in this cyber security initiative also? For the safety of its own Digital India at least. SP

The writer is former Commandant of Military College of Telecommunication Engineering (MCTE)

Cyber war – Where are we?

LT GENERAL
P.C. KATOCH (RETD)

ILLUSTRATION: Anoop Kamath

Cyber attacks in India have been on the rise over the years, particularly against government sites and Indian missions abroad despite several layers of security measures in place to protect against intrusions. In one instance, according to the Toronto-based Munk Centre of International Studies, GhostNet — a Chinese network — had infiltrated networks of the Indian Government as well as of the Dalai Lama. Not that this is not happening world over, absolute cyber security being misnomer. The hot news has been Russia hacking the US presidential elections in Donald Trump's favour, including exposing some 60,000 e-mails of the Hillary Clinton campaign that were later released by WikiLeaks showing Hillary in poor light.

In India, the Prime Minister's Office (PMO), Ministry of Exteranal Affairs, (MEA), Ministry of Home Affairs (MHA), the National

Informatics Centre (NIC) and the Defence Research and Development Organisation (DRDO), atomic installations, and military websites suffer hacking attacks periodically. Last year, as many as 32 lakh debit cards belonging to various Indian banks were compromised resulting in the loss of ₹1.3 crore, with one report indicating malware infected ATM of Yes Bank.

Then, 'Virtual Terrorism' is a gigantic problem facing India; examples being discovery in 2014 of Mehdi Masroor Biswas, ISIS tweeter "@ShamiWitness" operating past several years, a former NSA stating more than 100 individuals involved in Mehdi like activities, and a National Investigation Agency (NIA) probe showing tech savvy Indian Mujahideen (IM) cadres use proxy servers (in US, Nepal, Canada, Pakistan, Netherlands, India) and complex code to chat with e-mail accounts that disappear if not accessed in 24 hours, encrypted files and complicated code language.

We also face a situation where China is a cyber superpower adept in refined skills to undertake, cyber espionage and sabotage, and Pakistan is increasingly a beneficiary of China's cyber warfare capabilities because of the expanding China-Pakistan anti-India nexus. China's cyber warfare strategy focuses on controlling the information systems of the adversary during critical periods of confrontation and this is how China plans to negate superior US technology and obtain advantage in the physical battlefield. Therefore, in event of an Indo-Pak conflict, China is likely to assist Pakistan attack Indian command and control and other networks. Additionally, the Islamic State and Al Qaeda are refocusing to South Asia which increases the danger of cyber attacks. How the enemy is using social networks to destabilise regions is visible in J&K, rioting in Assam in recent past, plus the radicalisation and misinformation campaign pan India.

Moreover, Digital India is increasingly networking the country including critical infrastructure like transportation networks, power grids and financial institutions through online integration, with more and more official data stored online. Requisite levels of cyber security apparently could not be catered for in the Digital India project because the costs would have gone up exponentially. This gives the opportunity to our enemies, radicals and terrorists to undertake cyber attacks. What could perhaps be done is to execute Digital India with adequate cyber security in phased manner rather than race for a deadline to complete 'Digital India' by 2019 and then start worrying about cyber security.

Cyber war is a vital ingredient of hybrid warfare that is ongoing globally and what we have been facing past decades. Hence, focus must be maintained on this non-contact strategic asset. In India, cyberspace is being looked after primarily by the National Technical Research Organisation (NTRO) operating under Research and Analysis Wing (R&AW). The Indian Computer Emergency Response Team (CERT), set up in 2004 under Department of Information Technology (IT), is the nodal agency for responding to computer security incidents. In addition, the National Critical Information Infrastructure Centre (NCIIC) carved out CERT in 2013 is to protect assets in critical sectors like energy, banking, defence, telecom, transportation, etc. The NSA is to oversee a public-private partnership to set up a cyber security architecture. Logically, this would also be on the lines of the Counter Extremism Project (CEP), a non-governmental initiative launched in 2014 with Israeli assistance to confront the growing threat from extremist ideology; seeking to refute social media messaging, and compile world's biggest database of extremist networks.

Though a non-governmental organisation, it works with governments exploiting the Internet to mobilise social media to counter extremist ideology by exposing the threat of extremists and mounting a global counter narrative. India needs similar public-private partnership to tackle this mammoth problem. It may be recalled that Zakir Naik would have continued to preach hatred without Bangladesh pointing out to us Naik's radical activities that came to light post the terrorist attack on a Dhaka café. Of late, India's young hackers have also come of age. They have reportedly been successfully accessing Pakistani governmental networks. As per one media report, even the network of the US Embassy in Islamabad was snooped into and an old US road map for South Asia was retrieved, albeit US naturally denied its existence. So, the basic capability is very much there, but what is needed is harnessing the youth talent, a well-thought out roadmap and most importantly its implementation; often in India everyone knows what is to be done but where we lack is the execution part.

Already, many institutions in India are running courses in hacking. We need to invest heavily in IT protection, least we become easy targets for adversaries, terrorists and criminals. In addition to the National Critical Information Infrastructure Centre, we could also establish the following: one, National Coordination Centre for Information Sharing and Analysis — to define the meta data and data standards for information sharing between the NCIP, the intelligence agencies and the public and private sector industry. This may be a part of NSC/NTRO, and National IT Product Security Test Centre (NIPSTC) to operate and maintain a National Evaluation and Certification Scheme for IT security. But hacking and protection of own critical infrastructure and networks is not cyber warfare is all about.

In our case, not only is the military kept away from the cyber warfare programme, little progress has been made with respect of the Naresh Chandra Committee recommendation of 2012 for establishing a cyber command in the military

It must have the essential proactive element. It is for this reason that the cyber warfare programmes of both the US and China are led by the US Military and the People's Liberation Army (PLA). In fact the PLA has gone a step further and combined intelligence, technical reconnaissance, electronic warfare, cyber warfare and space warfare under the newly constituted Strategic Support Force of the PLA, which has tremendous operational advantage. In our case, not only is the military kept away from the cyber warfare programme, little progress has been made with respect to the Naresh Chandra Committee recommendation of 2012 for establishing a cyber command in the military. We must have an offensive cyber warfare policy and undertake systematic capacity building against adversaries including: one, stop them from accessing and using our critical information, systems and services; two, stealthily extract information from their networks and computers including vulnerabilities, plans and programmes of cyber attack/war, forethought and prior assessment being vital since it only takes 300 milliseconds for a keystroke to travel halfway around the world; three, penetrate their networks undetected and stealthy insertion of dormant codes, to be activated at opportune time for thwarting cyber attack(s); four, manipulate and doctor radio transmissions; five, destroy their computer networks, if and when necessary; six, manipulate their perceptions by speeding up ongoing research in mind control sciences. SP

The writer is former Director General of Information Systems, Indian Army

Indo-UK defence partnership

Union Minister for Finance, Corporate Affairs and Defence Arun Jaitley with the UK Secretary of State for Defence, Sir Michael Fallon in New Delhi on April 13, 2017

PHOTOGRAPHS: PIB

[By **Rajeev Chugh**]

The UK Secretary of State for Defence Sir Michael Fallon was on a four-day visit to India from April 11, 2017. The India-UK delegation level talks were held here where the UK side was led by Sir Michael Fallon while the Indian delegation was headed by the Defence Minister Arun Jaitley.

The joint statement said: "Minister of Defence Arun Jaitley and Secretary of State for Defence Sir Michael Fallon set out a shared vision for the India-UK Defence Partnership."

At the invitation of Minister of Defence Arun Jaitley, the Secretary of State for Defence Sir Michael Fallon visited India for the India-UK Strategic Defence Dialogue from April 11 to 14, 2017. The visit reaffirmed and consolidated UK-India defence cooperation in the framework of the Defence and International Security Partnership, agreed in November 2015, and the subsequent joint statement between the Governments of India and the UK in November 2016.

This enduring defence partnership will encompass not only cooperation in defence industry but also stronger military to military engagement, including training and advanced joint exercises. The renewed engagement will place capability and technology development at its core and seek to harness the complementary strengths of both nations in defence manufacturing and use the combined strengths of their respective private and public sectors

Union Minister for Finance, Corporate Affairs and Defence Arun Jaitley with the UK Secretary of State for Defence Sir Michael Fallon at the delegation level talks in New Delhi

to develop defence solutions for use in both home and shared export markets.

The Defence Ministers will also continue to consult and coordinate policies across a range of global security challenges, especially those intended to eliminate the scourge of international terrorism, in pursuit of their shared goal of a more secure world.

An Enhanced Defence Partnership

Based on the Defence and International Security Partnership (DISP) and building on existing Defence Consultative Group (DCG) mechanisms, both sides will explore additional areas for institutional engagement.

The Ministers agreed to further strengthen their naval and maritime interactions, including enhanced maritime domain awareness (MDA) through the bilateral technical agreement to exchange information to track terrorist and pirate vessels, a key deliverable of the DISP. The two Ministers also agreed to further develop cooperation between the UK Hydrographic Office and the Indian Navy Hydrographic Office.

India and the UK will endeavour to build a range of capability partnerships focusing on varied aspects of military effectiveness such as specialised training interactions and exchange of best practices in the following areas — counter terrorism (CT), counter improvised explosive devices (CIED), Air Force training, air total safety, aircraft carriers, maritime safety, shipbuilding and UN Peacekeeping. Efforts are already underway with exchanges of subject matter experts to discuss air safety collaboration and future CT requirements. The Ministers tasked the relevant Executive Steering Groups (ESGs) to finalise proposals for consideration at the next DCG meeting scheduled later this year.

As India and the UK continue to transform and modernise their defence structures with a shared desire to maximise the efficiencies and operational benefits of establishing joint force structures, the two Ministers agreed to share relevant experience in this domain.

Defence Industry

Whilst acknowledging the progress being made, the two Ministers recognised the potential for further cooperation in defence manufacturing between the UK and Indian companies under the 'Make in India' framework.

Jaitley welcomed the UK's interest in manufacturing in India as evidenced through recent announcements including the memorandum of understanding (MoU) between the Bharat Dynamics Limited and Thales UK on technology transfer opportunities for missile systems and efforts to develop an advanced hawk jet trainer jointly by the BAE Systems and the Hindustan Aeronautics Limited (HAL).

To further encourage and facilitate cooperation between the UK and Indian companies, they agreed to extend the current Defence Equipment Cooperation MoU and work towards early completion of an expanded MoU, that will provide a platform for the UK and Indian industries to collaborate on and support transfer of technology on projects in areas of mutual interest.

The two Ministers welcomed measures to ensure life-cycle support and sustenance of UK-origin defence platforms used by India, which may include setting up joint ventures and other collaborative arrangements. The UK and India will encourage interactions between the Indian Army Design Bureau and Defence Equipment and Support (DE&S)/Army Capability Branch through their Defence Equipment Sub-Group.

The UK and India will explore establishing a secure communications method in order to share classified material. The two countries will also consider upgrading their bilateral General Security Arrangement.

Science and Technology

The two Ministers recognised the need for stronger R&D cooperation, including access to defence R&D training, to enable new and vibrant technology partnerships across the defence domain.

They noted recent progress made on Defence Science and Technology collaboration with the signing of the Phase 2 follow-on research Collaborative Project Agreement on Human Sciences, signed at Aero India 2017.

Conclusion

The above commitments will better enable the UK and India to meet the evolving threats and challenges that face democracies in the 21st century. Both countries recognised their shared perspectives on the regional and international security situation and agreed to maintain their close interaction in this regard.

Sir Michael Fallon thanked Minister Jaitley for the warm hospitality extended to him and his delegation and looked forward to a return visit by the Minister of Defence to the UK. SP

PHOTOGRAPH: FICCI

Self-reliance, indigenisation and collaborative approach are Navy's mantra towards building a force of the future: Vice Admiral Deshpande

[By **Our Special Correspondent**]

The Indian Navy is working relentlessly towards transforming its shipbuilding, aviation and underwater capabilities by building new generation vessels by leveraging the technology and research as force multipliers. To this end, the Navy is emphasising on indigenisation and had identified areas for cooperation while actively seeking the involvement and participation of industry, academia and research laboratories.

This was stated by Vice Admiral D.M. Deshpande, AVSM, VSM, Controller of Warship Production and Acquisition (CWP&A), Indian Navy, at a curtain-raiser on FICCI's international seminar on 'Building India's Future Navy: Technology Imperatives', to be held from May 31-June 1, 2017, in New Delhi. The seminar would provide a common platform to explore and debate on disruptive technologies and its doctrinal impact in shaping the future of the Indian Navy.

Vice Admiral Deshpande said that the Indian Navy has been at the vanguard in promoting indigenous design and construction of warships and equipment for many years. The process of achieving self-reliance in the Navy is extremely complex and it requires active participation from many stakeholders across industries, both private and public, academia, R&D establishments, etc. He

EXCLUSIVE

Jayant Baranwal, Editor-in-Chief and Publisher of ***SP's M.A.I.*** spoke to **Vice Admiral D.M. Deshpande**, Controller of Warship Production and Acquisition (CWP&A), Indian Navy, at the curtain-raiser on international seminar on 'Building India's Future Navy: Technology Imperatives.' The questions were based on the push which is expected to help the fast-tracking process of modernisation out of the Indian Government's initiative of 'Make in India'.

Jayant Baranwal (JB): Can you share what is the status of landing platform docks (LPD) project?
Vice Admiral D.M. Deshpande (Deshpande): The situation now is way ahead for the landing platform docks. The decision is to be taken by the Ministry and we are likely to sign the contract by the end of this year.

JB: How is the Indigenous Aircraft Carrier-II (IAC-II) progressing?
Deshpande: We will be shortly interacting and finalising on the type of the IAC-II — exact tonnage, type of propulsion, and other design aspects. Post internal discussions, we will take it to the Ministry. This is a high-ticketed item and requires positivity from the government and the Navy.

JB: How about the status of Project 75I?
Deshpande: Project 75I is linked with the strategic partnership model and hinges on guidelines under the new DPP. The submarines are badly needed. If this model doesn't work then plan B gets into action and we will have to look elsewhere.

JB: You spoke about the ease of business rules. What does that signify?
Deshpande: We are looking at gaining self-reliance, that's the foremost. The FDI limits have also been raised and we are in talks with the government to facilitate the ease of business environment further. SP

—By Neetu Dhulia

added that an increasingly complex and volatile maritime security landscape requires development of technologies that can fulfill the requirements of the nation indigenously. He mentioned that in this regard the Navy has taken a quantum jump with respect to the technologies and the platform being inducted in its fleet over the years.

He said that the Navy is open to experimentation and R&D before embracing the technology. The plans of the Navy align well with the Government of India's 'Make in India' programme, which is enabling it to take bold decisions and collaborative approaches.

Vice Admiral Deshpande said that India aims to emerge as a defence manufacturing hub in future; thus the Navy seeks the support of industry, researchers, Defence Research and Development Organisation (DRDO) and government organisations. He added that proactive government policies aimed at easing business rules would help forge a collaborative environment.

Mentioning about the status of some of the large programmes in the pipeline, he shared that if all goes well, then the Navy is expected to close the landing platform docks (LPD) contract by end of this year.

On the occasion, Vice Admiral Deshpande released a brochure on the international seminar on 'Building India's Future Navy: Technology Imperatives.' In his presentation on the theme of the seminar, Cmde Sujeet Samaddar, NM (Retd), Honorary Advisor-Defence & Aerospace, FICCI, said that a disruptive technology changes the dynamics of competition in ways that are revolutionary, profound and unexpected. The seminar, he added, would focus on such technologies and would have dedicated sessions, which would deliberate on IDDM: Potential Projects for the Indian Industry, Modern Trends in Maritime Communications, Cyber Space Operations and Information Warfare, Shipborne Propulsion and Power Generation, Missiles, Underwater and Directed Energy Weapons, 'Make in India' Opportunities for Coastal States, Surveillance and Detection Systems, Transformation in Naval Aviation Sector: Challenges and Opportunities for the Aerospace Industry, Disruptive Technologies, Warship Building in India and Building India's Future Navy: Realising the 'Make in India' Initiative.

Ambika Sharma, Director General of FICCI, said that the seminar would provide a platform to senior officers of the Indian Navy and industry captains to deliberate on the future preparedness and required dimensions of a Future Ready Indian Naval Force. FICCI invites officers of the Indian Navy, Coast Guard, defence experts, innovators and industry to submit technical papers. All papers will be scrutinised by an expert panel. The last date for submission of the technical papers is April 30, 2017. SP

L&T and Hanwha Techwin sign contract for executing tracked SP gun programme

PHOTOGRAPH: L&T

Some key highlights of the contract

- Larsen & Toubro, India's multinational engineering conglomerate and private sector defence major, and Hanwha Techwin (HTW) of South Korea, signed a contract for execution of the 155mm/52-calibre tracked self-propelled (SP) gun programme for the Indian Army.
- The contract is a result of nearly a decade-long close relationship and joint efforts of the two companies on this programme, through extensive user evaluation and field trials followed by contract negotiations with the Indian Ministry of Defence.
- Keeping the spirit of 'Make in India,' L&T shall not only manufacture K9 Vajra-T in India, with over 50 per cent indigenous content, but also provide through life support from India.

Larsen & Toubro, India's multinational engineering conglomerate and private sector defence major, and Hanwha Techwin (HTW) of South Korea, on April 21, signed a contract for execution of the 155mm/52-calibre tracked self propelled (SP) gun program for the Indian Army.

L&T was declared as the sole qualified bidder, post user evaluation trials, based on the performance of the K9 Vajra-T, a world class self-propelled howitzer appropriately customised and fielded by L&T with HTW as the technology partner. The K9 Vajra-T gun is an enhanced version of HTW's K9 Thunder, to suit specific requirements of the Indian Army including desert operations. HTW's K9 Thunder is one of the best performing self-propelled howitzers in the world with over 1,000 numbers already in service in Korea and few other countries. This programme has set new benchmarks in co-development and co-production of defence systems by Indian private sector defence players and foreign majors.

The contract is a result of nearly a decade-long close relationship and joint efforts of the two companies on this programme, through extensive user evaluation and field trials followed by contract negotiations with the Indian Ministry of Defence.

Jayant Patil, Head of Defence and Aerospace and Member of Heavy Engineering Board at L&T, said: "This contract marks an important milestone in L&T's Defence Business journey and in our relationship with Hanwha Techwin. It will create synergies not only for this programme but also for upcoming Indian and global programmes. This also marks a giant step forward towards furthering the 'Make in India' vision of the Government of India. L&T plans to begin production of this vital weapon system at its Strategic Systems Complex at Talegaon near Pune in Maharashtra and deliver the first batch of 10 guns. L&T also has initiated setting up of a greenfield manufacturing line at Hazira, Gujarat, integral with a state-of-the-art test track, to produce, test and qualify the K9 Vajra-T guns."

Keeping the spirit of 'Make in India,' L&T shall not only manufacture K9 Vajra-T in India, with over 50 per cent indigenous content, but also provide through life support from India. SP

IAI signs $2 billion contracts with India

PHOTOGRAPH: IAI

[By **Our Special Correspondent**]

The Israel Aerospace Industries (IAI) announced on April 6, 2017, that the company has been awarded contracts in India totalling almost $2 billion. In a mega-contract worth over $1.6 billion, considered to be the largest defence contract in Israel's defence industries' history, IAI will provide an advanced MRSAM air and missile defence systems to the Indian Army.

The company will also supply additional LRSAM air and missile defence systems for the first 'Build in India' Indian aircraft carrier.

MRSAM is an advanced ground-breaking air and missile defence system that provides the ultimate protection against a variety of aerial threats. In its existing version, MRSAM is operational with the Indian Air Force, Indian Navy and Israel Defense Forces. The system includes an advanced phased-array radar, command and control, mobile launchers and missiles with advanced RF seekers. MRSAM was developed jointly for the Indian Army by IAI and India's Defence Research and Development Organisation (DRDO) in collaboration with Rafael and IAI/Elta, and worked with various Indian companies including BEL, L&T, BDL and other private vendors.

Joseph Weiss, IAI's President and CEO, said: "Over the past 25 years, IAI has worked with the Indian defence industries and armed forces in many areas as part of our strategic partnership. The current contracts represent an enormous expression of confidence by the Government of India in IAI's capabilities and advanced technologies which are being developed with our local partners as part of the Indian Government's 'Make in India' policy. We continue to stand with our partners in India at the forefront of technology for the defence and security of both our countries." Weiss added: "this contract award also recognises the professionalism of all of Israel's defence industries. We at IAI are proud to be leading this flagship project after a long and joint development process."

Boaz Levi, Executive Vice President and General Manager of Systems, Missiles & Space Group, said: "Along with our partner in India, we will supply to the Indian Army an advanced, sophisticated and innovative system that will provide the best operational solution. This complex development reflects technological innovation, creativity, vision and remarkable personal dedication of all those involved in the development of the system both in Israel and India". SP

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ISIS menace – Caution time ahead

LT GENERAL
P.C. KATOCH (RETD)

The Bhopal-Ujjain train blast on March 7, 2017, injuring nine people is being heralded as the first strike by the Islamic State in India. It has now emerged that the members of this module inspired by the Islamic State of Iraq and Syria (ISIS), led by self-styled 'emir' Atif Muzaffar, had criss-crossed the country between February 2016 and January 2017 visiting various borders and contacting immigration agents in cities with international airports in search for an opportunity to exit the country and migrate to Iraq/Syria.

After forming a 'core' group of like-minded, IS-influenced youths in Kanpur in February 2016, Atif, along with Danish and Faisal, travelled to Srinagar, Amritsar, Wagah and Jaisalmer, exploring ways to exfiltrate to Pakistan through the land border and contacting travel agents to get a visa to Pakistan. Radicalisation and youth attracted to Islamic State is not a new phenomenon.

In January 2017, the National Investigation Agency (NIA) suspected few months back that the 22 Kerala youths, who had disappeared, may have joined the Islamic State training camp in Afghanistan. According to intelligence sources, the agency has got some leads on the missing people and the NIA believed that they were at Nangrahar in Afghanistan. There have been earlier reports of some Indian youth having joined the ISIS, some trying to join and others having returned disillusioned. The one's returned may well be 'sleepers' which is recent tactics of returning volunteers to parent country for executing 'lone wolf'/module-based terror attacks when directed to do so.

ISIS flags have been appearing in the Kashmir Valley periodically. ISIS logo T-shirts have been distributed by radical mullahs in South India. Recently, posters inviting youths to join ISIS surfaced in Bihar's Rohtas district during March 2017. US intelligence has recently warned that the ISIS is doing active recruitment in Pakistan and Afghanistan. This is hardly surprising because we have neighbour Pakistan who is continuously experimenting with mating different variety of snakes. Intelligence reports indicate that the ISIS and Pakistan-based Lashkar-e-Jhangvi (LeJ) have joined hands under the tutelage of Pakistan's ISI (Inter-Services Intelligence) with eyes on South Asia; Afghanistan and India in particular.

There is need for extra caution in a liberal democracy like India. In 2014, Mehdi Masroor Biswas, a Bengaluru-based executive, first discovered and reported by Channel 4 News of UK, confessed he was handling the pro-jihad tweeter "@ShamiWitness" for past several years. According to a former NSA more than 100 individuals are involved in Mehdi-like activities.

A National Investigation Agency probe shows that Indian Mujahideen (IM) cadres are tech savvy and have been using proxy servers and complex code to chat: exceptional knack for IT setting up e-mail accounts that disappear if they not accessed in 24 hours, proxy servers to camouflage geographical location, encrypted files and complicated code language; use of US-based Yahoo Inc, Paltalk Inc, Sophidea Inc and Hurricane Electric, plus providers in Nepal, Canada and Ireland; IP address of Nimbuzz chat traced to Pakistan Telecom Company Limited and others traced to France, Germany, the Netherlands, Nepal and India.

Asymmetry through non-war operation encompasses fields like finance, ecology, psychology, media, drug trafficking tech, etc. Such asymmetric approaches will invariably be used in conjunction others. In the US, a non-governmental initiative termed Counter Extremism Project (CEP) was launched in 2014 with Israeli assistance to confront the growing threat from 'extremist ideology'. CEP seeks to refute social media messaging, compile world's biggest database of extremist networks. The CEP would augment the US NSA already heavily committed albeit the NSA faced heavy criticism in recent times for snooping globally under the 'Prism' programme.

CEP works with governments exploiting the Internet to mobilise social media to counter extremist ideology by exposing the threat of extremists and mounting a global counter narrative. India needs similar public-private partnership to tackle this mammoth problem.

Participation of the private sector is also essential because of the magnitude of the issues involved. CEP has been launched as a private sector organisation that describes itself non-partisan in its efforts to combat extremism. Its goals include compilation of the world's most exhaustive database on extremist groups and their networks, and places unmasking the funding sources for ISIS high on its list of immediate priorities.

Though the CEP is a non-governmental organisation, it works with governments exploiting the Internet to mobilise social media to counter extremist ideology by exposing the threat of extremists and mounting a global counter narrative. India needs similar public-private partnership to tackle this mammoth problem. Ironically, the radical Zakir Naik would have continued to preach hatred without Bangladesh pointing out to us Naik's radical activities that came to light post the terrorist attack on a Dhaka café. SP

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

Admiral Sunil Lanba, Chief of the Naval Staff, visits Malaysia

Admiral Sunil Lanba, Chairman Chiefs of Staff Committee (COSC) and Chief of the Naval Staff (CNS), Indian Navy, was on a goodwill visit to Malaysia from April 11 to 15, 2017. The visit was intended to consolidate and enhance bilateral maritime relations between India and Malaysia and was expected to provide a major boost to defence relations between India and Malaysia.

The Admiral held discussions with the Deputy Minister of Defence, Chief of Royal Malaysian Defence Forces along with the Chiefs of Army, Navy and Air Force of Malaysia. The Indian and the Royal Malaysian navies cooperate with each other in terms of training, operational interactions as well as interacting at various multilateral forums like the Indian Ocean Naval symposium, MILAN and ADMM Plus. Warships from both navies visit each other's ports to build 'Bridges of Friendship'. The Chief of the Royal Malaysian Navy (RMN) along with RMN corvette KD Lekir participated in the International Fleet Review 2016 at Visakhapatnam in February 2016.

An inaugural field training exercise is also scheduled between both navies in June this year, coinciding with the visit of Indian naval ships to Malaysia.

The Admiral, in addition to holding important bilateral discussions with various dignitaries also visited major naval establishments of the Royal Malaysian Navy including the submarine base. He also addressed the participant officers and faculty of the prestigious Royal Malaysian Armed Forces Command and Staff College. SP

Indo-Mongolian joint exercise: Nomadic Elephant

PHOTOGRAPHS: Indian Navy, Indian Army

The 12th iteration of Indo-Mongolian joint military exercise Nomadic Elephant was held at Vairengte from April 5 to 18, 2017. Mongolian Army is represented by nine officers and 36 soldiers of the elite 084 Special Forces Task Battalion while Indian Army is represented by a contingent comprising of three officers, four JCOs and 39 soldiers of the Jammu and Kashmir Rifles.

Nomadic Elephant is aimed at training the troops in counter-insurgency and counter-terrorism operations under the United Nations mandate. The joint training will also lay emphasis on conducting operations by a joint subunit, comprising of troops from both the armies, in adverse operational conditions aimed at enhancing the interoperability between the two armies. SP

DCI completes training of Indian submariners for Scorpène

The Défense Conseil International (DCI), the reference operator of the French Ministry of Defence for the transfer of French military know-how to international partners, has completed training of the first of two crews of Indian submariners for future Scorpène-type submarines. The training is part of the P-75 programme, launched between India and France in October 2005, which covers the construction of six Scorpène submarines by the Indian shipyard Mazagon Dock Limited.

Since September 2015, DCI has been in charge of training two crews for future Scorpène-type submarines, one of the most advanced and modern submarines in the world, thanks to a much higher degree of automation than previous-generation designs. Under the P-75 programme, DCI has deployed a team of nine expert submariners to train two crews, i.e. 100 Indian submariners, and transfer to them the know-how of the French Navy. The trainees include several instructors who will subsequently train the crews of the four other submarines in the P-75 programme.

The training, which was performed on land then onboard the submarine at the dockside and at sea, covered the submarine's equipment and systems in accordance with current French Navy standards. Training covered the safe operation of the vessel, on the surface and submerged, in normal and degraded modes.

"We are delighted with the successful training of this first crew of Indian submariners. DCI has shown once again its capacity to transfer its know-how and its training systems to its foreign navy partners", said Jean-Michel Palagos, Chairman and CEO of DCI. Training of the second crew is already under way.

Following Chile and Malaysia, India is the third country, ahead of Brazil, to receive submariner training from DCI, confirming the latter's capacity to adapt to an international, intercultural environment. SP

Army Commanders' Conference concludes: need to push modernisation and inclusive HR policies

(Left) The bi-annual Army Commanders' Conference commences; (Right) The Chief of Army Staff with Senior Officers at Army Commanders' Conference

The biannual Army Commanders' Conference came to an end recently with the closing remarks of General Bipin Rawat, Chief of Army Staff. The Army Commanders' Conference had commenced earlier this month in April 2017. Army Commanders' Conference is an important event in the planning and execution process of the Indian Army. To ensure due diligence, decisions are taken through a collegiate system comprising the Army Commanders and other senior officers who deliberate upon the prevailing security scenario, strategic and actionable issues to ensure effective combat edge of the Indian Army.

General Bipin Rawat, the Army Chief, in his addresses emphasized that all systems were working well and complimented all those who are working on the ground. He observed that Indian Army continues to hold a strong image and a professional reputation. He exhorted all ranks to endeavour to further strengthen the same. The Chief of Army Staff impressed upon the need to work in a collaborative manner for maintaining combat effectiveness of the Army. He expressed his confidence at the way the Army has been adapting itself to the dynamic internal and external operational environment. He added that there is a need for sustained and holistic modernisation of the Army wherein combat and manoeuvre arms, Air Defence and Aviation are on high priority. The Chief of Air Staff Air Chief Marshall BS Dhanoa and Chief of Naval Staff Admiral Sunil Lanba also addressed the conference emphasising on evolving a joint operational philosophy.

At the conference, it was decided to give heft to the modernization plan of the Army. A comprehensive plan to speed up land acquisition for infrastructure development has been decided to be addressed through the State Governments. During the deliberations, a session was dedicated to discussion with Ministry of Defense to evolve a more wholesome action plan on administrative and modernisation issues. Also, important issues having HR policy ramifications were discussed. There is an impetus to evolve a more pragmatic HR plan. The core values of Army though haven't changed; rapid societal changes and discernible impact of socio-economic aspirations on Army were a focus area of the Conference.

The Army unlike most Government departments has a highly pyramidal structure, which results in over 50 percent personnel not being promoted despite being highly competent thus necessitating optimum utilisation of this pool of competent personnel. The Conference deliberated measures to enhance transparency and inclusiveness leading to greater equability. The proposals to make Short Service Officers entry scheme more popular, streamlining the intake pattern, employment of Women Officers and grant of Honorary ranks to Junior Commissioned Officers and Non Commissioned Officers were also discussed with positive roadmaps.

The Army Chief during the course of the deliberations highlighted the need for a more participative form of policy formulation. Concerned branches of the Army HQ have accordingly been directed to interact with wide cross-section of offices, branches, and personnel.

Defence Minister Arun Jaitley also addressed the Army Commanders' Conference and complemented the senior military hierarchy saying 'whenever the challenges multiply or their nature changes, Indian Army has always outperformed itself'. He stated that modernisation of defence equipment is the topmost priority for the Government. SP

PHOTOGRAPHS: Indian Army

Defence Minister at Air Force Commanders' Conference

Defence Minister Arun Jaitley inaugurated the biannual Air Force Commanders' Conference at Air Headquarters (Vayu Bhawan), New Delhi on April 19, 2017. Air Chief Marshal B.S. Dhanoa, Chief of the Air Staff (CAS) welcomed the Defence Minister, G. Mohan Kumar, Defence Secretary and A.K. Gupta, Secretary (Defence Production). He also introduced the Air Force Commanders to the Defence Minister.

The CAS updated the Minister on the operational status of Indian Air Force (IAF)and the progress on infrastructure development. He highlighted the efforts made to enhance aircraft serviceability towards maintaining operational readiness of IAF. Achievements during the recently conducted pan IAF and international exercises with friendly foreign countries were also covered by the CAS. He further elaborated the actions initiated for enhancing operational effectiveness and the future roadmap of IAF.

The Defence Minister deliberated on the challenges to defence forces due to the rapidly changing geo-political situation in the world and the uncertainties existing in the region. He commended IAF for having successfully conducted various military exercises and operations towards Humanitarian Assistance and Disaster Relief (HADR) both within and outside the country. Acknowledging IAF's capability as the first responder especially in face of a natural calamity he emphasised the resolve of the government in expediting approved modernisation programmes of the Service. SP

A400M delivers first humanitarian cargo for Malaysia

The Royal Malaysian Airforce (RMAF), Airbus and the Spanish Red Cross have worked together to deliver a load of humanitarian goods from Seville, Spain, to the International Federation of Red Cross and Red Crescent Societies Asia-Pacific Regional Office in Malaysia on March 23.

The cargo consisted of mosquito nets, which will be used to prevent malaria outbreaks following future natural disasters in the region. The collaboration has been facilitated by the Airbus Foundation and utilised the delivery flight of the fourth A400M to the RMAF.

"We are delighted that this delivery flight to the Royal Malaysian Air Force has carried a load of humanitarian goods for the Red Cross. This will certainly be the first of many HADR missions, for which this aircraft is designed and ideally suited and we look forward to further support this in the future," added Fernando Alonso, Head of Military Aircraft Airbus Defence and Space.

The A400M unique ability to fly further, faster and with heavy loads while operating from short and soft unpaved airstrips, makes it ideally adapted to the geographical conditions that are often faced in the context of humanitarian missions. SP

PHOTOGRAPHS: IAF, Airbus D&S

Lockheed Martin's 3D printed parts for US military satellites

When the US Air Force's sixth Advanced Extremely High Frequency (AEHF-6) satellite launches into space, a 3D printed part will be along for the ride. A Remote Interface Unit, an aluminium electronic enclosure designed to hold avionic circuits, will be the first 3D printed part certified for use on a Lockheed Martin military satellite.

By going from multiple machined parts to one 3D printed part, the team was able to save time in the design and production cycle, as well as increase the quality and consistency of the units. The lead time for manufacturing the part went from six months to only 1.5 months, with assembly time also being reduced from 12 hours to just three hours. SP

CH-53K King Stallion achieves Milestone C

Lockheed Martin recently announced the CH-53K King Stallion programme successfully passed its Defense Acquisition Board (DAB) review and achieved a Milestone C decision that enables low rate initial production funding. "This affirmative Milestone C decision validates the maturity and the robust capability of the King Stallion in meeting the United States Marine Corps mission requirements," said Dr. Michael Torok, Sikorsky Vice President, CH-53K Programs.

"This establishes the CH-53K as a production programme and marks another critical step towards our goal of delivering this tremendous capability to the USMC."

Numerous, successfully completed prerequisites preceded the Milestone C decision. Supplier as well as prime contractor Production Readiness Reviews took place throughout 2016 to establish the programme's readiness to move into low rate initial production. Aircraft maturity was established well in advance with over 400 flight hours achieved, and the October 2016 initial Operational Assessment by the USMC fully established the ability of the King Stallion to achieve critical mission flight and ground scenarios in the hands of active duty Marines. SP

$2.2-billion contract for P-8 aircraft

Boeing, the US Navy, the Royal Australian Air Force and the United Kingdom Royal Air Force will continue modernising global maritime patrol capabilities through a $2.2-billion contract awarded on March 30 for at least 17 P-8A Poseidon aircraft.

The agreement also includes options for 32 additional aircraft, as well as money for long-lead parts for future orders. After exercising all options, the total contract value will be $6.8 billion. This comprehensive award reflects a commitment by Boeing and the Navy to achieve pricing and production stability, two keys of successful programme performance.

"The P-8A is a textbook example of Boeing's commercial derivative expertise," said Jamie Burgess, Vice President of Boeing Military Aircraft's Mobility, Surveillance and Engagement division and the P-8 programme manager. "Every day our customers get to fly incredible aircraft that perform exceptionally well and are built by the best of Boeing." SP

TU-142M receives a formal welcome at INS Dega

The Chief Minister of Andhra Pradesh N. Chandrababu Naidu welcomed the TU-142M long range maritime patrol aircraft of the Indian Navy which landed at INS Dega for the last time recently. A special ceremony organised at INS Dega to formally welcome the aircraft at Visakhapatnam was attended by P. Ashok Gajapathi Raju, Civil Aviation Minister, Vice Admiral H.C.S. Bisht, Flag Officer Commanding-in-Chief, Eastern Naval Command, and others. The Andhra Pradesh government had earlier requested the Ministry of Defence for allotment of one de-inducted TU-142M for converting it into a museum.

The request is being processed at the Ministry of Defence. The Visakhapatnam Urban Development Authority (VUDA) would be coordinating all activities related to aircraft museum. The TU is likely to be dismantled and transported by road on trailers and reassembled on the Beach Road near Kursura Submarine Museum. SP

PHOTOGRAPHS: Lockheed Martin, Boeing, Indian Navy

GA-ASI's Predator B demonstrates Threat Radar Detection

General Atomics Aeronautical Systems Inc (GA-ASI) announced the successful airborne demonstration of a radar warning receiver (RWR) on a GA-ASI Predator B/MQ-9 Reaper Block 5 aircraft. The company-owned Predator B operated from GA-ASI's Gray Butte Flight Operations Facility near Palmdale, California, against various ground-based radars.

"The successful demonstration of a mature radar warning receiver on our company-owned Predator B clearly shows the utility of the aircraft in conducting missions in the proximity of threat radars and enemy air defences," said Claudio Pereida, Executive Vice President, Mission Systems, GA-ASI. "We are pleased to be the first company to demonstrate this capability on a remotely piloted aircraft and hope to make it available to interested customers on a quick-reaction basis."

The Raytheon ALR-69A RWR, carried within GA-ASI's standard payload pod, provides enhanced situational awareness to aircrew and air element command and control units by identifying potential radar threats in or near "contested airspace" environments.

"The ALR-69A provides improved detection range and accurate, unambiguous identification in dense signal environments," said Paul Overstreet, ALR-69A Program Manager, Raytheon. "Its open architecture is what allows it to operate on manned or unmanned aircraft." SP

MQ-4C Triton improves mission capability

The US Navy's MQ-4C Triton, built by Northrop Grumman Corporation, completed formal lab testing and a successful first flight of an improved software suite that enhances the autonomous unmanned system's operational capabilities and enables early operational capability (EOC) deployment in early 2018.

The Navy conducted the first flight test of the software upgrade which is designed to enhance Triton's capabilities including Traffic Alert and Collision Avoidance System (TCAS), multi-aircraft control and additional Multi-Function Active Sensor (MFAS) radar modes.

"The integration of this enhanced software suite expands Triton's operational maritime intelligence, surveillance, reconnaissance, and targeting capabilities and moves it that much closer to qualification for operational missions in the Pacific theater," said Doug Shaffer, Vice President, Triton Programs, Northrop Grumman. "These flight tests further demonstrate the value and vast potential of this system."

US Navy's MQ-4C Triton is a forward-deployed, land-based, autonomously operated system that provides a persistent maritime ISR capability using a multi-sensor mission payload (radar, electro-optical/infrared/electronic support measures). The MQ-4C Triton provides real-time intelligence, surveillance and reconnaissance including vessel detection, tracking and classification over vast ocean and coastal regions. Its robust mission sensor suite provides unprecedented persistent 360-degree maritime domain awareness. The aircraft can fly up to 24 hours at altitudes of up to 56,500 feet with an operational range of 8,200 nautical miles and can monitor one million square miles of ocean in a single flight. SP

PHOTOGRAPHS: GA-ASI, Northrop Grumman

USAF, Lockheed Martin demonstrate manned/unmanned teaming

Lockheed Martin Skunk Works, the Air Force Research Laboratory (AFRL), US Air Force Test Pilot School and Calspan Corporation successfully demonstrated manned/unmanned teaming to improve combat efficiency and effectiveness for the warfighter.

"This demonstration is an important milestone in AFRL's maturation of technologies needed to integrate manned and unmanned aircraft in a strike package," said Captain Andrew Petry, AFRL autonomous flight operations engineer. "We've not only shown how an unmanned combat air vehicle can perform its mission when things go as planned, but also how it will react and adapt to unforeseen obstacles along the way."

During the flight demonstration, an experimental F-16 aircraft acted as a surrogate unmanned combat air vehicle autonomously reacting to a dynamic threat environment during an air-to-ground strike mission. SP

Rolls-Royce opens first defence Service Delivery Centre in Asia to support Indian armed forces and HAL

Rolls-Royce has opened a new defence Service Delivery Centre (SDC) in Asia, located at the Manyata Embassy Business Park in Bengaluru. Co-located with the Rolls-Royce Engineering Centre, the SDC will offer localised engineering support to improve frontline capability of Indian Air Force (IAF) and Indian Navy aircraft, and to the Hindustan Aeronautics Limited (HAL).

The Centre was officially inaugurated by Dominic McAllister, British Deputy High Commissioner, Bengaluru, in the presence of Rolls-Royce executives including Kishore Jayaraman, President - India & South Asia; Lee Doherty, Senior Vice President - Defence, Asia Pacific; and Shaun Agle, Vice President Customer Services India Defence.

According to Doherty: "We put our customers at the heart of our business, and the opening of our first Service Delivery Centre in India demonstrates our commitment to be closer to our customers to ensure they get the best possible aftermarket support and outstanding customer service which they have come to expect from us. With a highly skilled team, fully trained in engineering services, supply chain and operational support, we will continue to provide maximum engine readiness and availability."

The Centre will be providing defence customers in India with services such as fleet management, services engineering and supply chain co-ordination. It will also be the base from which Field Service Representatives can be rapidly dispatched to frontline bases, subject to contract coverage, to provide on-ground technical support. The aim is to deliver the optimum support possible to over 750 aircraft engines which power the Indian Armed Forces, including: the Adour, which powers both the Hawk Advanced Jet Trainer and the Jaguar combat aircraft; the Gnome engine, which powers the Sea King; and the Dart, which powers the HS748. It also provides coverage for AE2100 and AE3007 engines that power the C-130J and the Embraer 145, respectively. The SDC also will have the capability to support new engine fleets.

Additionally, the SDC will support HAL by enabling "state of the art" supply chain management that will also combine with improved in-country support for manufacturing, assembly and test and repair capabilities.

This SDC is based on a highly successful model operated by Rolls-Royce at Royal Air Force Marham, UK for RB199 and also in use for the US Navy Adour F405 in Kingsville. The support system puts engineering and services staff on-base, working closely and collaboratively with the service to increase efficiency and communication.

Agle explained "This Service Delivery Centre has been configured specifically for the Indian Armed Forces and HAL with Benagluru being a logical location close to Engine Division. Overall this contributes to the broader 'Make in India' agenda through skills development and increasing self-sufficiency. The overriding goal is to improve availability of 'engines-on-the-wing through a step change improvement of in-country responsiveness for current fleets as well as for future Defence programmes."

Jayaraman explained what it means to India's growing aerospace capabilities: "The opening of this Service Delivery Centre marks the beginning of a new chapter in the strong partnership that has existed for over eight decades between India and Rolls-Royce. It demonstrates our commitment to support India's growth capabilities by encouraging knowledge transfer, building highly skilled teams and developing the Indian aerospace ecosystem." SP

President of India honours HAL with SCOPE Meritorious Award

PHOTOGRAPH: HAL

The Hindustan Aeronautics Limited (HAL) has been conferred with SCOPE Meritorious Award 2014-15 for Corporate Governance. Pranab Mukherjee, President of India, presented the award to T. Suvarna Raju, Chairman and Managing Director of HAL on April 11 at New Delhi coinciding with the 'Public Sector Day celebrations'.

"I am happy to receive the prestigious award on behalf of HAL and its employees who are committed to the company's growth and excellence. We will continue to maintain and enhance the highest standards of Corporate Governance we have set for the organisation," said Suvarna Raju.

Anant G. Geete, Minister of Heavy Industries & Public Enterprises, Babul Supriyo, Minister of State for Heavy Industries and others were present on the occasion.

HAL complies with the Corporate Governance guidelines framed by the Department of Public Enterprises (DPE) and works for the optimum benefits of its stakeholders. The policies and procedures of the company are constantly reviewed and updated to ensure transparency in all aspects of the company's working. SP

Savis, Bradar and Rockwell Collins pact

Savis and Bradar, affiliated companies to Embraer Defense & Security, and Rockwell Collins announced at LAAD Defence & Security a cooperation agreement to jointly evaluate business opportunities in defence applications.

This initiative will enhance Savis and Bradar activities in the international market, working in conjunction with Rockwell Collins, and also search for existing complementary capabilities in the companies' product lines.

The first opportunity identified is the radar technology integration into the Rockwell Collins FireStorm system, the most precise portable solution available in the market to assure call for fire precision. The new capabilities offered by Savis and Bradar have the potential to extend the protection and situational awareness of the troops providing early warning of potential threats. This integrated solution provides an option to augment the capability to offer both close air support and troops call for fire, being capable in the future to operate integrated with attack aircraft, such as the A-29 Super Tucano.

"This Savis, Bradar and Rockwell Collins agreement will open opportunities to integrate existing capabilities in these companies and offer better integrated solutions not only for the Brazilian armed forces, but for the global market," said Jackson Schneider, Embraer Defense and Security CEO. SP

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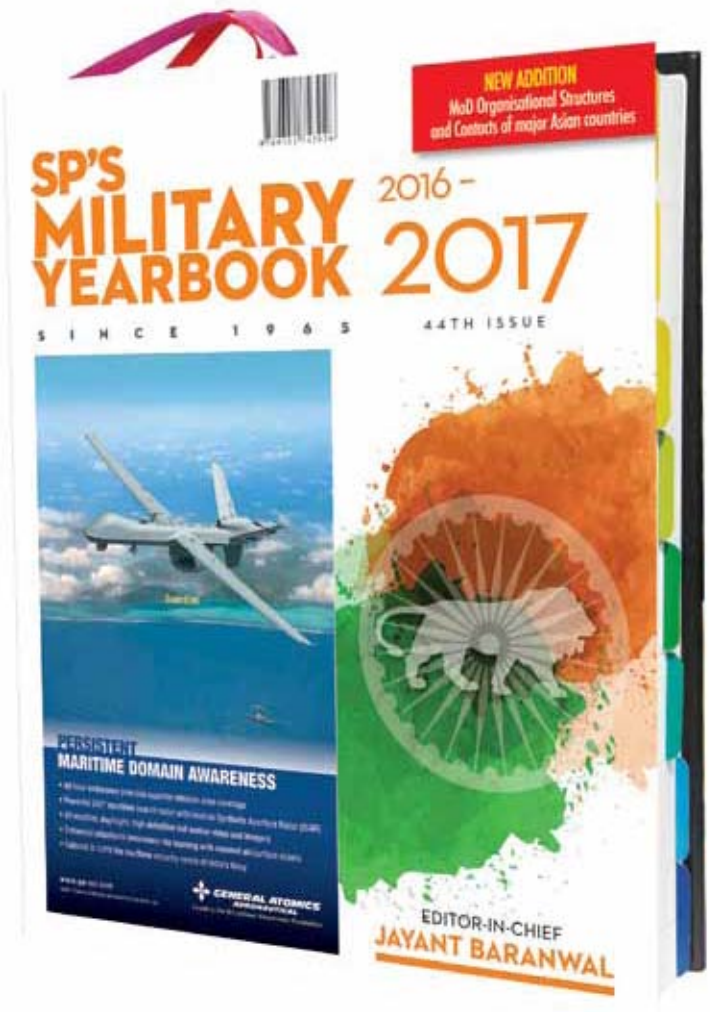

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