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SP's

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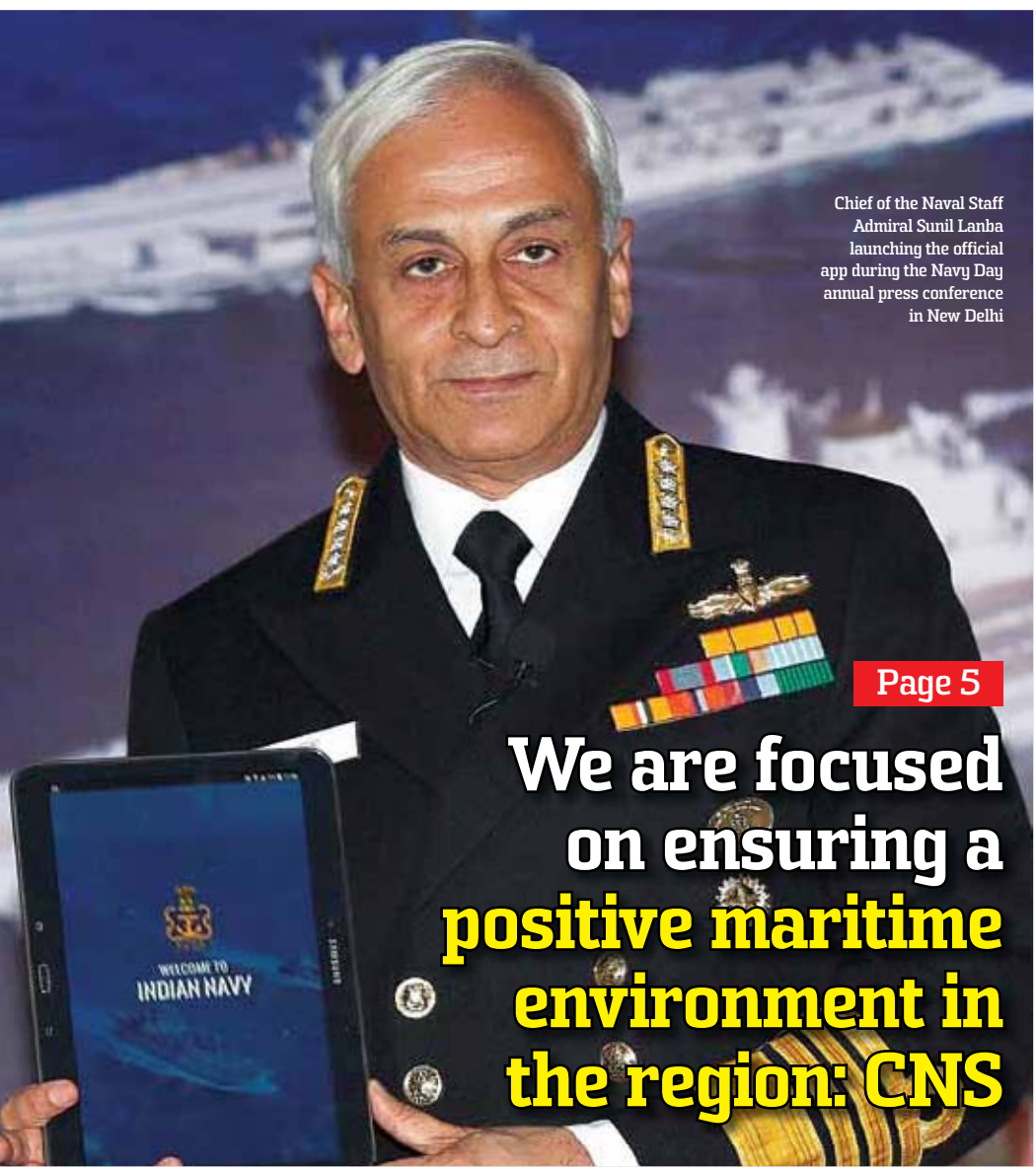

Chief of the Naval Staff Admiral Sunil Lanba launching the official app during the Navy Day annual press conference in New Delhi

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We are focused on ensuring a positive maritime environment in the region: CNS

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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)

SP GUIDE PUBLICATIONS

OVER 5 DECADES SINCE 1964

General Atomics advanced arresting gear system successfully completes first fly-in aircraft recovery

General Atomics Electromagnetic Systems (GA-EMS) on December 1, 2016, announced that the advanced arresting gear (AAG) system successfully completed the first fly-in aircraft recovery of an F/A-18E Super Hornet on October 13, 2016, at the runway arrested landing site (RALS) at joint base McGuire-Dix-Lakehurst in New Jersey. The F/A-18E fly-in recovery follows more than 200 successful roll-in test arrestments at the site since March, and more than 1,300 dead-load arrestments.

"This marks another significant milestone in the successful demonstration and verification of AAG's performance and capability," stated Scott Forney, President of GA-EMS. "We're tracking to a very aggressive testing schedule, and this fly-in recovery marks a major step towards AAG readiness for on-board testing on the Pre-Commissioning Unit Gerald R. Ford (CVN 78)."

PHOTOGRAPH: GA-EMS

AAG is a turbo-electric system designed for controlled and reliable deceleration of aircraft recovery operations on carriers. AAG is installed onboard CVN 78 along with the GA-EMS Electromagnetic Aircraft Launch System (EMALS), which uses electromagnetic technology to launch aircraft from the deck of naval aircraft carriers. EMALS has successfully completed system testing on CVN 78.

"The fly-in recovery of the F/A-18 Super Hornet illustrates AAG's capabilities to perform as predicted, under conditions similar to today's carrier operations," stated Andy Gibbs, AAG Chief Engineer at GA-EMS. "We're collecting data to support the development of an Aircraft Recovery Bulletin, a critical step towards arresting the aircraft on CVN 78. We look forward to continuing success as the AAG system undergoes planned testing activities for additional aircraft types and models." SP

Cover:
In the annual press conference by CNS on the eve of Navy Day 2016, Admiral Sunil Lanba mentioned that the Indian Navy has holistically reviewed its deployment philosophy to proactively deter any menace that may threaten our sovereignty.

Cover images: Indian Navy, Wikipedia, Insitu

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Indian Navy plans to keep at bay any trouble in the region

The Indian Navy is a force to reckon with in the international maritime community. It has been doing yeoman service to the nation by a series of activities to deter any menace that may threaten India's sovereignty. With the Indian Ocean region (IOR) being a very active region on many fronts, the Navy has been not only very active but also proactive in keeping the region in a positive maritime environment. The Chief of the Naval Staff Admiral Sunil Lanba in his press conference on the eve of Navy Day has clearly spelt out that Navy plans to keep at bay any trouble in the region.

The Navy has deployed over 40 ships, four submarines, and 12 aircraft in the Indian peninsular and island territories and is constantly testing its operational philosophy, war-fighting capabilities and combat tactics, through a series of exercises, some jointly with foreign navies, some with the other arms of the armed forces and independently.

Explaining in detail how the Indian Navy maintains a positive maritime environment, the CNS has pointed out the joint exercises with IOR countries; training of personnel of IOR countries; coordinating patrol in the Gulf of Aden along with Japan, China and South Korea and many more activities. The CNS has been very open with regard to developments and in a response to one of our questions on the light combat aircraft (LCA); he has stated how the LCA with its present engine is too heavy, hence not suitable for operating from an aircraft carrier.

Meanwhile, we have a number of OEM announcements and developments, considering the market potential of India. Insitu Pacific, Australia, a Boeing subsidiary, has offered making of drones in India. This offer is expected to dramatically change the surveillance capabilities of the Indian maritime security agencies and forces deployed on borders to prevent terrorist infiltration. This was revealed to Ranjit Kumar who visited the Insitu facility in Australia recently.

Another happening is that India and the US have signed a letter of agreement for purchase of M777 howitzers from BAE Systems. When this happens India will join the US, Canadian and Australian forces in gaining the M777's unmatched strategic and tactical mobility. The Vice President and General Manager for Weapon Systems at BAE Systems, Dr Joe Senftle said: "Our plan to establish a domestic assembly, integration and test facility further demonstrates our commitment to 'Make in India' and remains a firm part of our strategy to work with the Indian defence sector across air, land, sea and security."

While a number of acquisitions and 'Make in India' plans happen, the need to guard against corruption has become that much more important. The government is expected to announce a policy to tackle corruption in defence deals. Lt General P.C. Katoch (Retd) states that doing away with 'blanket blacklisting' of a company may prove unproductive. He said that the new policy will have a focused product-specific ban, aimed at punishing the corrupt among the foreign suppliers and not hold to ransom the country's military and defence needs. This indeed is a welcome step especially at a time when a boost is being given to defence industrial production in the country that would raise competition amongst companies.

Happy reading!

Jayant Baranwal
Publisher & Editor-in-Chief

Indian Navy focused on positive maritime environment: CNS

Chief of the Naval Staff Admiral Sunil Lanba during the Navy Day press conference in New Delhi on December 2, 2016

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

The Chief of the Naval Staff (CNS) Admiral Sunil Lanba on the eve of Navy Day launched the redeveloped Indian Navy's recruitment website, along with an official app, to simplify the application process to join the Indian Navy. Applicants will need to register on the website and will receive automated opportunity and application-processing alerts. Applications will be made completely paperless within two months of the launch. Notably, applicants in remote places would be able to apply for the Indian Navy utilizing the existing network of 1.45 lakh Customer Service Centres, with whom the Indian Navy has signed an MoU.

Addressing his first press conference as CNS, Admiral Lanba mentioned the security scenario in the immediate neighbourhood. In this scenario, the Indian Navy has holistically reviewed its deployment philosophy to proactively deter any menace that may threaten India's sovereignty. The Navy has over 40 ships, four submarines, and 12 aircraft deployed in the Indian peninsular and island territories. The operational philosophy, war-fighting capabilities and combat tactics of both the fleets are constantly been tested through a series of sea exercises.

It is Indian Navy's prime responsibility to safeguard national maritime interests and to shape a favourable and positive maritime environment in the Indian Ocean region. The CNS stated: "Towards this end, our ships have established a wide operational footprint carrying the nation's tricolour across the Indian Ocean region, and even beyond over the last year."

The Indian Navy has accorded the highest priority to India's neighbourhood in keeping with the government's 'Neighbourhood First' policy. "Our ships have visited various ports and engaged with navies of countries in the Bay of Bengal, Southeast Asia, Sri Lanka and Maldives in 2016," he said. He mentioned the successful completion of the International Fleet Review (IFR) at Visakhapatnam in February this year. He said that the Indian Navy's endeavour to promote maritime partnerships for common benefit of the global community was achieved with tremendous success during the IFR 2016. This event, he said, is of national significance has enabled the Navy to bring diverse nations on a common platform to engage meaningfully for securing the maritime domain.

CNS Admiral Sunil Lanba said: "The Indian Navy had trained almost 1,000 personnel from over 40 navies in our training establishments, continued to deploy our ships and aircraft for EEZ patrols off Maldives, Seychelles and Mauritius, and provisioned ships, aircraft, helicopters and simulators, to friendly regional navies. Herein, I must highlight that our advanced light helicopter deployed to Maldives with our crew, has undertaken multiple missions, including medical evacuations and search and rescue in Maldives.

PHOTOGRAPHS: SP Guide Pubns, DRDO

EXCLUSIVE

CNS answered to SP's on Navy Day press conference

***SP's M.A.I.*: You spoke about the positive maritime environment, a very pleasing terminology. How does the Navy ensure, which all steps, to guarantee that the maritime environment remains very positive?**

CNS: As far as the positive maritime environment goes, India being the largest country in the Indian Ocean region (IOR), and Indian Navy being the largest navy in the IOR, we work with like-minded nations and the navies to create this environment. We support capability building and capacity assessment in the form of providing training to a very large number of countries within the IOR. Over a thousand officers and sailors of IOR nations and countries train with us. We have provided and we go and patrol the exclusive economic zone (EEZ) of island nations, we exercise together with our maritime neighbours. I have just come back from 'The Galle Dialogue' where we had the discussions that all these initiatives make a positive environment. We have resolved our boundary dispute with Bangladesh. We coordinate our patrol in the Gulf of Aden along with Japan, China and South Korea, so all this put together makes a positive maritime environment.

SP's: US-2 was supposed to be signed during the Prime Minister's visit to Japan, but somehow it was delayed. What numbers are we looking for and what is the progress on the deal?

CNS: The number that we are looking at present is six as of now. As far as signature of the deal, it was mere speculation by the media only it was not on the agenda of the Prime Minister during his visit to Japan.

SP's: The private sector engagement like Larsen & Toubro (L&T) and Reliance Defence and Engineering Limited (RDEL) are competing for the Landing Platform Docks (LPD) programme. Can you elaborate on the status and when the winner is likely to be announced?

CNS: The technical evaluation of the bids has been done and both L&T and Reliance have qualified in the technical evaluation and the commercial bids are expected to be opened shortly.

SP's: What has been the reason behind LCA Navy not meeting the QR of Indian Navy?

CNS: LCA with its present engine is too heavy, hence not suitable for operating from a carrier. It does not meet the thrust and weight ratio requirement to be able to take off with the full weapon load. SP

LCA Navy

"Our growing national security needs dictate that we embrace jointness and respond more effectively in a composite manner to address present and future challenges. With this foundational principle, the Indian Navy, along with the Indian Army and the Indian Air Force, has conducted a series of joint exercises this year, involving several aircraft from the IAF as well as Indian Army units."

The CNS elaborated: "As far as coastal security is concerned, with support from the National Committee for Strengthening Maritime and Coastal Security (NCSMCS), we have brought multiple agencies of the government together. This has enabled consolidation of our combined capabilities. Consequently, our operational readiness to secure our coastal and offshore regions has significantly improved."

The year 2016 has witnessed significant capability accretion through induction of a number of state-of-the-art combat platforms into our force. These include the anti-submarine warfare corvette, Kadmatt, which has more than 90 per cent indigenous content, the water jet fast attack craft, Tihayu and several fast interceptor craft.

"The commissioning of INS Chennai, the third ship of Kolkata class, was an important milestone in our indigenous shipbuilding programme. We also launched the second ship of the P-15B destroyers Mormugao this year. The impending inductions of ASW corvette Kiltan, water jet FACs and landing craft utility ships will further boost our combat potential. The construction of our first indigenous aircraft carrier Vikrant is progressing well at Kochi. We are also finalising our plans and design for our next Indigenous aircraft carrier and moving to seeks government's approval for the project," the CNS said:

The Indian Navy's Submarine arm is completing 50 years on December 8, 2017, and 2017 will be celebrated as the 'Year of the Submarine Arm.'

"We have concluded the contract for purchase of four additional P-8I aircraft. Simultaneously, the contract for upgradation of Ka-28 helicopters has been concluded which will give a boost to our integral aviation capability," the CNS said. The successful and timely completion of Vikramaditya's refit, including her maiden docking at Cochin Shipyard, was a momentous achievement. This maiden feat has enhanced our collective confidence in indigenous capability to maintain and build complex platforms.

"LCA with its present engine is too heavy, hence not suitable for operating from a carrier. It does not meet the thrust and weight ratio requirement to be able to take off with the full weapon load."

– Admiral Sunil Lanba, CNS

Officers and sailors training establishments at Ezhimala and Chilka are being augmented. Skill-mapping of retiring sailors and certification during in-service training are important initiatives by the Indian Navy in pursuance of the government's 'Skill India' mission.

The CNS said he hoped that "this year, six of our personnel were honoured with Naosena Medal for exhibiting exceptional gallantry and courage, in the face of daunting challenges. On the occasion of Navy Day, I salute them and their families, for their contributions and sacrifices, in service of our nation." SP

India signs M777 howitzers

- *BAE Systems to deliver 145 M777 ultra-light howitzers*
- *Deal going to be worth ₹5,000 crore*
- *BAE Systems makes commitment of $200 million in Indian defence suppliers*

Unmatched strategic and tactical mobility: BAE Systems' M777 howitzer

[By **R. Chandrakanth**]

BAE Systems in a statement has welcomed the signed letter of agreement and acceptance for Indian M777 howitzers. It stated "India will join the US, Canadian and Australian forces in gaining the M777's unmatched strategic and tactical mobility."

"We look forward to providing the Indian Army with the combat-proven M777," said Dr Joe Senftle, Vice President and General Manager for Weapon Systems at BAE Systems. "Our plan to establish a domestic assembly, integration and test facility, further demonstrates our commitment to 'Make in India' and remains a firm part of our strategy to work with the Indian defence sector across air, land, sea and security."

BAE Systems signing the contract in the coming weeks with the US Department of Defense to supply the howitzers to the Indian Army. BAE Systems said that the M777 howitzers were half the weight of other 155mm towed howitzers. The M777 will provide rapid reaction capability. It has a proven pedigree that delivers decisive firepower when needed most in sustained combat conditions.

There are over 1,090 M777s in service across the globe and is said to be the only battle-proven 155mm ultra-lightweight howitzer in the world. BAE Systems said that it would remain in the forefront of artillery technology well into the future through the use of technical

PHOTOGRAPHS: US DoD, US Army

Technical Data

Range
- Maximum unassisted: 24.7 km
- Maximum assisted: 30+ km

Rate of fire
- Intense: 5 rounds per minute for up to 2 minutes
- Sustained: 2 rounds per minute

Into/out of action
- Emplacement: < 3 minutes
- Displacement: < 2 minutes

Pointing limits
- Elevation: +1,275mm
- Depression: -43mm
- Traverse (on carriage): 400mm left and right (6,400mm through quickswitch)

Ammunition
- All current and developmental US and NATO standard 155mm projectiles and charges including Modular Artillery Charge System

Mobility
- Maximum road speed: 88 kmph/55 mph
- Cross country speed: 24 kmph/15 mph
- Towing vehicles: MTVR, FMTV, M800 and M900 5-tonne trucks, any 2.5-tonne truck, HMMWV in local area
- Fixed wing: C130, C141, C17, C5, Roll-on roll-off/ LVAD
- Rotary wing: CH53E, CH47D, MV22

Source: BAE Systems

insertions, long range precision guided munition developments, and flexible mobility options.

BAE Systems stated: "Earlier this year, encouraged by Prime Minister Modi's call to 'Make in India', BAE Systems announced a plan to establish an Assembly Integration and Testing (AIT) facility in India which will expand our global supply chain and is an integral part of the offset offer to the Government of India." It further added: "The offset offer commits to investing in, and the development of a number of Indian defence suppliers, providing them with access to the BAE Systems group across air, land, sea and security programmes. The conclusion of this procurement programme will enable BAE Systems to make an investment of over $200 million in those defence suppliers."

Under the foreign military sales (FMS) programme, India and the US have agreed to sign deal wherein the latter will sell through BAE Systems 145 M777 ultra-light howitzers. The deal when signed will be worth ₹5,000 crore and reportedly the howitzers will be deployed on the borders, particularly along the Chinese border.

With India signing the letter of acceptance which formalises the contract between India and the US for the howitzers, the next steps will be worked out soon. Only recently, the Indian Cabinet Committee on Security (CCS) also had cleared the guns. The agreement reportedly was inked at the 15th India-US Military Cooperation Group (MCG) in Delhi. The India-US MCG is a forum established to progress defence cooperation between HQ Integrated Defence Staff and US Pacific Command at the strategic and operational levels.

The meeting commenced with the US Co-Chair Lt General David H. Berger, Commander US Marine Corps Forces, Pacific calling on Lt General Satish Dua, CISC, HQ IDS. The MCG meeting was co-chaired by Air Marshal A.S. Bhonsle DCIDS (Operations), HQ IDS.

It is reported that a 260-member delegation from the US Defence Forces and several officers from the three Services HQ and HQ IDS representing the Indian side attended the bilateral event.

The M777 will provide rapid reaction capability. It has a proven pedigree that delivers decisive firepower when needed most in sustained combat conditions.

The offsets, under which BAE Systems manufacturer of the gun, will invest about $200 million, will be pursued independently. While 25 guns will come to India in a flyaway condition, the rest will be assembled at the proposed Assembly Integration and Test facility for the weapon system in India in partnership with Mahindra. The first two howitzers will be delivered within six months of the contract being inked, while rest will be delivered at the rate of two per month.

The howitzers are going to make substantial difference in the artillery which last imported artillery guns nearly three decades back with the controversial Bofors guns. SP

Prime Minister Modi's Japan visit – Historic nuclear deal signed

LT GENERAL
P.C. KATOCH (RETD)

Prime Minister Narendra Modi with the Prime Minister of Japan Shinzo Abe in Tokyo, on November 11, 2016

PHOTOGRAPH: PIB

Prime Minister Narendra Modi's visit to Japan on November 11-12 may be termed the most historic as making an exception; Japan has signed a civil nuclear cooperation deal with India. Modi said, "I have visited Japan many times, and this is my second visit as Prime Minister. And, every visit has been unique, special, educative and deeply rewarding". This deal will open the doors for cooperation between the two countries in the nuclear field. It was firmed up during the 2015 visit of Prime Minister Shinzo Abe to India when the principles of the agreement were frozen.

Prime Minister Modi termed this a historic step in their engagement to build a clean energy partnership. Indo-Japanese negotiations for this agreement had been ongoing for the past six years. Japan has 13 civil nuclear agreements with countries like France and the United States but India is the first non-member of the Nuclear Non-proliferation Treaty (NPT) to have signed such a deal with Japan. Taking Japan's sensitivities about nuclear non-proliferation into account, both countries signed a note in addition to the civil nuclear agreement reflecting both countries' positions, Japan's reaffirmation of its national positions and India reiterating the non-proliferation commitment made on September 5, 2008, on the eve of the Nuclear Suppliers Group (NSG) plenary. This note also talks about the terms of cessation of cooperation. The template is similar to the

(Top) Prime Minister Modi and Prime Minister of Japan Abe witnessing the exchange of the civil nuclear agreement between India and Japan at Kantei in Tokyo on November 11; (above) ShinMaywa US-2 amphibious aircraft.

US deal; a year's notice has to be given for cessation of cooperation. Prime Minister Modi stated, "This agreement is a legal framework that India will act responsibly in peaceful uses of nuclear energy and also in non-proliferation regime even though India is not a participant or signatory of NPT".

Prime Minister Modi and Prime Minister Abe held vide ranging talks also reviewing the special strategic and global partnership as outlined in the "India and Japan Vision 2025" set forth on December 12, 2015. Highlights of the Indo-Japanese joint statement included: emphasising rising importance of Indo-Pacific region as the key driver for global prosperity stressing democracy, peace, rule of law, tolerance and respect for the environment; improving connectivity between Asia and Africa, and synergy between India's 'Act East' Policy and Japan's Expanded Partnership for Quality Infrastructure; cooperation on global challenges like climate change, countering terrorism, UN and UNSC reform and maintaining rules-based international order; cooperation in high technology, space, clean energy and energy sector development, infrastructure and smart cities, biotechnology, pharmaceuticals, ICT, education and skills development; consolidate security and defence cooperation including through '2+2' Dialogue, Defence Policy Dialogue, Military-to-Military Talks and Coast Guard-to-Coast Guard cooperation; appreciation of Japan's readiness to provide the US-2 amphibian aircraft to India; Japan's firm support for Indian initiatives like 'Make in India', 'Digital India', 'Skill India', 'Smart City', 'Swachh Bharat' and 'Start-Up India' by sharing advanced skills and technologies through mobilisation of Japanese public and private sector investments, including through Official Development Assistance (ODA) appreciation steady progress made in the Mumbai-Ahmedabad High Speed Rail (MAHSR) Project through the discussion – construction and operation to commence end 2018 and 2023 respectively; progress to realise 3.5 trillion yen of public and private financing to India in five years under the Japan-India Investment Promotion Partnership; commitment to work together to enhance connectivity including road connectivity in North Eastern India; Japan's appreciation for Modi's initiative for improving the business environment in India; entry into force of the Agreement on Social Security in October 2016, reducing costs of business; importance of implementing Japan-India Make in India Special Finance Facility up to 1.5 trillion yen by Japan; MoU between National Investment and Infrastructure Fund (NIIF) and Japan Overseas Infrastructure Investment Corporation for Transport and Urban Development (JOIN) to explore funding for infrastructure projects in India; strengthening bilateral energy cooperation; intention to achieve early conclusion of Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009; deeper bilateral collaboration in science and technology – MoU signed between the Japan Aerospace Exploration Agency and the Indian Space Research Organisation; cooperation in marine, earth and atmospheric sciences – Memorandum of Cooperation (MOC) between Ministry of Earth Science and JAMSTEC; cooperation in IT and IoT, disaster management, disaster risk reduction, education and healthcare; MOC in field of Cultural Exchanges – 2017 to be year of India-Japan friendly exchanges in the field of culture and tourism; MOC on Sports between the Ministry of Youth Affairs and Sports of India and the Ministry of Education, Culture, Sports, Science and Technology of Japan; MOU between Gujarat and Hyogo Prefecture on mutual cooperation; prospects of cooperation in Iran and Afghanistan including in development of infrastructure and connectivity for Chabahar Port; cooperation in Japan-India-Australia dialogue and in strengthening East Asia Summit (EAS) and ASEAN; zero tolerance for terrorism — also calling Pakistan to bring perpetrators of 2008 terrorist Mumbai terrorist and 2016 Pathankot terrorist attack to justice; closer cooperation in safeguarding global commons and domains; reaffirmed shared commitment to elimination of nuclear weapons; and commitment to work together for India to become full member in the remaining three international export control regimes: Nuclear Suppliers Group, Wassenaar Arrangement and Australia Group, with the aim of strengthening the international non-proliferation efforts. As per media, Japan is to supply India with 12 x US-2i amphibious aircraft at a cost of ₹10,000 crore.

Japan has reportedly agreed to reduce the price, earlier pegged at $1.6 billion (₹10,720 crore) for the 12 aircraft, to clinch the deal and expand its strategic partnership with India. The four turboprop US-2i is capable of short take-offs from land or water. Meant for search and rescue, it can also transport 30 combat troops. Interestingly, Japan in mid-1990s had proposed positioning 2 x US-2i amphibious aircraft in Andaman and Nicobar for search and rescue at sea. The Japanese proposal was free of cost with both amphibious aircraft to be under joint control of India and Japan, jointly operated by both countries. Ironically, India did not respond and two decades later we are buying the same aircraft. Notwithstanding this, Prime Minister Narendra Modi's visit to Japan was by far the most successful, taking India-Japan relations to the next level. SP

PHOTOGRAPHS: PIB, ShinMaywa

(L-R): Rear Admiral C.S. Rao; Chief of the Naval Staff Admiral Sunil Lanba; Defence Minister Manohar Parrikar; Harshavardhan Neotia; and Jayant D. Patil.

PHOTOGRAPH: FICCI

Current and future challenges of underwater vehicle

REAR ADMIRAL
S. RAMSAY (RETD)

Defence Minister Manohar Parrikar mentioned that the current government has cleared more than ₹2,00,000 crore worth of defence acquisition since it came to power and is resolved to order ₹3,00,000 crore (cumulative basis) by the end of this financial year

Indian Navy embarked upon the indigenous route for design, development and construction of its force levels in the early 1970s. Whilst the Surface Ships Design Group of the Directorate of Naval Design continued its successful march the Submarine Design Group came into existence only during 1986. To commemorate the completion of three decades of the Submarine Design Group, Indian Navy along with FICCI organised an International Seminar on Current and Future Challenges of Underwater Vehicle.

Welcoming the august gathering, Harshavardhan Neotia, President, FICCI, expressed happiness over the highly collaborative work between Indian Navy's Submarine Design Directorate, Ministry of Defence (MoD) and industry and stated that it is visible in industry's highly productive and frank interactions with MoD staff to achieve vital national objective of indigenous design and construction of underwater platforms. He further added that Indian industry believes that P-75(I) programme is on track and is looking forward to participate productively in this programme as well as the subsequent ones. He stated that industry sees 'Make in India' (Defence) as an opportunity towards not only achieving self-reliance but also creating the ecosystem that would promote high technology manufacture and high skill jobs in the country.

Delivering the inaugural address Defence Minister Manohar Parrikar emphasised the commitment of government towards modernisation of armed forces. He mentioned that the current government has cleared more than ₹2,00,000 crore worth of defence acquisition since it came to power and is resolved to order ₹3,00,000 crore (cumulative basis) by the end of this financial year. He commended Indian Navy for commendable track record in indigenously designing and constructing the advanced frontline warships such as destroyers, frigates, anti-submarine warfare corvettes, landing crafts and is in the midst of constructing an aircraft carrier. He said that in consonance with 'Make in India' campaign the indigenous content of the latest naval platforms today is staggering 85-90 per cent. He mentioned that the 24 submarines which are to be acquired as part of the 30-year submarine building plan of India, out of which six submarines have been ordered on the Mazagon Dock Ltd (MDL) and the same are being built with the help of transfer of technology (ToT) from DCNS. Comparing submarine construction programmes with other countries, the Defence Minister opined that India should rethink its submarine building programme and expand its fleet beyond the planned 24. He brought out while the underwater platforms built under the aegis of ATVP achieved indigenous contents of over 70 per cent, P-75 programme has not achieved quantitative indigenisation which is limited to mere 30 per cent.

While emphasising the importance of strategic programmes, he mentioned that RFP (request for proposal) for the much awaited P-75I project under which six more submarines are to be built with the participation of private sector will be under the strategic partnership (SP) model. He informed that a dedicated chapter on SP was being drafted and would be finalised soon. Thereafter it will be submitted for clearance by the Defence Acquisition Council (DAC) and finally referred to the Cabinet for approval. After the approval of SP model, the project P75I will be fast-tracked for implementation.

Giving the keynote address, Admiral Sunil Lanba, Chief of the Naval Staff, mentioned that the aim of the Indian Navy is to indigenously design and construct the submarines with the help of industry, academia and R&D. He brought out that naval platforms operate for nearly 25 to 30 years and thus depend on the partnership with the industry in a meaningful and sustainable manner. He further added that the Naval Capability Building Plan cannot be accomplished by the Indian Navy alone and it has to be a collective effort of the government agencies, R&D and industry. He emphasised that the above objective needed firm support of robust budgets and sound infrastructure. He shared Navy's belief that self-respect comes from self-reliance. He shared disappointment that while Indian Navy achieved large-scale indigenisation in warship building the same cannot be said for submarine design and construction. He was appreciative of the courage of the private industry having invested huge sums in this niche sector and has been resilient in withstanding the long gestation periods. He acknowledged that such efforts are to be supported by long-term partnerships and committed that Navy and industry would continue to grow on indigenisation. He talked of the SP model and said that it was a step in the right direction for building the much needed submarines at the required pace. He said Navy would continue to promote higher R&D in industry and partner with those who possess domain capacity and capability. He reiterated that life-cycle support of the submarines is also to be given equal importance and emphasised that timelines for delivery of submarines is an important factor since delays would lead to obsolescence of technology on board. He highlighted the need for creativity, adaptability, and flexibility to compress programme cycle times.

Raksha Mantri Manohar Parrikar commended Indian Navy for commendable track record in indigenously designing and constructing the advanced frontline warships such as destroyers, frigates, anti-submarine warfare corvettes, landing crafts and is in the midst of constructing an aircraft carrier

Rear Admiral C.S. Rao, Director General (Submarine Design Group), in his introductory address explained the reasons for low visibility of Directorate of Naval Design (SDG) matching that of the underwater platforms. He traced the history of the Submarine Design Organisation of the Indian Navy and reiterated the need to nurture the skills required for design and construction of these man-made stealthy seamonsters. He highlighted the role of submarines in the context of maritime security imperatives and emphasised the importance of synergy with the participation of academia, research, development agencies and the industry to build indigenous capabilities in its design and construction.

These aspects were addressed and discussed extensively in two sessions of the seminar. Session-I on theme of Self-Reliance in Design and Construction of Submarines: Synergy between User, Academia and Research & Development Agencies was chaired by Vice Admiral A.K. Bahl, Programme Director, ATVP. Participants were Rear Admiral S.P. Shrivastav, Additional Director General (SDG); Dr Subhash C. Sati, Distinguished Scientist, Director General (Naval Systems & Materials), DRDO; Professor S.N. Singh, Department of Applied Mechanics, IIT, Delhi; Captain Rajiv Lath (Retd), Director (Submarine & Heavy Engineering), Mazagon Dock Ltd; Stephane Neuveglise, Senior Business & Industry Consultant – Marine, AVEVA; Andrei Baranov, Deputy Director General, Central Design Bureau for Marine Engineering, Rubin; Commodore Mukesh Bhargava (Retd), Vice President, L&T Heavy Engineering and Rear Admiral Raja Menon (Retd), Distinguished Fellow, Institute of Peace and Conflict Studies.

Session-II was chaired by Rear Admiral S. Mahindru, Flag Officer Commanding Maharashtra Area with presentations from Rear Admiral Mohit Gupta, Assistant Chief of Naval Staff (Submarines); Per Malmborg, Head of Systems Development, Saab Kockums; Stephan Meunie, Head of Submarines Business Development for DCNS; A. Srinivas Nagraj, Vice President, NED Energy Limited; Manoj Singh, Industry Solution Manager, Siemens; Segei V. Shedko, Head of Sector, Krylov State Research Centre, Russia and Aleksandr A. Ismagilov, Lead Engineer, Krylov State Research Centre, Russia.

Speaking during the valedictory session were eminent speakers like Jayant D. Patil, Chairman, Defence and Aerospace Committee FICCI and Senior Vice President and Member of the Board L&T Heavy Engineering and L&T Shipbuilding; Bernard Buisson, Managing Director, DCNS India and Vice Admiral D.M. Deshpande, Controller of Warship Production & Acquisition. The valedictory address was made by Dr S. Christopher, Secretary R&D, Ministry of Defence, which was followed by a vote of thanks by Rear Admiral C.S. Rao for an enthusiastic participation in the seminar and for those who added much value through excellent presentations, articulations and intensive interaction to make the seminar truly a great success. SP

LT GENERAL
P.C. KATOCH (RETD)

Blacklisting redefined

Since December 2014, media was reporting that a new government policy legalising middlemen in arms purchases, a source of massive controversies in the past, would be in place soon. Defence Minister Manohar Parrikar had stated on December 31, 2014, "The middlemen have to be declared and their commission cannot be linked to the outcome of negotiations." The government had also been engaged in implementing nuanced blacklisting norms to replace the earlier indiscriminate ones. Middlemen or defence agents were banned for years after the multimillion-dollar scandal in the 1980s involving alleged kickbacks paid to politicians and officials in purchases. This move obviously was because of poor response to the regulatory role on agents that the Ministry of Defence (MoD) had acquired for itself in conjunction stringent guidelines issued in year 2001 that had proved counterproductive.

As for blacklisting, the Bofors ban had severely affected the artillery with shortage of spares and assemblies. In fact, during the Kargil conflict just 100 Bofors guns could be cannibalised from the 400 Bofors guns that had been imported. The equipping of armed forces suffered very badly during the decade-long tenure of A.K. Antony as Defence Minister because he would blacklist a firm at the drop of a hat — even based on an anonymous letter. The action of lifting of such blacklisting was not transparent enough. Recently, corruption in the AgustaWestland helicopter scandal had hit the media, the origin of which actually was in 2013 when Italian investigators arrested and incarcerated the company's Chairman, Guiseppe Orsi, on charges of bribing Indian officials to facilitate the sale by group company, AgustaWestland, of AW101 VVIP helicopters to India. This had led to the blanket blacklisting of the of Italian multinational, Finmeccanica.

AW101 VVIP helicopters

The blanket blacklisting also placed a ban on the Finmeccanica affiliated companies of the Finmeccanica Group, which disrupted:

- Purchase of 98 Black Shark heavyweight torpedoes for Indian Navy's Scorpene submarines from marine specialist, Whitehead Alenia Sistemi Subacquel (WASS).
- Shipboard radar being fitted on the indigenous aircraft carrier, INS Vikrant, by Selex Electronics Systems (ES).
- Purchase of anti-aircraft guns for warships from Otomelara.
- Further procurement of AgustaWestland helicopters, two of which had already been procured before the blacklisting came into effect.

In 2014, Arun Jaitley, then Defence Minister, had issued tough interim guidelines for dealing with the Finmeccanica Group companies, which did little to help ease the problems in procuring torpedoes, shipboard radars, anti-aircraft guns as mentioned above. There was crying need to circumvent blanket bans on global defence conglomerates that that not only restricts the government's options in buying weaponry but also in the event of similar product not available from other sources, adversely affects modernisation of the military. Now government has approved a new 'blacklisting' policy during the meeting of the Defence Acquisition Council (DAC) chaired by Defence Minister Parrikar held on November 7, 2016. This policy is designed to tackle corruption better and will be officially announced in the near future. It not only lists out the method to deal with foreign firms but more significantly has done away with the system of 'blanket blacklisting'.

The new policy will have a focused product-specific ban, aimed at punishing the corrupt among the foreign suppliers and not hold to ransom the country's military and defence needs. This indeed is a welcome step especially at a time when a boost is being given to defence-industrial production in the country that would raise competition amongst companies. The new policy envisages that a person of a foreign company, if found to be indulging in corruption, will not be allowed to deal in another case of the company's subsidiary. According to MoD sources, while the new policy does away with blanket blacklisting of entire conglomerates, companies found guilty of violating norms, especially an "integrity pact" that forms a part of all defence contracts, can still be banned from doing business in India.

Under the new policy, AgustaWestland would be liable for blacklisting and financial penalties, while the group companies would be evaluated on merit. This policy somewhat mirrors the US policy of imposing tough financial penalties on companies found guilty of wrongdoing, rather than banning them from doing business altogether. What will happen in the event corrupt practices are discovered in single-vendor situations is perhaps yet to be examined. Nevertheless, the new blacklisting policy is a welcome step and needs to be promulgated straightway. SP

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

Prime Minister dedicates GSL modernisation Phase 3A to the nation

Prime Minister Narendra Modi dedicated the Phase 3A of Goa Shipyard Limited's (GSL) ambitious infrastructural modernisation project to the nation and inaugurated the production of CGOPV Project, at Taleigao on November 13, 2016, in the presence of Defence Minister Manohar Parrikar, Governor of Goa Dr Mridula Sinha, Chief Minister of Goa Laxmikant Parsekar and others.

The Prime Minister stated that "MCMV Project, for which this world-class infrastructure has been created, will not only strengthen the nation's maritime security but also create employment opportunities and speed up development of the region. This project is an important step towards self-reliance in defence sector, where till now we have been predominantly dependent on the foreign countries. Today at Goa, an important step in the direction of 'Make in India' is being taken to boost the maritime security."

Defence Minister Parrikar in his address congratulated GSL for timely completing this Phase 3A facility for MCMV Project and said that MCMV Project is a good example of government's 'Make in India' initiative, where all the 12 vessels are being made locally in Goa, as against earlier decision to make first two ships abroad. This ambitious project will boost the Goan economy and will generate lot of employment opportunities through skill development. The Defence Minister also congratulated GSL for start of construction of Coast Guard OPV projects at a cost of ₹1,867 crore.

GSL has upgraded infrastructure at a cost of ₹700 crore, in order to meet the critical operational requirements of the Indian Navy in MCMV field. This include Phase 3A work constructed at a cost of ₹400 crore, further ₹600 crore infrastructure is being executed and will be completed in next three years.

The infrastructure will enable construction of GRP hull MCMVs first time in Goa. This will be unique facility available only in Goa and will put India in elite company of only five-six countries, which boast of this facility in the world. It is pertinent to mention that on the clarion call of Prime Minister in September 2014, GSL has proposed in October 2014 making MCMV in India, under 'Make in India' programme against earlier decision of government to make two ships abroad. SP

Indian Navy inducts indigenously developed sonars

The Defence Minister Manohar Parrikar handed over four Naval Systems developed by the Defence Research and Development Organisation (DRDO) to the Indian Navy at a special ceremony in New Delhi on November 18, 2016. The four indigenously developed naval systems, viz. Abhay, Humsa UG, NACS and AIDSS which will boost underwater surveillance capability of the Indian Navy, were formally handed over to the Chief of the Naval Staff Admiral Sunil Lanba by the Minister.

Parrikar complimented the DRDO and the Navy for their successful joint venture in developing several naval systems, which will provide a fillip to the quest for self-reliance in this critical area of technology. "I expect much more synergy between the armed forces and DRDO in the days to come", he said. He expressed his appreciation to DRDO for its achievements in the last two years particularly in the induction of LCA Tejas, Varunastra torpedo, Pinaka multi-barrel rocket launcher, Rustom-II UAV and several missile programmes.

Addressing the gathering, the Minister of State for Skill Development and Entrepreneurship Rajiv Pratap Rudy said skill initiative programme is the brainchild of the Prime Minister Narendra Modi. He said the credit of pulling along the skill ecosystem in the Indian armed forces should go to the Defence Minister. Rudy said the Defence Minister is not only involved in the skilling process technically but also socially as he has created a new pathway about the programme in the armed forces. SP

PHOTOGRAPHS: PIB

India successfully conducts twin trial of Prithvi-II missile

India on November 21 successfully test-fired its indigenously developed nuclear capable Prithvi-II missile twice in quick succession as part of a user trial by the army from a test range at Chandipur in Odisha.

In salvo mode, the two surface-to-surface missiles, which have a strike range of 350 km and are capable of carrying 500 kg to 1,000 kg of warheads were successfully test-fired in quick succession from mobile launcher from launch complex-3 of the Integrated Test Range (ITR) at around 9.35 a.m., defence sources said. SP

Guided missile destroyer INS Chennai joins the Indian Navy

INS Chennai, a P-15A guided missile destroyer, was commissioned into the Indian Navy by the Raksha Mantri Manohar Parrikar at the Naval Dockyard, Mumbai. The event marked the formal induction into the Navy of the third and the last of the three Kolkata class destroyers, indigenously designed by the Indian Navy's in-house organisation, Directorate of Naval Design and constructed by Mazagon Dock Limited (MDL) Mumbai.

Parrikar, whilst addressing the gathering, termed the commissioning of INS Chennai, last of the Project 15 A class destroyers, as a historic day for the Indian Navy as it adds another milestone in our relentless journey towards achieving self-reliance in battle readiness. The ship represents a significant 'coming of age' of our warship building capability and defence preparedness, said the Defence Minister. He further stated that the Indian Navy, in addition to providing overall maritime security to our country, also plays a crucial role as the 'net security provider' in our adjoining seas. In this regard, Parrikar also stressed that the Navy's growth and development must keep pace with the nation's growth and maritime security needs.

Lauding the role played by the naval designers (DGND) and the ship builders, i.e. MDL Mumbai, the Raksha Mantri said: "With the induction of INS Chennai, a new benchmark has been achieved for our warship design and construction endeavours, with the sophistication of systems and equipment, and utilisation of advanced shipbuilding techniques".

Admiral Sunil Lanba, the Navy Chief, said that commissioning of INS Chennai marks another milestone in the Navy's quest for self-reliance as it signifies completion of the challenging Project P-15A and heralds a new era of advanced warships built indigenously by Indian shipyards. The Admiral also stated that indigenisation of platforms, weapons, sensors and equipment with participation of public as well as private sectors, will continue to remain a focus area of the Indian Navy, in line with the 'Make in India' policy enunciated by the Prime Minister. He emphasised that the "Road map for the Navy's expansion and growth would continue to remain firmly anchored on self-reliance and indigenisation."

The Commanding Officer, Captain C.R. Praveen Nair, read out the Commissioning Warrant, which was followed by the hoisting of 'Colours' (ceremony of hoisting the national flag and naval ensign) which marked the commencement of the ship's service as a warship of the Navy.

Following her formal induction, INS Chennai will be placed under the operational and administrative control of the Flag Officer Commanding-in-Chief, Western Naval Command. In due course, the ship will be assigned to the Western Fleet and would be base-ported at Mumbai.

The ship measures 163 m in length, 17.4 m in breadth with a displacement of 7,500 tonnes and can rightfully be regarded as one of the most potent warships to have been constructed in India. INS Chennai is packed with contemporary and sophisticated state-of-the-art weapons and sensors such as surface-to-surface missile and surface-to-air-missiles. The ship is fitted with a modern surveillance radar which provides target data to the gunnery weapon systems of the ship. The ship's anti-submarine warfare capabilities are provided by the indigenously developed rocket launchers and torpedo launchers. The ship is equipped to fight under nuclear, biological and chemical (NBC) warfare conditions. SP

LCU 57 launched at GRSE, Kolkata

The seventh ship of LCU MK IV project was launched on November 24, 2016, at the Garden Reach Shipbuilders and Engineers Ltd (GRSE), Kolkata. The chief guest, Dr Subhash Ramarao Bhamre, Raksha Rajya Mantri, along with Vice Admiral D.M. Deshpande, Controller of Warship Production and Acquisition (CWP&A), Chairman & Managing Director of GRSE and various other dignitaries were present for the launch ceremony.

Rear Admiral A.K. Verma (Retd), Chairman & Managing Director of GRSE Ltd, commenced the proceedings with a formal welcome, which was followed by an address by the chief guest.

LCU L-57 is the seventh vessel in the series of eight landing craft utility ships being designed and built by GRSE for the Indian Navy. The ship can be deployed for multi-role activities like beaching operations, humanitarian and disaster relief operations and evacuation from distant islands. SP

PHOTOGRAPHS: Indian Navy

Indian warship Shardul visits Port Victoria

In a demonstration of India's commitment to its ties with Seychelles and to promote maritime security in the Indian Ocean region, Indian naval ship Shardul was at Port Victoria on a three-day visit. INS Shardul, an amphibious ship of the Indian Navy, is currently on a month-long deployment in the Southern Indian Ocean in keeping with the vision of SAGAR – Security and Growth for All in the Region. Accordingly, the Indian Navy will be progressing maritime security cooperation with Seychelles Coast Guard (SCG) towards ensuring a secure and stable regional maritime environment for unhindered economic development in the region.

INS Shardul's visit was part of its mission to carry out surveillance in the Seychelles EEZ with SCG personnel embarked onboard. During the deployment, INS Shardul would also assist local authorities in providing logistics and medical support to the outer islands of Seychelles. Calls on senior government and military authorities, training and technical cooperation measures with SCG, sporting and cultural interactions, aimed at strengthening ties and mutual understanding between the two forces are also planned. SP

Agile and virtually undetectable: ScanEagle

ScanEagle & Integrator – May be Made in India

The offer of drones from Insitu Pacific, Australia, is expected to dramatically change the surveillance capabilities of the Indian maritime security agencies and forces deployed on borders to prevent terrorist infiltration

[By **Ranjit Kumar**]

If negotiations with Indian defence and armed forces officials proceed well, India could soon be producing the most advanced Integrator and ScanEagle drones. The Indian Navy and the Indian Army want to deploy these surveillance drones for keeping a close watch from the sky on any surreptitious movements not only in the coastal areas but also on the high seas and land border areas. These unmanned aerial systems (UAS) can very effectively watch and locate the launch pads of the terror groups, who are ready for infiltration into India, specifically in Jammu and Kashmir (J&K).

Designed, developed and produced by Insitu Pacific, the Australia-based fully-owned subsidiary of the Boeing Company, it has offered these highly advanced and most effective maritime and overland surveillance systems to the Indian armed forces, which will greatly boost the capabilities of Indian security agencies to keep a close watch on the Pakistani terrorist infiltration from across the line of control and the international border in J&K. The company describes the ScanEagle as agile, virtually undetectable, and on station until the job is done. According to a company official, the hardworking ScanEagle delivers persistent imagery on land or at sea at a fraction of cost of other surveillance methods. These drones can keep continuous surveillance day and night. The Integrators

PHOTOGRAPHS: Insitu

are the latest unmanned aerial systems with the ability to carry out longer missions with larger payloads. The Integrator has an empty structure weight of 36+ kg with a maximum payload of 18 kg and a maximum take-off weight of 61.2 kg including the fuel. This UAS is powered by reciprocating piston engine developing eight horsepower and runs on heavy fuel or auto gas. The vehicle is designed for a maximum speed of 90 knots with a service ceiling of 20,000 feet. Though after the 26/11 Mumbai terror attack, the Indian Navy and the Coast Guard have deployed many systems like automatic identification systems (AIS) in the over 7,000-km-long coastline, the two category of drones on offer from Insitu Pacific is expected to dramatically change the surveillance capabilities of the Indian maritime security agencies and forces deployed on borders to prevent terrorist infiltrations.

During a visit to the Insitu facility in Brisbane, a senior official of the company Brad Jeismann revealed that the company is engaged in serious discussion with Indian private sector companies to set up production facilities in India for supply of not only to the Indian armed forces but also for exports. According to Jeismann: "Any acquisition of unmanned aerial systems would consider the overall architecture of the system and not just the platform. We have had a number of discussions with a number of Indian companies on what could be possible to support our Make and Buy India strategy. It has been really enlightening to go ahead and conduct these discussions. We have been quite positive that we can produce some elements in the country."

The ScanEagle has been under production since early last decade and in use with the US and Australian maritime agencies since the middle of last decade. The ScanEagle was deployed with US Maritime command in 2004 and a year later US Navy acquired these UAS. In 2006 the Australian Navy deployed the ScanEagle. The US Air Force also acquired these UAS in 2008. Insitu has been constantly engaged in enhancing its surveillance capabilities and it has now evolved into a most effective aerial tool to keep a track on the intruding vessels from the sea. The ScanEagle has by now accumulated over 7,00,000 combat flying hours. Also described as 'low altitude low endurance unmanned aircraft system', the ScanEagle has latest technologies that include the synthetic aperture radar, signals intelligence and electro-optical infrared payloads. With these advanced systems onboard, the UAS automatically detects, highlights and tracks sea surface contacts including fast boats, small wooden and rubberised vessels and even people onboard these insignificant looking boats. The UAS provides thumbnail images and locations of detected objects for sensor operators. These onboard systems enable cross-cuing of other sensors for interrogation and classification. Explaining its capabilities, Brad said that it allows passive search and tracking for covert environments such as drug interdiction and even submarine periscope detection. With 24 hours constant scanning capabilities it can oversee eight times faster and eight times larger areas than the current available UAS. This is why these UAS have been widely deployed even in the AfPak areas. It can focus very closely over 30 nautical miles area and no small fishing boat can escape its eyes. With night vision and dual imaging capabilities, the UAS while observing land areas, can even read car number plates and see the driver sitting inside. Even if somebody is hiding in the shadow of a tree, the ScanEagle and Integrator can observe that person closely. Hence, these UAS have been found to be very effective in keeping a close watch over border areas to prevent any intrusion of terrorist elements or even drug smugglers.

The ScanEagles are 5.1 feet long and 10.2 feet wingspan, with a maximum take-off weight of 22 kg with a performance ceiling of 19,500 feet and maximum horizontal speed of 80 knots, requires only 60 watt onboard power source. The UAS has software application with state-of-the-art user interface which provides full motion video (FMV) and processing, exploitation and dissemination (PED) tools. These enhance and improve the FMV using features such as video stabilisation and automatic contrast enhancement to get the most of collected imagery. These transform raw data into actionable intelligence using the software exploitation tools enabling accurate real world measurements. The system features plug-and-play computers, vision and metadata processing capabilities to extricate, improve, edit or delete information contained in media or metadata. Hence the UAS provides small footprint solution for command and control of unmanned vehicles and payloads. It enables a single operator to operate multiple unmanned vehicles from one workstation and manage vehicle sensor command and control features on open architecture design that is easily modified using the software development kit. The designers of Integrator and ScanEagle describe these as multi-mission capability platforms which can operate in very dense environments. ScanEagle and Integrator UAS can be launched from a very small 18-metre operational craft or research vessel. These UAS have a very flexible hub and spoke configurations at an offshore base and create an ad hoc communications network to keep ground troops aware and informed. The UAS has surveillance range of over 200 km. SP

Versatile UAV: Integrator UAS for land and sea

—The writer is a Strategic Analyst who visited the facility of Insitu at Brisbane, Australia

IAF aircraft carry out trial landings on Lucknow-Agra Expressway

Three Mirage 2000 and three Su-30 aircraft of the Indian Air Force carried out a 'touch and go' on a portion of the newly constructed Agra-Lucknow Expressway in Uttar Pradesh on Novenmber 21, 2016.

The portion of the Expressway used for the purpose has an RCC construction and has been reinforced and appropriately marked to facilitate aircraft landings. The portion of the Expressway used for the operations is located at Ganj Moradabad in Unnao district of Uttar Pradesh.

Air Marshal S.B.P. Sinha, Air Officer Commanding-in-Chief Central Air Command, was present at the venue to oversee the operations. Uttar Pradesh Chief Minister Akhilesh Yadav along with a number of military and civil dignitaries witnessed this unique feat by our air warriors.

The aim of the exercise is to check feasibility of expressways being used as alternate airstrips in case of dire emergencies or non-availability of runway for any reason.

The entire operation began with the first three Mirages coming overhead at around 1300 hours and culminated with a touch and go by the final Su-30 fighter jet around 1330 hours. SP

Embraer gets provisional type certificate for KC-390 basic vehicle

Embraer has recently received the provisional type certificate for the KC-390 basic vehicle, issued by the Instituto de Fomento e Coordenação Industrial – IFI (Industrial Fostering and Coordination Institute), the Brazilian Air Force organisation responsible for military certification, attesting that the KC-390 in this basic configuration complies with the certification basis requirements.

"Achieving this milestone demonstrates the design maturity that is allowing the tests campaign to progress as planned and with high efficiency", said Jackson Schneider, President and CEO Embraer Defense & Security.

The joint work of the Embraer and IFI teams has proven useful in bringing better integration, as well as improving and validating programme processes and procedures aiming at the initial operational capability declaration (IOC), in the second half of 2017, and the certification of the final operational capability (FOC), in the second half of 2018. SP

Lockheed Martin begins T-50A flight operations in South Carolina

The initial filght of Lockheed Martin T-50A took place over Greenville, South Carolina, on November 19, 2016.

The T-50A was announced as the official Lockheed Martin/Korea Aerospace Industries (KAI) offering for the US Air Force's Advanced Pilot Training (APT)/T-X competition in February, and Greenville was announced as the final assembly and checkout facility (FACO).

The T-50A is purpose-built around fifth-generation thinking, and will train the F-22 Raptor and F-35 Lightning II pilots of tomorrow, as well as pilots for frontline fourth-generation aircraft. Building on the proven heritage of the T-50, the T-50A has more than 1,00,000 flight hours in its repertoire, training more than 1,800 pilots.

Lockheed Martin's accompanying T-50A ground-based training system features innovative technologies that deliver an immersive, synchronised ground-based training platform. SP

Airbus A400M demonstrates Cobham's aerial refuelling system

Airbus Defence and Space has achieved a significant aerial refuelling milestone by successfully demonstrating the first ever A400M tanker to A400M receiver contact using Cobham's 808E hose drum unit installed in the aircrafts fuselage.

The 808E hose drum unit represents the most advanced refuelling system in production today, providing a stable platform for refuelling larger aircraft, an exceptional flow rate capability and extended hose length.

The A400M also features two Cobham wing mounted 908E pods which as well as sharing many of the same benefits as the 808E provide the aircraft with multi-point refuelling capability. SP

PHOTOGRAPHS: IAF, Lockheed Martin, Embraer

Successful maiden flight of Rustom-II

Heralding a new era in the indigenous development of unmanned aerial vehicle (UAV), Defence Research and Development Organisation (DRDO) on November 16 successfully carried out the maiden flight of TAPAS 201 (Rusrom-II), a medium altitude long endurance (MALE) UAV. The test flight took place from Aeronautical Test Range (ATR), Chitradurga, 250 km from Bengaluru, which is a newly developed flight test range for the testing of UAVs and manned aircraft. The flight accomplished the main objectives of proving the flying platform, such as take-off, bank, level flight and landing, etc.

TAPAS 201, the MALE UAV, has been designed and developed by the Aeronautical Development Establishment (ADE), the Bengaluru-based premier lab of DRDO with HAL-BEL as the production partners. The UAV weighing two tonnes was put into air by a dedicated team of young scientists of DRDO. It was piloted (external and internal) by the pilots from the armed forces. It is also the first R&D prototype UAV which has undergone certification and qualification for the first flight from the Centre for Military Airworthiness & Certification (CEMILAC) and Directorate General of Aeronautical Quality Assurance (DGAQA). SP

Demonstration of SW-4 Solo Rotary Wing UAV launched

Leonardo-Finmeccanica recently demonstrated the capabilities of its advanced SW-4 Solo rotary unmanned air system as well as its airborne sensors such as the SAGE electronic warfare and Osprey E-Scan radar systems integrated using its skyISTAR mission management system in order to support ISR missions at Royal Navy's Unmanned Warrior 2016. The company has been investing in unmanned rotorcraft technology which it believes can deliver or contribute to the delivery of a wide range of missions cost effectively and also complement its range of manned naval helicopters.

The SW-4 Solo rotary unmanned air system (RUAS) is based on the proven SW-4 light single engine helicopter. It is designed for both piloted (optionally piloted helicopter, OPH) and unmanned operations, for maximum operational flexibility. The RUAS version of the SW-4 is capable of performing a number of roles, including ISR and cargo re-supply, in both land and naval environments. When piloted, the SW-4 Solo can undertake manned activities including transportation of personnel, surveillance and intervention. The SW-4 is EASA certified, ensuring safe operations when operating in the manned and unmanned modes. SP

PHOTOGRAPHS: DRDO, GA-ASI, Leonardo

United Kingdom – certifiable Predator B remotely piloted aircraft

The US State Department has made a determination approving a possible foreign military sale to the United Kingdom for certifiable Predator B remotely piloted aircraft, equipment, training, and support. The estimated cost is $1.0 billion. The Defense Security Cooperation Agency delivered the required certification notifying Congress of this possible sale on November 16, 2016.

The United Kingdom UK requested a possible sale of up to 26 certifiable Predator B. Remotely Piloted Aircraft; and 12 advanced ground control stations (GCSs);

four new Launch and Recovery Element GCSs; four upgrades to existing Blk 15 Launch and recovery element GCSs; 25 multi-spectral targeting Systems; 25 AN/APY-8 lynx IIe block 20A synthetic aperture radar and ground moving target indicators (SAR/GMTI) and; 86 embedded global positioning system/inertial guidance units (EGIs).

This sale also includes communications equipment, identification friend or foe (IFF) equipment; weapons installation kits; TPE331-10YGD engines; unique and common spares package; support equipment; US air force technical orders; country specific technical orders; contractor logistics support for two (optional three) years; contractor provided aircraft components, spares, and accessories; personnel training; and other related elements of logistical and programme support. SP

Internet of Things and dangers in cyberspace

LT GENERAL
P.C. KATOCH (RETD)

Much has been said in recent years about Internet of Things (IoT); it is coming, it has arrived or it is growing rapidly. But the enormity of IoT can be gauged from the one forecast that by 2030 there will be over 26 billion connected devices that would average to about six connected devices per each person on this planet. This estimate may be exaggerated considering another estimates put this figure at 50 million plus by 2020. Of the total Indian population of 1.32 billion plus, 34.8 per cent have Internet connections already – total Internet users being 46,21,24,989. In 2015, number of Internet users in India was 35,41,14,747; implying that 10,80,10,242 Internet users have already been added during 2016.

In June 2016, India had surpassed the US in terms of the number of Internet users and was trailing only behind China, according to the annual Internet Trends Report by Mary Mecker of investment firm Kleiner Perkins Caufield & Byers, which also states that India is growing at 43 per cent every year when it comes to Internet usage as against a flat growth seen across the world. This report pegs the total number of global users at three billion which is growing at 9 per cent annually, slower than what it was in the past few years. As per 2015 data, 94 per cent users access the Internet through their mobile phones in urban India. 77 per cent of urban non-working women who access the Internet also do so from their mobiles. This is due to advent of low-cost smartphones and reasonable tariffs, empowering consumers in hinterland also to use data connectivity.

IoT networks the physical objects like devices and items embedded systems with electronics, software, sensors, enabling objects to exchange data with manufacturer, operator, other devices through network infrastructure, allowing objects to be controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, resulting in improved efficiency, accuracy and economic benefit. Applications of IoT can be infinite to include media, environmental monitoring, infrastructure management, manufacturing, energy management, waste management, safety management, medical and health-care systems, building and home automation and transportation; encompassing technologies like smart grids, smart homes, intelligent transportation, smart cities, etc. IoT can help computer manage and inventory objects and people, transforming daily lives. Advances in technology may see Wi-Fi being replaced by Li-Fi (light fidelity), advantage of Li-Fi being its lightening speed; smartphones could be connected to Internet with a lamp giving 100 times faster access than Wi-Fi. This was successfully demonstrated at the Mobile World Congress held from February 22-25, 2016, in Barcelona, Spain. With analysts predicting the number of objects that are connected to the Internet soaring at enormous pace and the spectrum for radio waves used by Wi-Fi in short supply, Li-Fi does offers a viable alternative.

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Sure we can have bottom up convergence of data from IoT into applications, web-of-things providing civic engagement and data-driven decision making. However, question of security remains not only in terms of spying on people in their own homes but also cyber attacks in the physical world. That is why it is said that if one thing can prevent the Internet of things from transforming the way we live and work, it will be a breakdown in security. The next step in IoT is the advent of IoT 'Services'. For example, Icontrol Networks Inc, founded in 2004, helps set up smart homes for clients.

So it is not getting appliances and then connecting them to Internet but making available a complete home-automation system. Similarly, the company SolarCity relies on making their assets smart and connected by knowing how much electricity a home's solar panels are producing, compared to its earlier business model of selling electricity directly to homeowners. Now fears have emerged that hackers could hijack entire smart home systems, vehicles, industrial controls and the like. But these are apprehensions people will perhaps have to live with while enjoying the fruits of IoT. SP

ILLUSTRATION: Anoop Kamath

Boeing names Pat Goggin President of Defense and Space Development organisation

Boeing is promoting Pat Goggin to be President of its Defense, Space & Security Development organisation, succeeding Jim O'Neill who will retire next year.

Goggin currently is Vice President of Airplane Programs Engineering for the company's Commercial Airplanes unit, overseeing the engineering teams that support all the current 7-series passenger planes. Before that, he was Vice President of Boeing's Development Program Excellence initiative, focused on properly starting programmes and identifying key risk areas.

"During more than three decades with Boeing, Jim built a legacy that will endure for many years to come," said Leanne Caret, President and CEO of Defense, Space & Security. "Pat's experience across commercial and defence programmes will help us grow a stable of strong development programmes on the foundation that Jim put in place."

BDS Development oversees the pre-production phases of key defence and space programmes with a goal of enhancing performance prior to entering production. It, and a similar organisation in commercial airplanes, demonstrate the company's best-of-Boeing approach to reduce risk and improve the affordability of key development activities.

Goggin, who has worked at Boeing for 29 years, will move into his new role in December so he and O'Neill can collaborate during a transition period. SP

New CMD takes charge at BEL

PHOTOGRAPH: BEL

M.V. Gowtama has taken charge as the Chairman and Managing Director of Bharat Electronics Limited (BEL) on November 8, 2016.

He joined BEL at Ghaziabad unit in January 1983 as a probationary engineer. He was initially posted to the D&E-Radar Division where he contributed to the development of receiver subsystem of cyclone warning radar. In about three-and-half years, his team was able to design, develop, manufacture, deliver and commission the first cyclone warning radar at Paradip in Odisha. The cyclone warning radar development team won the R&D Award.

Gowtama was transferred to Hyderabad unit in May 1986. At Hyderabad unit, he worked in the D&E, testing, system integration, installation & commissioning groups of Ajanta project till 1998. His team developed in-house the high voltage power supplies for Ajanta, which was commended by then CMD. He completed M.Tech in advanced electronics from Jawaharlal Nehru Technological University, Hyderabad, even while in service.

From 1998 to 2006, he worked on the Sangraha programme of Indian Navy. With ToT from DLRL, his team developed different ESM systems for submarines, helicopters, medium and long-range aircraft. They also developed in-house a lightweight ESM system for small ships called Sanket. Traditionally, project teams at Hyderabad used to look after ToT, development, testing and installation and commissioning activities. However, a new D&E division was established in 2006 to address future businesses in line with the new defence procurement policy and Gowtama had the opportunity to lead this D&E group as AGM. He was able to establish strong R&D teams at Hyderabad unit for product/subsystem development, engineering for different platforms and development of complex software.

Gowtama took over as General Manager (Technology Planning)/BEL-Corporate Office, on February 1, 2010. Later he served as GM (Milcom)/BEL-Bengaluru and was Executive Director (Missile Systems)/BEL-Bengaluru till his elevation as CMD, BEL.

Gowtama was born on June 26, 1961, in Tenali, the small yet famous town of Andhra Pradesh. He completed his B.Tech in Electronics and Communications from Sri Venkateswara University College of Engineering, Tirupati, in 1983. SP

RUAG opens repair centre in Subang, Malaysia

The official opening of the new RUAG Aviation component repair centre in Subang, Malaysia, confirms the aircraft provider's commitment to the region. The centre serves the company's position as a component services hub for aviation customers and OEMs in Asia. The announcement of the opening follows on a successful audit and European Aviation Safety Agency (EASA) Part 145 approval.

The opening formalises and confirms RUAG Aviation in its role as an established supplier, life-cycle support provider and integrator of systems and components for civil and military aviation based in Malaysia serving the Asia region. Through this investment it reinforces the company's commitment to the Malaysian aerospace industry and further develops the technical capabilities usinglocal workforce engaging in effective knowledge sharing and skills.

RUAG Aviation Malaysia is establishing this new centre to provide maintenance, repair and overhaul (MRO) services for aircraft components. "To fulfil our customer expectations in the region we closely cooperate with them and partner with selected OEMs", said David Jones, General Manager of RUAG Aviation Malaysia. "The successful audit by the Swiss Federal Office of Civil Aviation (FOCA) combined with EASA Part 145 approval affirms and supports our objective to become the partner of choice."

Proven MRO capabilities on aircraft from the world's leading OEMs have established RUAG Aviation as a trusted and reliable partner for aircraft operators in the international market. SP

Gigi Hadid lifted by stalker

Vitalii Sediuk, a man known for harassing celebrities, literally lifted Gigi Hadid into the air, completely violating her right to not be touched by stranger without permission, as the model was leaving a fashion show in Milan. Gigi Hadid fought back.

Gigi was leaving Max Mara's fashion show with sister Bella when Sediuk grabbed her from behind and lifted her off the ground.

Vitalii Sediuk was back at the harassment again – with Kim Kardashian as his latest victim. As Kim and her entourage were walking in Paris, Vitalii Sediuk apparently snuck up behind the reality star and tried to kiss her butt, before he was taken down by Kim's bodyguard. SP

Three Mobile data hacked

Three Mobile recently admitted that hackers had hacked customer upgrade database after using an employee log in. Three Mobile confirmed the breach but declined to say whether customers' data was stolen or how many have been affected. It mentioned that the data accessed included names, phone numbers, addresses and dates of birth, but added that it did not include financial information.

It comes after Talk Talk, the phone and broadband company, admitted in October last year that the private details of 1,57,000 customers had been hacked.

"The investigation is ongoing and the company is taking steps to further strengthen our controls. Three has over nine million customers and it is understood that hackers, who used company access codes to get into the system, had access to large parts of the upgrade database. SP

Tesco Bank resumes full services

Tesco Bank on November 8 confirmed that it had resumed full services following the temporary suspension of online transactions from current accounts. Tesco confirmed that personal data was not compromised as a result of fraud that took place over the weekend of November 5-6 and that online transactions had been suspended to prevent criminal activity.

Tesco Bank CEO Benny Higgins commented: "Our first priority throughout this incident has been protecting and looking after our customers and we'd again like to apologise for the worry and inconvenience this issue has caused.

"We've now refunded all customer accounts affected by fraud and lifted the suspension of online debit transactions so that customers can use their accounts as normal. We'd also like to reassure our customers that none of their personal data has been compromised."

The bank confirmed around 9,000 customers were affected by these fraudulent transactions and all customers affected were fully reimbursed, amounting to £2.5 million. SP

Suspicious drones halt Swedish military drill

A major Swedish naval exercise was disrupted by the sudden appearance of remote-controlled drones. The manoeuvres were interrupted, and weapons were loaded with live ammunition to shoot down the intruders, which managed to escape. Incidentally, the Finnish military, also said they were visited by drones shortly thereafter.

"We can confirm these observations. But what it was, and to what extent, is nothing we can go into," Swedish Armed Forces Press Secretary Jesper Tengroth told *Dagens Nyheter*. According to military reports, the units involved swapped their training blanks to live ammunition to shoot down the trespasser. Ultimately, however, they didn't open fire. Jesper Tengroth said that the Swedish armed forces always adapted to current threats.

The drones observed over Swenex were equipped with position lights visible in the darkness, which led to speculation that a "major superpower" was behind the encroachment in order to openly demonstrate that it had the capacity to keep a close eye on the Swedish defence.

All in all, 2,000 troops, 20 warships, a number of surveillance aircraft, warplanes and helicopters participated in the Swenex 2016 exercise, which was held between November 14 and 23, 201. SP

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