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AN SP GUIDE PUBLICATION

MAI



Vol: 7 Issue 4 | February 16-28 • 2017

www.spsmai.com

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Aero India 2017 Makes a Mark

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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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[SP's @ 53 PURSUING EXCELLENCE OVER FIVE DECADES SINCE 1964]

INSV Tarini inducted

The Indian Navy's second ocean going sailboat Tarini was inducted in presence of a host of dignitaries at a glittering ceremony at INS Mandovi Boat Pool on February 18. Admiral Sunil Lanba, Chief of the Naval Staff, along with other senior naval officers was also present on this historic occasion to wish the boat and her crew a success in their endeavours. INSV Tarini is a sloop built by Aquarius Shipyard Pvt Ltd at Divar, Goa. The sailboat Tarini is being inducted into the Navy and is slated to be the platform for First Indian All Women Circumnavigation of the Globe expedition of the Indian Navy.

During the ceremony, Admiral Sunil Lanba announced that the extremely challenging expedition by her all women crew is slated to commence in August 2017. Talking about the women crew, he said that the team has logged over 10,000 nautical miles on INSV Mhadei, including a voyage from India to Mauritius and back and Goa to Cape Town braving through rough monsoon seas and heavy wind.



The dignitaries had a visit to the boat and were briefed on its advanced features, including improvements, based on experience of operating INSV Mhadei, which have been incorporated. On completion of the ceremony, the crew sailed the boat out of harbour displaying its agile handling capabilities.

The keel of the vessel was laid on March 27, 2016, at the Aquarius Shipyard. The construction was diligently overseen by the Warship Overseeing Team, Goa, and the vessel was delivered before the scheduled date of delivery by the boat builder. Extensive trials of the newly built INSV Tarini were successfully completed on January 30, 2017. The boat is skippered by Lt Commander Vartika Joshi and crew members include Lt Commander Pratibha Jamwal, Lt Aishwarya Boddapati, Lt Patarapalli Swathi, Lt Sh Vijaya Devi and Lt Payal Gupta. 



Cover:

Aero India 2017 showcased the aviation and aerospace sectors, which are going to boom like never before as the civil and military aviation sectors are coming together.

Cover images: Karthik Kumar / SP Guide Pubns

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SUBSCRIPTION/ CIRCULATION

Annual Inland: ₹1,320 • Foreign: US\$ 325

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One signature international air show from India on the cards

This has been making the rounds for some time — one international air show from India — a signature one at that, like Le Bourget (Paris) or Farnborough (London). The Minister of Defence, Manohar Parrikar, and also the Minister of Civil Aviation P. Ashok Gajapathi Raju have been talking about it, to club the biennial Aero India show (predominantly military) which has Bengaluru as its venue and the biennial India Aviation (civil aviation) in Hyderabad. For Aero India 2017, the two ministers were on the inaugural stage and also addressed the press conference jointly, talking about convergence.

When that convergence will happen and where the show will be located are matters of speculation, though media reports continue to drop the name of Goa as the probable venue. We saw that happen in early 2016 when the coastal state played host to Defexpo, moving from Pragati Maidan in New Delhi to Naqueri Quitol in south Goa. That was a back of beyond location which the Defence Minister got it turned into an exhibition place. Defexpo had its own set of new challenges in terms of setting up infrastructure, narrow roads, low turnout (Delhi with all its armed forces headquarters and personnel has had record breaking footfalls), cost of logistics, etc. Not to forget, that the Dabolim airport which belongs to the Indian Navy is too small. Will Goa be able to handle the kind of air traffic, in terms of both military and civilian aircraft coming to the show, and also the airlines that will be pressed into service. There are major doubts about that. While the speculation goes on, Aero India highlighted how the country has stepped up its 'Make in India' initiative and the foreign original equipment manufacturers (OEMs) are in sync. A number of joint ventures have been signed and will get signed in the days to come.

India's military requirements are humongous to say the least. Lt General P.C. Katoch (Retd) in his fortnightly column has underscored the importance of the army holding War Wastage Reserves (WWR) sufficient for 30 days of 'intense' fighting plus 30 days of 'normal' fighting which he mentions has been allowed to deplete as part of the neglected defence capability past several years.

In another article, he talks about India-US relations, post US elections. He is of the view that the United States must review its assistance to Pakistan as the hatchery of Islamic terrorism, which is backed by China. Taming the 'deep state' of Pakistan cannot be ignored if the Indo-US defence partnership is really to grow.

Lt General Katoch also talks about leadership, particularly the Tri-Service Commands. He states that the talk of creating Tri-Service Commands and a single-point military advisor too indicates random measures that may be by design or lack of understanding. It really calls for a Chief of Defence Staff.

We are happy to announce that SP Guide Publications has been honoured by the Business Aircraft Operators Association (BAOA) for its contribution to the niche sector of business aviation. The award was presented at the annual BizAvIndia conference, held on the eve of Aero India in Bengaluru.

Happy reading!

Jayant Baranwal
Publisher & Editor-in-Chief

SP Guide Publications Wins Prestigious Business Aviation Award



At the BizAVIndia Awards 2017 organised by BAOA in Bengaluru on February 13, 2017, SP Guide Publications was felicitated for its efforts and relentless coverage of business aviation in its range of publications and its contribution to business aviation. Jayant Baranwal, Publisher and Editor-in-Chief of SP Guide Publications, received the award from Minister of State for Civil Aviation Jayant Sinha. Jayant Nadkarni, President BAOA, and Group Captain R.K. Bali (Retd), Managing Director, BAOA, are also seen on the dias.



LT GENERAL
PC. KATOCH (RETD)

Indo-US defence ties – Retain the high

There was some speculation as to how the Indo-US defence relationship would pan out under the new US President, as relationships do undergo change with new administrations. Not that there was any reason for apprehensions considering the indications from the US post-election of President Donald Trump. President Trump had already called Prime Minister Narendra Modi on January 24, four days after his swearing-in as President, wherein he emphasised that the US considers India a true friend, and he looked forward to hosting Prime Minister Modi in the US later this year. The two leaders reportedly discussed opportunities to strengthen the bilateral partnership in broad areas like economy and defence.

Then in February 9, the new US Defense Secretary General James Mattis called up Defence Minister Manohar Parrikar. General Mattis committed to build upon the tremendous progress in bilateral defence cooperation made in recent years, underscoring the strategic importance of the US-India relationship and India's role in advancing global peace and security. The Pentagon Press Secretary Captain Jeff Davis released a press statement after the conversation saying, "Secretary Mattis and Minister Parrikar affirmed their commitment to sustain the momentum on key bilateral defence efforts to include the defence technology and trade initiative." Davis said after the phone call between the two leaders which took place on February 8.

Earlier, Defence Minister Parrikar had written a letter congratulating General Mattis after his appointment. However, dates of a future meeting between Parrikar and Mattis are not indicated yet, especially since some changes are expected in the US defence set up. For example, the portfolio of Frank Kendall, Under Secretary for Acquisition, Technology and Logistics (Defence Technology and Trade Initiative (DTTI) with India) is likely to be bifurcated. Indo-US defence relationship have been growing strong with fluid geopolitical dynamics of the region and the Indo-Pacific, including the aggressive act of a bullish China. For example, while Chinese nuclear submarines are prowling the Indian Ocean and docking at Pakistani ports, Admiral Harry B. Harris, Commander of the US Pacific Command, had stated on January 19, 2017, that US and Indian navies have been sharing information on the movement of Chinese submarines and ships in the Indian Ocean. He also said India should be concerned about the increasing Chinese influence in the region.

The US must review its assistance to Pakistan as the hatchery of Islamic terrorism, which is backed by China. Taming the 'deep state' of Pakistan cannot be ignored if the Indo-US defence partnership is really to grow.

The 'Make in India' project offers tremendous scope for enlarging the Indo-US defence relationship. The US had proposed in December 2016 joint development and production of futuristic military helicopters as well as infantry combat vehicles in the first such big-ticket programmes under the DTTI. The US had suggested that the future infantry combat vehicle (FICV) project can be a trilateral venture with the inclusion of Israel.

However, this offer comes at a time when India is hiccupping its way through and indigenous FICV project with six bidders in the fray: OFB; L&T; Mahindra; Pipavav Defence & Offshore Engineering; Tata Motors-Bharat Forge consortium; and Tata Power SED-Titagarh Wagons consortium. Whether India will let these bidders free to pick up their foreign partners (including American or Israeli or both) or review the project afresh in view of the US offer is the moot question. Reviewing the FICV project afresh will certainly delay the project by another few years.

The second US offer is for participation in its future vertical-lift (FVL) aircraft programme, in which India has already shown interest. This programme includes development of five different helicopters or 'capability sets' over the next 15 years at a cost of around \$8 billion. However, India is unlikely to go for all the five types of helicopters, which range from lightweight to heavy-lift ones.

India has already inked \$3.1 billion deal for 22 Apache attack and 15 Chinook heavy-lift helicopters from the US, which are slated for delivery in 2019-20. At the same time, India and Russia have finalised joint production of 200 Kamov 226T light-utility helicopters worth \$1 billion albeit getting this joint venture (JV) appears delayed, with Russians showing concern over the delay during the recent visit of the National Security Advisor Ajit Doval to Russia. The problem may well be finances with the second successive negative defence allocation this year.

The Indian armed forces are in the hunt for 1,200 helicopters of different types over the next 15-20 years to replace their ageing fleets. So while the Hindustan Aeronautics Limited is also independently tasked to develop 187 Kamov type helicopters, the requirements are large.

The US can certainly bring down its own defence budget by moving part of its arms industry to India, even as some of the skilled technicians may have to be brought in till skill development picks up in India. At the same time, the US must review its assistance to Pakistan as the hatchery of Islamic terrorism, which is backed by China. Taming the 'deep state' of Pakistan cannot be ignored if the Indo-US defence partnership is really to grow. **SP**



Defence Minister Manohar Parrikar, Minister for Civil Aviation P Ashok Gajapathi Raju, Minister of State for Civil Aviation Jayant Sinha, Minister of State for Defence Subhash Ramrao Bhamre, three Service Chiefs and other dignitaries at the Aero India 2017, at Yelahanka Air Force Station in Bengaluru on February 14, 2017

Aero India makes a mark

With over 1,000 civil aircraft on order, about 400 fighter aircraft and 800 helicopters requirement, besides 5,000 helicopter engines in the next five to 10 years, the aerospace and defence sector is going to boom like never before and the two sectors coming together is but natural

[By **R. Chandrakanth**]

The Defence Minister Manohar Parrikar inaugurated the 11th biennial edition of Aero India 2017 at Air Force Station Yelahanka in Bengaluru on February 14. This edition of Aero India, for the first time, combined the defence and civil aviation segments into a holistic event with the involvement of the defence and civil aviation ministries. It is likely that the two biennial events — Aero India which is held in Bengaluru and India Aviation that is held in Hyderabad — will become one, though it has not been officially announced yet.

Parrikar said that this edition of Aero India would witness the emerging dynamism of defence manufacturing in India, especially the rising role of Indian defence industry. He further stated that the government is committed to creating an enabling environment for a domestic ecosystem of defence manufacturing, the results of which were already visible. He added, “The defence public sector undertakings are being revitalised and encouraged. Government has also taken several initiatives for ease of doing business for private firms and additional initiatives are underway to support the role of private sector in defence manufacturing.”

Stating that the government was going aggressive on various initiatives that would prop up the economy, including ‘Make in India,’ ‘Start-up India,’ the Defence Minister said that the focus had shifted to start-ups, while the government will not compromise on time-bound delivery of projects, to ensure that the armed forces modernisation was always on track.

“The government will encourage manufacturing, design as well as innovation in the field of defence manufacturing. Conditions have never been better than now for defence manufacturing in India and I hope it will make way for better technical enhancement,” he said. There would be constant efforts to engage the foreign original equipment manufactures (OEMs), who he acknowledged had contributed significantly to enhancing India’s aerospace and defence capabilities. The government, he said, was taking measures to ensure that ease of business would improve to enhance investments, not only domestic but also international, in these sectors.

The Minister for Civil Aviation P. Ashok Gajapathi Raju highlighted that India was the fastest growing aviation sector in passenger terms in the world and held tremendous potential to graduate from the present position of being ninth in the world to being the third largest by 2022.

The inaugural address was followed by three Mi-17 helicopters flying past the dais in formation carrying the flags of India, the Indian Air Force (IAF) and Aero India. This edition of Aero India had to its credit the first ever public display of light utility helicopter (LUH) and the handing over by the Defence Research and Development Organisation (DRDO) of the first indigenous airborne early warning and control (AEW&C) aircraft, the Embraer ERJ-145, in the initial operational clearance configuration to the IAF.

The air show that followed had a fly-past by the 'Make in India' formation consisting of HTT-40, Hawk-i, Dornier 228, Su-30MKI and the Tejas light combat aircraft. This was followed by the fighters tearing through the skies displaying a host of aerobatic manoeuvres — the Su-30MKI followed by Sweden's Saab Gripen, Tejas LCA, the American F-16 Falcon and the French Rafale. The Yakovlev aerobatics team, the Skycats, the Surya Kiran aerobatics team and the Sarang helicopter display team enthralled the spectators with their performance. Another unique feature of this air show was the 20-minute sortie by the Chief of the Air Staff, Air Chief Marshal Birender Singh Dhanoa, who flew in the Tejas LCA trainer during the day.

“The government will encourage manufacturing, design as well as innovation in the field of defence manufacturing. Conditions have never been better than now for defence manufacturing in India and I hope it will make way for better technical enhancement.”
– Defence Minister Manohar Parrikar

Present on the occasion were the Minister of State for Defence, Dr Subhash Ramrao Bhamre; the Minister of State for Civil Aviation Jayant Sinha, the three Service Chiefs of the Army, Navy and the Air Force, and the Industries Minister of Karnataka R.V. Deshpande; Secretary Defence Production, Ashok Kumar Gupta; delegates from several foreign countries, senior serving officers from the three Services, veterans, and senior executives from defence industries.

In his welcome address Ashok Kumar Gupta, Secretary Defence Production, said that Aero India had carved a niche for itself globally as a premier aerospace exhibition. The interest by the OEMs had increased as the government had come out with policies that were conducive for joint investments.

After inaugurating the show, the Defence Minister spent time understanding the capabilities of India's first indigenously developed AEW&C system. He also went inside the Netra AEW&C system, developed by the DRDO and the Hindustan Aeronautics Limited (HAL), and other stalls.

Industrialists Anil Ambani flew on a Rafale fighter jet at the air show and pulled off 6G (experiencing six times the force of gravity) during his

(Below, L-R) Blazing the sky: Dassault Rafale performing a manoeuvre over Yelahanka Air Force Station in Bengaluru; HAL manufactured light combat helicopter over Yelahanka; (Bottom, L-R) IAF's Su-30 MKI flying at near super sonic velocity and indigenously built LCA Tejas in flight.





(Top, L-R) DRDO handed over the first indigenous airborne early warning and control (AEW&C) aircraft, the Embraer ERJ-145, in the initial operational clearance configuration to the IAF; USAF C-130J Super Hercules in flight; (Above, L-R) Indian Army's Rudra helicopters performing on Yelahanka skies; Scandinavian Skycats performing an aerobatic act on Catwalk during the show.

35-minute sortie. Dassault Aviation, the manufacturer of Rafale, has forged a joint venture with Ambani's Reliance Defence for carrying out its offset obligations bundled with the Rafale deal. Asked to sum up his fighter flight experience, Ambani said it was fascinating and he wanted to fly many more times.

Secretary Defence Production Gupta was spotted at the BAE Systems stand, getting a lowdown on modular bridging systems. He discussed the utility of such systems that can be deployed quickly to replace infrastructure in combat and for peacetime disaster relief. The systems can be used for building bridges in lengths up to 60 metres that can support main battle tanks and 110-tonne loaded tank transporters.

At a joint press conference, the two ministers talked about convergence of aerospace and defence. With over 1,000 civil aircraft on order, about 400 fighter aircraft and 800 helicopters requirement, besides 5,000 helicopter engines in the next five to 10 years, the aerospace and defence sector is going to boom like never before and the two sectors coming together is but natural, said Parrikar.

He said while indigenisation would be the route, there would be substantial content from the foreign OEMs as "we do not have those technologies." The percentage of indigenisation content can keep increasing as we progress. He was all praise for HAL which has kept to timelines and the aerospace major would be outsourcing work in large quantities, thus galvanising the emerging private sector. "We

are ramping up LCA production and we would be adding another line of eight, from the present eight production lines." During the current calendar year, there would be decisions on C295, single- and twin-engine fighter, etc.

Echoing similar views, Ashok Gajapathi Raju said considering aviation growth, currently over 20 per cent, and with more aircraft coming in and the Regional Connectivity Scheme all set to take off, there would be urgent need to infuse a lot more investment from within and without. "We are growing at a pace where we will need to invite investments from everywhere." India is expected to catapult from its ranking of nine in global aviation market to number three by 2022.

The Minister of Civil Aviation said with aviation growth at over 20 per cent, there was going to be strain on infrastructure. "We are going to add another 55 airports to the already 75 operational airports in the next two years. The Airports Authority of India requires ₹17,500 crore in the next five years to develop the airports, including air navigation systems. This investment will not be sufficient and we will have to invite investments from across the globe." Air cargo sector is in its infancy and there are enormous business opportunities in this field.

This edition of Aero India saw the participation of 549 companies with 53 aircraft present. The total area of the show saw an increase from 24,403 square metres to 27,678 square metres this year. The gross area has also increased from 2,50,000 square metres to 2,60,000 square metres. **SP**



Air Chief Marshal B.S. Dhanoa flies the LCA Tejas at Aero India

Chief of the Air Staff Air Chief Marshal B.S. Dhanoa took to the skies in Yelahanka over Bengaluru city in the indigenously designed and developed aircraft LCA Mk I Tejas at 1645 hours on February 14, 2017. The Air Chief Marshal flew with Air Vice Marshal A.P. Singh, the Principal Director Test Flight of the

National Flight Test Centre Air.

During the sortie, Chief of the Air Staff demonstrated the operational capability of the aircraft which included agility, manoeuvrability and advanced interface of avionics. The profile included general handling, air-to-air and ground attack patterns. The Air Chief Marshal was impressed by its capability expressing his faith in the programme. The Tejas aircraft has achieved initial operational clearance (IOC) and has been inducted into the Indian Air Force. **SP**



1. (Left) Air Marshal S.B. Deo flew the indigenously developed light combat helicopter (LCH) at Air Force Station Yelahanka during his visit to Aero India 2017.
2. (Above) Vice Chief of the Air Staff Air Marshal S.B. Deo also flew the LCA Tejas in Yelahanka.



LT GENERAL
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Tri-Service Commands – Must get them right

After a lapse of over a year, news is media is again talking of Tri-Service Commands and other measures like appointing a single-point military advisor, without elaborating about the latter whether it will be a Chief of Defence Staff (CDS) or a permanent chairman of the Chiefs of Staff Committee (COSC). What powers the CDS/COSC is to have also remains vague. These types of rumours, which are actually games being played with India's national security.

It is common knowledge that India does not have a cohesive National Security Strategy (NSS). In fact, this was admitted in Parliament in May 10, 1995, by the then Prime Minister P.V. Narasimha Rao when he stated, "We do not have a document called India's Defence Policy. But we have several guidelines which are followed, strictly followed and observed...This policy is not merely rigid in the sense that it has been written down, but these are the guidelines, these are the objectives, these are the matters which are always kept in view while conducting our defence policy." He did not amplify what these several guidelines were that were strictly being followed and observed, but the fact is that the defence of India remained in such dire neglect including pathetic equipping of the military and its operational components certainly proves that these so-called guidelines and their follow-up was grossly inadequate to put it mildly.

Yet no government has ever bothered to bridge this vital void that adversely impacts India's national security at the strategic level. This talk of creating Tri-Service Commands and a single-point military advisor too indicates random measures that may be by design or lack of understanding. Few years back, at the behest of the Ministry of Defence (MoD), HQ Integrated Defence Staff (IDS) came up with a Tri-Service Doctrine. As usual, the media lapped it up. However, no one queried as to who will implement this doctrine, in the absence of headquarters that are 'truly' integrated and have the operational powers to implement it. That certainly was not the case then and the present state remains unchanged.

So, while talking of Tri-Service Commands are we developing a cart without a horse? Going by the media, a single-point military advisor may get established by the end of the year — which year not having been specified. If the so-called single-point military advisor is not a CDS with full operational powers, the whole exercise will be a waste. The CDS must actually be a 'single-point military advisor' overruling what the bureaucracy craftily scripted in the Cabinet Committee on Security (CCS) note under which HQ IDS was raised, wherein it reads "As and when a CDS is established, he will have equal voting rights as the Service Chiefs and if two Service Chiefs disagree, the Ministry of Defence (read babus) will arbitrate". This line must be deleted because the CDS can hardly be single-point advisor with such slanderous provisions. Next comes the issue of Tri-Service Commands — who in MoD understands the requirement of having Integrated Theatre Commands

(ITCs) and Integrated Functional Commands (IFCs) and that some of the latter would necessarily be Bi-Service, not Tri-Service because of their geographical location. How many bureaucrats of MoD understand the difference between ITCs and IFCs is anyone's guess.

Additionally, policy makers would be quite unaware that General S. Padmanabhan, former Chief of Army Staff, had said, "There is no escaping the military logic of creating suitably constituted Integrated Theatre Commands and Functional Commands for the armed forces as a whole." Years later post the Kargil conflict, then Army Chief General V.P. Malik went on record to say. "It is not my case that the Service Chiefs

do not cooperate in war. Were they not to do so, it would be churlish. But in war, cooperative synergies are simply not good enough." The bottom line is that if we are not going in for establishing a CDS with full operational powers and then establish ITCs and IFCs in cohesive manner, it would be a fruitless exercise. But that is not all, concurrent to appointing a CDS, HQ IDS must be fully merged with the MoD. But then this last essential requires a rare quality of political leadership, no? SP

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



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Tri-Service
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Chief of the Army Staff witnesses Aero India, appreciates synergy

General Bipin Rawat, the Chief of the Army Staff (COAS), witnessed the eleventh biennial edition of Aerospace and Defence Exhibition — Aero India 2017 at Air Force Station Yelahanka in Bengaluru on February 14, 2017.

COAS visited galleries of government, public and private enterprises. He interacted with a number of national and international manufacturing houses. COAS appreciated the synergy among industry, academia and the Indian armed forces. COAS displayed



interest in the 'Make in India' initiatives and the national response which had accelerated the pace of modernisation.

During the day, the Army Aviation Corps of the Indian Army with their flying machines too displayed a glimpse of their capabilities during Aero India 2017. The ALH-WSI, commonly known as the Rudra, an armed version of the indigenous advance light helicopter, demonstrated its air strike capability in close support of ground forces. One section of the Army Aviation pavilion also showcased the evolution of aircrafts in the Indian Army. The Army Chief also visited the Army Aviation pavilion in Aero India 2017. **SP**

DG Army Aviation flies the LCH

On February 15, 2017, Lt General Kanwal Kumar, Director General Army Aviation Corps, flew the light combat helicopter (LCH) at Aero India 2017. The LCH is indigenously developed by the Hindustan Aeronautics Limited (HAL) and will soon be inducted into the Indian Army.



This combat helicopter is light, manoeuvrable and armed with devastating firepower. It has the capability to manoeuvre through narrow valleys, mountains and high altitude areas, providing effective support to ground operations. The LCH, armed with its turret mounted gun, rockets, air-to-air missiles and air-to-ground missiles is a potent force multiplier and shall greatly enhance the Indian Army's military capability. **SP**

PLA delegation visits India

A 15-member delegation from Western Theatre Command of People's Liberation Army, China is on a five-day visit to India from February 21 to 26, 2017. The delegation is being led by Major General Zhao Jin Song, Vice Chief of Staff of

Headquarter Western Theatre Command, Chengdu, China.

With New Delhi, Agra and Kolkata on the itinerary, the Chinese delegation called on senior Indian Army officers dealing with border issues at Army Headquarters on February 21.

The two sides exchanged views on a wide ranging issues and agreed that peace and tranquillity on the border is an important guarantor for development and continued growth of bilateral relations. The leaders of two delegations discussed the importance of having regular bilateral exchanges and additional Border Personnel Meeting points. This visit is continuation of the enhanced engagements between the two armies which also saw Western Theatre Commander General Zhao Zongqi visit India in December 2016. **SP**





INS Betwa to be fully operational by April 2018

INS Betwa, the P-16A class frigate, has been made upright by the unstinted efforts put in by the Naval Dockyard, Mumbai, and the salvage firm Resolve Marine, specially contracted for the operation. It may be recalled that the ship which was undergoing major repairs had keeled on to her side during her undocking on December 5, 2016.

The salvage operations were progressed on a war footing and the initial stabilisation of the ship was achieved by December 29, 2016. The complete salvage operation involving complex hydrodynamic calculations and rigging up of intricate measuring and monitoring systems was completed in less than two months.

As the ship was undergoing major refit and midlife upgradation since April 2016, majority of the equipment/machinery had already been removed for routine servicing/replacement with upgraded equipment.

Indian Navy is confident that with in-house expertise and sustained efforts, the ship will be made fully operational by her scheduled date of refit completion, i.e by April 2018. **SP**

Defence Minister presents Best Marching Contingent Trophies



The Defence Minister Manohar Parrikar recently presented the Best Marching Contingent Trophies to the Madras Sappers and the Central Industrial Security Force (CISF) who participated in the Republic Day parade 2017 at the historic Rajpath, New Delhi. Commandant Madras Engineer Group Brigadier R.K. Sachdeva received the trophy on behalf of the Madras Sappers while Director General CISF O.P. Singh received the trophy on behalf of CISF.

The function was attended by the Chief of the Army Staff General Bipin Rawat, the Chief of the Naval Staff Admiral Sunil Lanba, the Chief of the Air Staff Air Chief Marshal B.S. Dhanoa, Defence Secretary G. Mohan Kumar and other senior officers from the Ministry of Defence, the three Services and Ministry of Home Affairs.

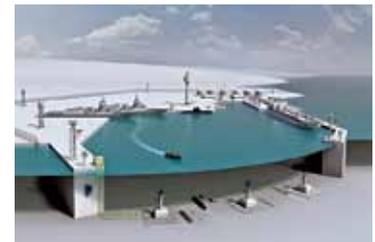
True to their motto of 'Sarvatra', the Madras Engineer Group has always distinguished themselves in full spectrum of professional activities ranging from operations to ceremonial events throughout the glorious history of 236 years, be it supporting fighting troops during operations or claiming the Best Marching Contingent every time they participated.

PHOTOGRAPHS: Indian Navy, IAI, PIB

Keeping their rich traditions alive, Madras Sappers once again claimed the Best Marching Contingent Trophy both in Army Day and Republic Day parades 2017. **SP**

IAI completes Port Security and Defence Project in India

Israel Aerospace Industries (IAI) has developed and delivered comprehensive security and protection systems, known as the Integrated Underwater Harbour Defence and Surveillance System (IUHDSS). The Indian Navy, tasked with defending the subcontinent's 7,516-kilometres-long coastline, had raised the need for such systems. Developed by IAI subsidiary, Elta Systems, IUHDSS comprises surveillance, observation, surface and underwater sensing arrays that can detect, locate, and track various threats — whether from small boats and submersibles, swimmer delivery vehicles (SDV), swimmers or divers.



IUHDSS is a modular system, tailor made to meet specific customer needs. The system includes an advanced command and control system, a range of coastal surveillance radars, diver-detecting sonars, electro-optical sensors, and automatic threat identification systems. The central command and control system provides automatic integration of all sensors, creating a common situational picture for port defence.

Nissim Hadas, IAI Executive Vice President & Elta President said, "We are proud to deliver another project to India, our strategic partner. Many of IAI's systems play a role in India's maritime and coastal defence. Since becoming operational, this system has proved itself, and we look forward to continuing our long-term strategic cooperation with India for a bright and safe future!" **SP**



LT GENERAL
PC. KATOCH (RETD)

Critical shortages – Where is the money?

Media reports headlining urgent arms deals of ₹20,000 crore have been signed to keep the armed forces ‘ready’ create an impression that all is going to be hunky-dory in a jiffy is a misnomer. If you read between the lines, the reports are talking of only ammunition. More significantly, the noise is being made over the fact that government wants to ensure military must have sufficient ammunition to fight for at least 10 days.

As per operational requirements, the Army is required to hold War Wastage Reserves (WWR) sufficient for 30 days of ‘intense’ fighting plus 30 days of ‘normal’ fighting (total of 60 days) but these have been allowed to deplete as part of the neglected defence capability past several years. Nothing much happened when the letter by General V.K. Singh, then Army Chief (now the Minister of State for External Affairs), wrote to then Prime Minister Manmohan Singh about the critical deficiencies in the Army, including ammunition holdings. Though the letter was deliberately leaked to the media because of ulterior motives, there was total inaction for making up the critical voids.

Now this news about making sure that at least 10 days worth of ammunition for fighting will be made available does not cut much ice. Can the government vouch that any future war will end in 10 days? If not, does the government plan to request the enemy take a break midway in the battle so that we can procure more ammunition. But that is not all. Experience will tell you that it usually takes a number of years before a deal is inked and its fructification. One example is the ‘emergent’ procurement of 50,000 bullet proof jackets announced by Defence Minister Manohar Parrikar which have still not fully fetched up, even as the overall deficiency of bullet proof jackets in the Army shot past the figure of 3,50,000 during 2016. Now if that is the norm for just bullet proof jackets, in what time frame will ammunition of various types worth ₹20,000 crore be procured? Sure, the Comptroller and Auditor General of India (CAG) has taken note of critical shortage of ammunition when the alarming report was tabled in Parliament. So has this media report been released to satisfy CAG’s observations? The harsh truth is that the Finance Minister has presented a second successive bud-

get that is ‘negative’ despite that heightening of tensions on the borders and the China-Pakistan anti-India nexus magnifying.

Factually, the defence allocation made on February 1, 2017, and the hype about the 6 per cent increase over the previous year’s allocation is poor attempt to whitewash the 10-15 per cent annual increase in defence costs. Given the meagre defence allocation of ₹2,74,000 crore, ₹86,500 crore of which is for capital expenditure, can the government really buy ₹20,000 crore of ammunition from the revenue budget given the rising manpower costs including for accretion manpower on account of new raisings, which would entail salaries, 7th Central Pay Commission hikes, food, clothing, tavel,

medical, etc., even if pensions are not part of the announced defence budget. So in all probability, the same old tactics of ‘red tape’ will be applied — spreading this procurement over years.

Despite painting the optimistic note, media obviously is privy to the true picture when elaborating that while the 2017-18 may not have allocated much, but the armed forces are gung-ho about the fast-track procedure now in place to ensure ‘serviceability and availability’ of existing weapon systems and platforms. Now who are we fooling? Sure the government has set up empowered procurement committees under the Vice Chiefs of the three Services with emergency financial powers to make up deficiencies in stockpiles, and ‘some’ contracts have been concluded by the Army and the Air Force, but have sufficient funds been put aside for these empowered committees to make up the critical voids?

The fact is that there are enormous critical deficiencies in a host of components of operational components, not just ammunition. Have we forgotten that General (later Field Marshal) S.H.F.J. Manekshaw had told then Prime Minister Indira Gandhi that he would need few months of preparation, even though the Prime Minister wanted immediate intervention in East Pakistan (now Bangladesh). We cannot have such luxury when enemy is attacking us. It is time the accumulated critical deficiencies and their adverse strategic fallout be taken more seriously. **SP**

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



The Army is required to hold War Wastage Reserves (WWR) sufficient for 30 days of ‘intense’ fighting plus 30 days of ‘normal’ fighting (total of 60 days) but these have been allowed to deplete as part of the neglected defence capability past several years



“The C295 joint venture between the Tata group and Airbus has the potential to create an ecosystem for the Indian aviation sector similar to what the Maruti car JV did for the automobile sector in India.”

–Air Chief Marshal B.S. Dhanoa (in an informal conversation with Jayant Baranwal, Editor-in-Chief, SP's M.A.I.)



Northrop Grumman and partners celebrate first flight of UH-60V Black Hawk



Northrop Grumman Corporation in partnership with the US Army Prototype Integration Facility and prime contractor Redstone Defense Systems, has successfully completed the first flight of the UH-60V Black Hawk helicopter.

Northrop Grumman provided the integrated avionics suite for the UH-60V, which upgrades the US Army's UH-60L Black Hawk helicopters with a digital cockpit, under a contract awarded in 2014. The scalable, fully integrated and open architecture-based cockpit design replaces older analog gauges with digital electronic instrument displays in the upgraded aircraft. The UH-60V features one of the Army's most advanced avionics solutions, enabling the complex missions of the Army Aviation warfighter.

On January 19, the UH-60V Black Hawk successfully flew for the first time with this digitised cockpit in Huntsville. This important milestone was the culmination of a cockpit design and development effort that was completed on schedule within 29

months of the original contract award. The team's accomplishment achieves the specific timeline set by Army leadership over two years prior to the first flight. The UH-60V Black Hawk programme will modernise the Army's fleet of UH-60L helicopters through cost-effective cockpit upgrades. The new system is nearly identical to the UH-60M pilot-vehicle interface, providing common training and operational employment. **SP**

Successful demonstration of an ASMP-A missile launch

Jean-Yves Le Drian, French Minister of Defense, expressed his great satisfaction after the successful test launch of a nuclear-capable missile without a nuclear charge.

The Minister congratulated all the women and men of the forces, the Directorate General of Armaments (DGA), the Gendarmerie Nationale and the companies that have worked towards this new success of the French deterrent.

On February 14, 2017, a Rafale-M single-seat fighter belonging to the French Navy took off from Avord Air Base (BA 702) in Central France and completed a flight of over four hours, during which it enacted all the phases of an airborne deterrent mission: long-distance flight, successive aerial refuellings, low-altitude penetration, terrain following and launch of a high-accuracy ASMP-A (Air-Sol Moyenne-Portée-Amélioré) missile on a test area of the DGA's Bis-carrosse missile test centre.

This was the operational assessment firing of the enhanced Rafale/ASMP-A system, and is representative of a real nuclear strike

mission carried out by the airborne nuclear component. **SP**

Forest firefighting operation by IAF helicopter in Mukkunimala



On February 21, 2017, Mi-17V5 helicopters of the Indian Air Force (IAF) doused fire in an operation at Mukkunimala Hill which is located 10 km east of airfield at Thiruvananthapuram. An Air Force radar is also located on hill top at Mukkunimala. Due to lack of rain in the region, first forest fire occurred in the hills on February 18. The same was put off by employing domestic fire tenders of IAF and the Kerala Fire Service. The fire, however, continued to reoccur due to thick and dry vegetation. On February 21, Kerala State Government requested IAF for assistance in terms of employing helicopters to douse the forest fire at Mukkunimala.

Two Mi-17V5 helicopters which undertook the operation flew a total of five sorties in Bambi bucket configuration and dropped 62,050 litres of water to douse the forest fire. By evening the fire was fully doused. **SP**

PHOTOGRAPHS: IAF, Airbus D&S, Northrop Grumman

Russia ready to export advanced MiG-35 fighter to India



Russia is ready to supply India with sophisticated Mikoyan MiG-35 multi-role fighters, should India be interested in the type, Vladimir Drozhzhov, Deputy Director of the Federal Service for Military-Technical Cooperation (FSMTC), has told TASS.

“If India takes interest [in the MiG-35], Russia is ready to deliver it, all the more so that MiG fighter jets are well known to Indian pilots and India has the adequate infrastructure to operate them, which is not the fact as far as the French-made Rafale fighters are concerned,” Drozhzhov said.

The testing of the MiG-35 will be complete in the coming years, MiG Corporation Director General Ilya Tarasenko said at the Aero India 2017 air show. “They [the trials] have been underway smoothly.

We shall complete them in the coming years,” he replied. MiG Corp. is prepared to offer its MiG-35 in the bidding on the Indian contract, Tarasenko added. “Our objective is to have the MiG-35 in the Indian Air Force’s [IAF] inventory. Therefore, we shall bid in any tender in India,” he said.

The MiG-35 is an advanced Russian-built fourth-generation plus multi-role fighter derived from the MiG-29K/KUB and MiG-29M/M2 combat aircraft. It features improved flight characteristics, cutting-edge avionics and a formidable weapons suite comprising a wide array of air-to-air and air-to-surface guided missiles and smart bombs. **SP**

Dassault Aviation looking at naval contract

After bagging the €8.78-billion deal for 36 Rafale fighters to strengthen the Indian Air Force fleet, French aircraft manufacturer Dassault Aviation is now eyeing the naval contract of 57 aircraft that is up for grabs. The navy issued a request for information last month seeking response from various manufacturers to equip its aircraft carriers with fighter jets, shelving the original plan to go in for the naval version of the indigenous Tejas.

Eric Trappier, CEO of Dassault Aviation, said the French aviation company will pitch for the naval contract. “We are the only company to have strictly the same aircraft for our air force and for our navy. Our Rafale for the navy and the air force are same. In case we have the new contract for the navy, we will benefit from the local implementation of the Rafale production [for the air force],” Trappier said.

Like other defence companies vying for the multibillion-dollar contract, Dassault too has offered to set up a manufacturing line in India. “We started to think seriously about producing Rafale in India a long time ago. We will start production of parts of Rafale, which is a part of the existing contract. **SP**

T-50 powered by second-stage engine to conduct maiden flight in Q4 2017

Russia’s T-50 (also designated Perspective Frontline Aviation Complex, Russian acronym PAK FA) fifth-generation fighter aircraft powered by the second-stage engine will conduct its maiden flight in the fourth quarter of 2017, the press department of the United Engine Corporation (ODK, a subsidiary of the Rostec State Corporation) told journalists.

“The first flight of the aircraft powered by the new engine is expected [to be conducted] in the fourth quarter of 2017,” a UEC representative said. He pointed out that the engine programme is being developed “on the established time schedule”.

The first ground launch of the demonstrator engine was conducted at the Lytkarino Machine-Building Plant in November 2016. The engine is being developed by the Lyulka Design Bureau under auspices of the bureau’s Designer General-Director Evgeniy

Marchukov. According to the Director General of UEC Alexander Artyukhov, “New design considerations of the Russian engine-building that remain unmatched” were used during the manufacturing of the demonstrator engine.

“In addition to the aforementioned demonstrator, the gas-generators of the new engine were also produced separately. The second-stage jet engine intended for the PAK FA aircraft will feature a FADEC (Full Authority Digital Engine Control) system. The effectiveness of the Unit 30 should be 17-18 per cent higher compared to the performances of the first-stage engine (Unit 117).

“The second-stage engine for PAK FA is a fifth-plus-generation engine, even the fifth-plus-plus-generation one,” Marchukov said previously. The specific performances of the engine are 15-20 per cent better than the ones of its predecessors.

The PAK FA combat aircraft conducted its maiden flight in 2010. The first five serial fighters are supposed to be delivered to the military this year. The deliveries of PAK FAs to the military may start after 2018. At present, the fighter prototypes are powered by the first-stage engines (Unit 117). **SP**



CAE awarded contract by Airbus for comprehensive C295W training solution

CAE announced that Airbus Defence and Space has awarded CAE a contract for a comprehensive C295W aircrew and maintenance training solution to support the Royal Canadian Air Force's (RCAF) fixed-wing search and rescue (FWSAR) programme. The contract is worth approximately C\$200 million over the next 11 years and includes options to extend an additional 15 years that would take the value to more than C\$300 million.

The Airbus C295W was selected by the Government of Canada as its new FWSAR platform in December 2016. As part of the FWSAR programme, the RCAF will receive 16 C295W aircraft specifically modified for search and rescue.

"We are honoured to serve as the training systems integrator to lead the overall design and development of a comprehensive C295W training solution for aircrews and maintainers," said Joe Armstrong, Vice President and General Manager, CAE Canada.



"The search and rescue mission in Canada is both critical and challenging, and we are proud that we will play a role in helping train and prepare the RCAF for this mission." **SP**

Defence Minister unveils full scale mock-up of HAL's Indian multi-role helicopter



Hindustan Aeronautics Limited (HAL), Asia's largest aerospace and defence major, emerged as a show stopper during the opening day of the 11th edition of Aero India inaugurated by the Defence Minister Manohar Parrikar at Yelahanka.

Parrikar unveiled the full-scale mock-up of Indian multirole helicopter (IMRH) in the presence of Goa Chief Minister Laxmikant Paresekar, T. Suvarna Raju, CMD of HAL, and other key officials at a function held at HAL Pavilion at Hall E.

HAL aims to indigenously develop 12-tonne class IMRH with service ceiling of around 20,000 feet, 3,500 kg payload and

a seating capacity of 24. The major roles to be performed are tactical troop transport, casualty evacuation, under slung load, combat search & rescue, anti-surface operations, offshore operations, VIP/VVIP transport and air ambulance. The Army/IAF version will have a significant hovering and payload capability especially at high altitude.

The proposed IMRH will be powered by twin engines (to be identified), equipped with automatic flight control system, state-of-the-art mission systems, advanced cockpit display and avionics systems, etc. to meet the utility and armed roles of Indian armed forces. A dedicated naval variant is also planned.

Besides the domestic defence orders, HAL will target export orders, aiming to replace the ageing fleet of similar class of helicopters that are operational in more than 40 air forces around the world.

The Defence Minister also visited HAL stall and witnessed the products and technologies on display. **SP**

UK Minister for Defence Procurement shows support to Indo-UK Advanced Hawk

During her visit to Aero India 2017, Harriett Baldwin MP, UK Minister for Defence Procurement, met BAE Systems and Hindustan Aeronautics Limited (HAL) and was given a demonstration of the partnership's latest collaboration, the Advanced Hawk fast jet trainer.

After seeing at first-hand the capabilities the Advanced Hawk offers, the Minister said: "The UK and India have so much to offer one another in defence and I'm delighted to be at Aero India to build this close relationship."

She added: "The joint development of the Advanced Hawk by BAE Systems and Hindustan Aeronautics Limited is an outstanding example of what our defence industries can achieve together. Indian companies like HAL have been building UK-designed aircraft for over 40 years, so we are building on a strong foundation."

Alan Garwood, Group Business Development Director, BAE Systems, added: "The Advanced Hawk is another demonstration of our commitment to 'Make in India' and presents a unique opportunity to build on our track record of collaboration with HAL and Indian industry in developing technologies and capabilities. Advanced Hawk is a great example of 'Make in India,' for India and export from India." **SP**



E-2D Advanced Hawkeye arrives in Japan

Carrier Airborne Early Warning Squadron (VAW) 125 arrived at Marine Corps Air Station (MCAS) Iwakuni, February 2. The Tigertails of VAW-125 are relieving the Liberty Bells of VAW-115 as the early-warning squadron of the US Navy's Carrier Air Wing (CVW) 5, supporting the USS Ronald Reagan (CVN 76) Carrier Strike Group.

"We are excited to join the Forward Deployed Naval Forces at Marine Corps Air Station Iwakuni in the amazing city of Iwakuni," said Cmdr. Daniel Prochazka, VAW-125's commanding officer. "I would like to thank the city for its hospitality and for warmly welcoming us to this incredible place. This is my second time in the Forward Deployed Naval Forces. My fond memories make me personally very thrilled to be back."

VAW-125's arrival also brings enhanced capabilities to the region, as the squadron's five E-2D Advanced Hawkeye aircraft provide substantial upgrades over the E-2C Hawkeye platform. VAW-125 is the US Navy's first operational fleet squadron to utilise the E-2D. "VAW-125 is the first and most experienced E-2D squadron in the US Navy," Prochazka said. "This aircraft has the most advanced airborne radar in the world, and the people who fix and fly it are the best in the US Navy." Among the improvements in the E-2D are an



all-new electronics suite, enhanced turboprop engines, modernized communications, and upgrade potential for mid-air refuelling capabilities. The US Navy first took delivery of the E-2D in July of 2010 and began a phased replacement of the venerable E-2C aircraft, which has served the fleet since 1973. **SP**

Embraer KC-390 begins in-flight refuelling trials



The first in-flight refuelling mission of the future Brazilian Air Force (FAB) freighter, the KC-390, was successfully completed recently. From February 1 to February 22, FAB's military personnel and Embraer professionals worked together on yet another flight test campaign, this time to test the Wing Air Refueling Pod (WARP). The device is located under the wings of the freighter, and operates refueling hose, which is 30 metres long. Air force F-5M fighters were used as receivers.

This time, although the contact was dry – that is, no fuel was transferred – all other procedures involved in the in-flight refuelling were carried out. Raphael Leme, leader of the KC-390 in-flight test engineering, says this is an important test, as the aircraft is the

first tanker ever produced by Embraer. "We are working with the novelty factor," he says. He further explains that the main thing to be tested is the ability of the WARP software to strain the hose: it cannot form waves, nor can it be called 'dead hose,' when there is no lift.

The KC-390 test campaign's end schedule will run until the end of 2018. Currently, there are two prototypes performing in-flight testing in parallel, and a third is in the finalisation phase. In all, there will be more than 2,000 flight hours for the development and certification tests. **SP**

Leonardo: AW609 programme moves forward preparing for icing trials

The AW609 tiltrotor programme is expected to start icing trials soon following recent ground and flight testing activities. These advances have been made in support of FAA certification, which remains on track for 2018.

The third prototype, based at Leonardo's facility in Philadelphia, performed several weeks of unrestrained ground testing and, more recently, flight trials that allowed avionics and all systems to be fully tested. During initial flights, the aircraft performed basic hovering and manoeuvring and pat-

terns around the airport, concluding with hover landing. Additional flights up to altitudes of 4,000 feet with short take-off and landing (STOL) are planned shortly.

The aircraft will undergo icing trials in Marquette, Michigan, through the winter. The tests will ensure the AW609 can fly in known icing conditions and reach operational standards not currently available in any other commercial aircraft.

The fourth AW609 prototype is now located within the main production area of the Philadelphia facility's assembly line to ensure a smooth transition to the first production build aircraft, also planned for 2018. The unique flight characteristics of the AW609 combine the benefits of a helicopter and a fixed-wing aircraft into one aircraft. Flying above adverse weather conditions with up to nine people in comfort or a combination of stretchers and medical attendants in a pressurised cabin with turboprop-like speed and performance, the AW609 represents the next-generation of aircraft transport.

With agreements for nearly 60 units from customers around the world, including the intention of the UAE Joint Aviation Command to take delivery of three aircraft, the AW609 is capable of diverse missions, including patrol and search and rescue, offshore transport, executive/private transport and homeland security roles. Development agreements are in place with Bristow Group and Era Group, for offshore and EMS variants, respectively. **SP**

MQ-9 participates in Red Flag I7-1, integrates with F-35

Two MQ-9 Reapers and multiple aircrews from the 432nd Wing/432nd Air Expeditionary Wing participated in Red Flag I7-1 from January 23 to February 10, 2017, at Nellis Air Force Base, Nevada. This was the first time the MQ-9 and F-35A Lightning II have integrated in a Red Flag.

“Specifically for this Red Flag our desire and objectives were to integrate in combat search and rescue missions,” said Captain Joseph, 42nd Attack Squadron pilot. “We wanted to demonstrate that we are a capable and feasible aircraft to provide on-scene command during a CSAR event.”

“The F-35, on the times we worked together, provided suppression of enemy air defence and coverage in order to execute our mission,” Joseph said. “They would take out any surface-to-air missiles or air-to-air threats, protecting us [if needed].” During the exercise the MQ-9 and F-35 crews were learning about how to integrate with each other. “The biggest education point was how



to communicate effectively to each other what our desires are and how to get the same results,” Jacob said. **SP**

Schiebel Camcopter S-100 UAS wins contract with Australian Navy



Hans Georg Schiebel, owner of Schiebel Group, emphasises: “We feel most honoured by the Royal Australian Navy’s decision to purchase our Camcopter S-100 UAS. We are sure that the S-100 will prove to be an effective asset that will set a new benchmark for UAS capability.” The Camcopter S-100 holds an impressive track record of supporting naval customers with missions successfully completed on over 30 different ships on all the world’s oceans in every environment from the tropics to the Arctic. **SP**

SideArm prototype catches full-size unmanned aerial system flying at full speed

Few scenes capture the US Navy’s prowess as effectively as the rapid-fire take-off and recovery of combat jets from the deck of an aircraft carrier. The ability to carry air power anywhere in the world, and both launch those aircraft to flight speed and bring them to a stop over extremely short distances has been essential to carriers’ decades-long dominance of naval warfare.

To help provide similar capabilities — minus the 90,000-tonne carriers — to US military units around the world, DARPA’s SideArm research effort seeks to create a self-contained, portable apparatus able to horizontally launch and retrieve unmanned aerial systems (UAS) of up to 900 pounds. **SP**

NAWCWD’s ongoing Spike efforts pay off in successful fire



From its first guided shot just over a decade ago to a 2015 folding fin demonstration, the home-grown Spike missile programme at the Naval Air Warfare Center Weapons Division continues to use in-house developments and warfighter input to make improvements to get the missile into the hands of sailors and marines in the face of growing unmanned aerial vehicle concerns.

During a December 2016 test at China Lake, the Spike team twice demonstrated the capability of the missile to shoot down an outlaw UAV with one shot.

“The team worked really hard to get us to the point where everything was smooth,” said Spike Project Manager Gavin Swanson. “Come test day, there wasn’t anything in our way.” **SP**

The Royal Australian Navy awarded to Schiebel a contract for the supply of its Camcopter S-100 System and three years of follow-on contractor logistics support. The Royal Australian Navy released an international request for tender (RfT) in late February 2016 for a UAS capability. Schiebel was very pleased to be able to submit a comprehensive proposal to deliver the latest version of its highly successful Camcopter S-100 UAS. After thorough proposal evaluation and completing negotiations, the contract was signed at the end of December 2016.

PHOTOGRAPHS: Defense.gov, US Navy, Schiebel

Israel Aerospace Industries and Kalyani Group to incorporate a JV to manufacture specific air defence systems

Israel Aerospace Industries Ltd (IAI) and Kalyani Strategic Systems Ltd (KSSL), the defence arm of Kalyani Group, signed a memorandum of understanding (MoU) to incorporate a joint venture company (JVC) in India.

As part of the MoU, IAI and KSSL are aiming to expand their presence in the Indian defence market and to build, market and manufacture specific air defence systems and lightweight special purpose munitions.

The MoU was signed in Bengaluru, at the Aero India exhibition, by Joseph Weiss, IAI's President and CEO, and Baba Kalyani, Chairman of Kalyani Group. The MoU is the first step of a process to establish a JVC between the two companies. The JVC will integrate strategic state-of-the-art defence systems for the Indian MoD in accordance with the Indian

Government's 'Make in India' policy. Joseph Weiss said: "We are excited to announce the next step in our partnership in India, one of IAI's leading markets. This collaboration brings together the manufacturing and technology excellence of two leading companies and we hope we can continue with our partners at KSSL to

spread our footprint in India and to continue our vast work with the 'Make in India' policy".

Baba Kalyani said: "The joint venture company will combine IAI's advance technology, knowledge and experience as an OEM with world-class design, development and manufacturing capabilities of the Kalyani Group. The joint venture will provide indigenously manufactured solutions in niche technology areas of defence sector, thereby furthering the 'Make in India' initiative of the government". **SP**



Godrej Aerospace partners ISRO in launching a record 104 satellites

In a massive show of strength and prowess, the Indian Space and Research Organisation's (ISRO's) PSLV C37 rocket has successfully launched 104 satellites, the most in a single mission anywhere in the world. This was a mammoth leap from the previously held record of 37 satellites by Russia in 2014 and 29 by NASA in 2013.

This historical achievement by the ISRO has placed India in a new orbit amongst the space faring nations. Godrej Aerospace (GA), a business unit of Godrej & Boyce Mfg Co Ltd, has contributed to the mission by manufacturing critical systems and components for the launch vehicle. The second stage liquid propulsion engine and the fourth stage reaction control system components for the launch vehicle were manufactured by GA.

For over three decades, GA has been associated with ISRO including for complex systems such as liquid propulsion engines for PSLV and GSLV rockets, thrusters for satellites and antenna systems. GA was also an integral part of the prestigious Chandrayaan and Mangalyaan missions. The company has been committed to the cause of indigenous manufacturing for India's space pro-

grammes, and at Godrej & Boyce, partnering the Indian space programme is another way to propel India's technological prowess. **SP**

New European defence company Hensoldt launched

Following the closing of the transaction between Airbus Group SE and KKR, a leading global investment firm, a new European defence company headquartered in Germany, Hensoldt, has been launched.

The new company, headquartered in Taufkirchen close to Munich, will be led by an Executive Committee comprising CEO Thomas Müller, head of HR Peter Fieser, head of Finance Axel Salzmann and head of Operations Peter Schlote. Further members of the Executive Committee are head of Electronic Warfare/Situational Awareness Uwe Virkus, head of Radar/IFF/Data Links Erwin Paulus, head of Optronics Andreas Hülle, head of Sales & Marketing Sabine K. Hipp, head of Strategic Business Development Celia

Pelaz and General Counsel Solms U. Wittig.

The Hensoldt brand derives from Moritz Carl Hensoldt (1821-1903), a German pioneer of optics and precision mechanics who developed benchmark technology solutions and products in his field. The name Hensoldt stands for premium solutions, combining excellence, innovation and efficiency.

Hensoldt will provide leading edge technology solutions to armed forces and security agencies. Firmly grounded in its three product lines — Optronics, Radar/IFF/Data link and Electronic Warfare/Situational Awareness — the company offers sensor solutions for air, sea and land applications. This includes the protection of critical infrastructures, air defence, airborne self-protection, vehicle and convoy protection, signal intelligence and data links, as well as night vision, thermal imaging, laser rangefinding and optronic targeting. Furthermore, the portfolio comprises mission avionics equipment, such as computers, mission planning devices and situational awareness systems for helicopters.

Hensoldt is a key contributor to major European defence acquisition programmes and has demonstrated its global reach by winning a number of international contracts. Among the most prominent air and space platforms equipped by Hensoldt are the F-16, Eurofighter, Gripen and Rafale combat aircraft, the Tandem-X and EDRS-A satellites, the A400M transport aircraft, as well as helicopters of various types. **SP**



Thomas Müller, CEO, Hensoldt

Jindal Stainless (Hisar) Limited forays into defence sector

Jindal Stainless (Hisar) Limited (JSHL), country's largest integrated stainless steel producer has announced its entry into the defence sector by signing the license agreement with the Defence Research and Development Organisation (DRDO), which entails transfer of technology for manufacturing high nitrogen steel (HNS) for armour applications. The agreement was signed in the presence of Minister of State for Defence, Dr Subhash Bhamre, and Abhyuday Jindal, Vice Chairman, JSHL. With this, JSHL now becomes India's first company to commercially manufacture high nitrogen steel for the defence sector. The use of HNS will replace the existing import of rolled homogenous armour (RHA), thereby resulting in improved cost efficiency in material acquisition for armour applications by 50 per cent.

It is a comprehensive joint effort, and almost a decade of R&D by JSHL and Defence Metallurgical Research Laboratory (DMRL) to develop HNS. This major development will not only accelerate the indigenisation process of Indian defence arsenal in line with government's 'Make in India' drive but will also help in easy availability of best material for manufacturing lighter armour vehicles, as import procurement often delays the manufacturing process. HNS is corrosion resistant and provides exceptional ballistic/blast protection than the existing material at a much reduced thickness along with longevity which increases the fuel and mass efficiency. HNS exhibits higher energy absorption level, enhances crashworthiness to the entire artillery system and has significantly higher impact values (> 200 Joules at room temperature and > 150 Joules at -40°C) as compared to RHA which make HNS a far superior material for blast protection. HNS has passed multiple levels of ballistic tests in different calibres with 8-10 times higher impact/blast protection.

HNS has potential application in all armoured vehicles including infantry combat vehicle (ICV), light specialty vehicle (LSV), light armoured multi-purpose vehicle (LAMV), futuristic infantry combat vehicle (FICV), main battle tank (MBT), future ready combat vehicle (FRCV), aviation and naval systems. JSHL is also working to produce additional variants of HNS with enhanced blast and ballistic protection to cater to niche requirements of the Indian defence sector.

HNS is manufactured at JSHL's state-of-the-art facility at Hisar with triplex refining route and manufacturing process has already been optimised for industry scale production to cater to stringent and niche requirements of Indian defence and paramilitary forces. JSHL and DMRL together have developed the quality assurance plan for the HNS to ensure consistent quality in production to meet the future demand of HNS. **SP**

Rafael, Reliance JV to manufacture air defence systems

Israeli company Rafael with cutting-edge technologies in air defence systems has tied up with Reliance to manufacture air defence systems, which the company is showcasing at Aero India 2017.

The Deputy General Manager, Colonel Joseph Horowitz (Retd) told *SP's M.A.I.* that delegations

from the Indian Navy and the Indian Air Force had visited the pavilion and expressed interest in the air defence systems — Iron Dome and C-Dome. He said the Iron Dome since its launch in 2011 had destroyed over 1,700 enemy rockets. "We cannot find any missile in the world with such a strike rate of 90 per cent." He said that a week ago, Israel had destroyed a Hamas fired rocket with great effect. He said the Iron Dome launcher was put on a Israeli ship recently and using the ship's radar, it was possible for 'target detection' and 'weapon allocation' in quick time. The company was now working on integrating the air defence system on ships. The Israeli Navy had worked on this system called the Closed-in Weapons System. The system can detect sea-skimming threats, rockets and other enemy munitions.

The systems, he said, would be required in India as the country had huge assets to protect not only on land but also on sea. He was hopeful that these systems would soon be accepted by India. **SP**



Raytheon, TASL to co-produce Stinger missile components

Raytheon Company signed a memorandum of understanding with India's Tata Advanced Systems Limited (TASL) to engage in co-production of Stinger air defence missile components.

"Our agreement with Tata Advanced Systems deepens our industrial partnership in India with a global technology leader and will expand the range of options and capabilities for US and coalition forces to achieve their missions," said Duane Gooden, Vice President, Raytheon Land Warfare Systems.

As part of the new pact, TASL could produce components of the Stinger missile in India. Stinger has both surface-to-

air and air-to-air applications against a variety of airborne targets.

"This collaboration with Raytheon is in keeping with other partnerships that TASL has with global leaders in the defence and aerospace sector. We look forward to becoming a key contributor to the Stinger missile for India," said Sukaran Singh, CEO and Managing Director of TASL.

"We will seek to expand our relationship to other missile systems and technologies, and contribute to the progressive implementation of the 'Make in India' initiative to address multiple objectives of the government, such as value addition, employment, and control over key technologies," added Singh. In 2016, India was one of three international customers to order Stinger missiles. India will equip its AH-64 Apache attack helicopters soon to enter service with the Indian Air Force." **SP**



Alanis victim of multimillion-dollar theft

US Police said burglars broke into the Canadian singer's Los Angeles home and stole a safe containing \$2 million in jewellery.

The *Los Angeles Times* reported that Morissette, her husband, and their two children weren't home at the time of the February 9 break-in at their Brentwood home. Investigators haven't said whether the burglary is connected to recent celebrity heists, including a break-in at the home of NickiMinaj, in which thieves made off with jewellery worth around \$1,75,000. *People* notes that Morissette, whose ex-manager recently admitted stealing almost \$5 million from her, focused on the positive in a recent tweet, saying that "it is nice to know you are surrounded by so much goodness." **SP**



Ministry of Home Affairs website hacked

The Ministry of Home Affairs (MHA) website was hacked recently prompting authorities to temporarily block it, an official said. The MHA website was immediately blocked by the National Informatics Centre (NIC) after hacking was noticed. Computer emergency response teams (CERT) are looking into the incident, the official said. Further details were awaited.

Last month, suspected Pakistan-affiliated operatives had hacked the official website of the elite National Security Guard (NSG) and defaced it with a profanity-laden message against the Prime Minister and anti-India content.

More than 700 websites of various central and state government departments were hacked in the past four years and a total of 8,348 persons were arrested for their involvement in cyber crimes, according to official data released this month. **SP**

House committee launches investigation into breaches at Mar-a-Lago

The US House Committee on Oversight and Government Reform has demanded proof of security protocols and how they are kept in place by February 28. The House Oversight Committee has launched an investigation into Donald Trump's alleged security breaches at his Mar-a-Lago estate in Florida.

After it was revealed that the President discussed North Korea's ballistic missile test over dinner with Japanese Prime Minister Shinzo Abe and other guests in what committee chairman Jason Chaffetz described as a "public space," the committee has asked the President's team to provide proof of his security protocols at his estate and how they were maintained.

In a letter to Chief of Staff Reince Priebus, the President was also asked to explain why he reviewed White House documents at the dinner table, whether these documents were classified and if

the other guests at the dinner had been vetted. "During this time, according to reports, the President made telephone calls to staff in Washington DC. These reports and social media accounts have suggested White House staff used their own cell phones to provide illumination for reviewing documents," the letter read. "Separately, one Mar-a-Lago guest posted to his Facebook page a photograph with a man described to be the holder of the "nuclear football". **SP**

Security lapse at JFK airport



A security lapse at New York's John F. Kennedy International Airport allowed 11 passengers to walk through a security checkpoint without being screened by TSA agents recently. But TSA officials say they are "confident" the unscreened individuals posed no threat.

According to media reports, 11 people walked through a TSA security line around 6 a.m. in JFK's Terminal 5 when TSA agents opened the screening lane without immediately assigning agents to man it. Of the 11 people who made it through, three triggered the metal detector - but no one was around to stop them. **SP**

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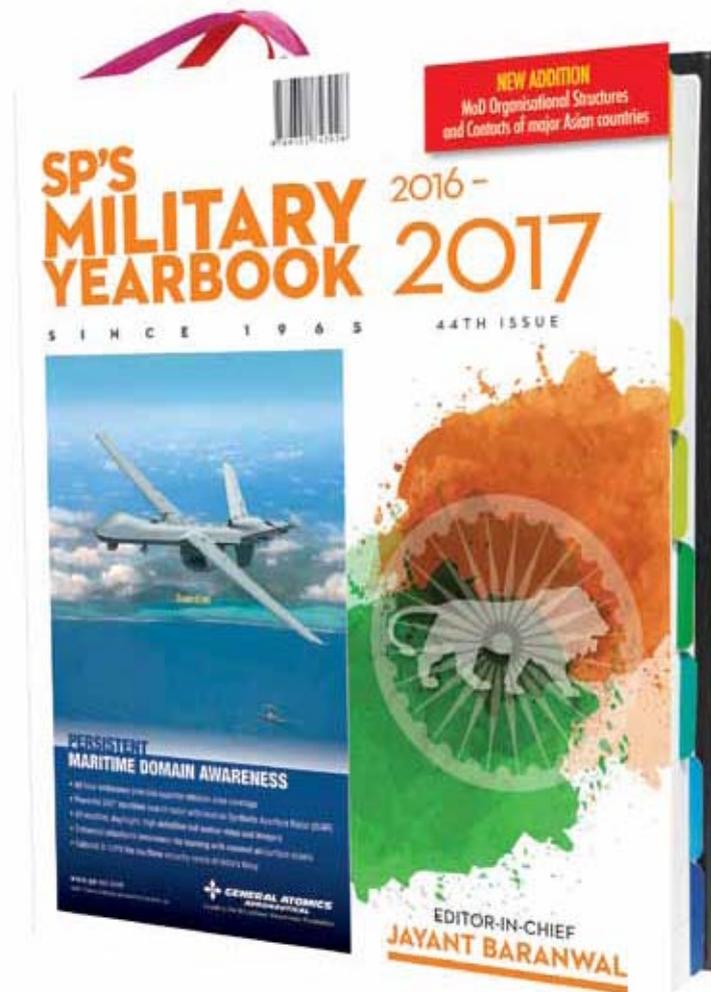


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