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राक्षस ANIRVEDA

PURSUING SELF RELIANCE IN DEFENCE



MODI 2.0

HEXAD EFFECT ON INDIA'S STRATEGIC AFFAIRS

Defence Procurement Needs a Makeover

New Procedures Established, but Govt Steps not Reassuring

US fear for S-400, nightmare for PAF?

By Building Analogues of S-400, India May Squeeze Pakistan

Four-Nation Quad: A Roller Coaster Ride

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-Editor

RESPONSE

'Raksha Anirveda' editorial team looks forward to receive comments and views from the readers on the content of the magazine.

Editorial

REVITALISING DEFENCE INDUSTRY: TRANSFORMATIONAL REFORMS TO BE THE KEY DRIVER



Since the massive mandate the BJP got for a second term, it has sought to build a new narrative for India's strategic and defence policy with renewed focus on neighbourhood,

Central Asia and issue based strategic alignment with global powers. This assumes significance in the prevailing new global order that's unpredictable and challenging with multiple centres of conflicts. It revolves around sovereign security, robust economic cooperation that's aligned to rising aspirations of India and its strategic independence.

New India Strong India has been the key strategy in the action packed three months with India seeking to position itself for a strategic role in the global order.

The recent initiatives taken by the Modi 2.0 indicates that the government is confident and focused to bring in the necessary reforms to resolve the problems that have been plaguing the defence preparedness and the defence industry. This gives rise to several questions: Why defence R&D has failed to deliver in totality? Why DPSU's haven't been able to evolve as OEMs even after seven decades? Why the MSMEs and SMEs in defence sector haven't been able to scale up? Why the much needed reforms in armed forces have been on the back burner?

Probably the mindset has resisted the wind of change for decades, trust deficit and the inherent inability to come out of the burdensome legacy issues.

India despite having the brightest minds and innovators hasn't been able to match the global developments in defence technologies, What an irony? Russia with a defence budget that's less than that of Indian defence budget is considered one of the best innovators in defence technologies and weapon platforms.

It's never too late for with sincere efforts, the defence capability and preparedness gap can be narrowed down. The real thrust should be self reliance in defence through indigenous equipment manufacturing, futuristic technology and innovation development and R&D in the shortest time frame. It can be achieved through competitive collaborations, partnership and multi-layered efforts.

Many from the govt and services believe that there would be no war and it will be only skirmishes - conventional and unconventional. In near future, the two and a half war fighting agenda will further evolve or widen its scope as space will witness race between nations to emerge as space power leader. So focus should be on integrated defence capability, avoidance of duplication of weapon systems and platforms and right mix of defence procurement. The budget 2019 provided the glimpse of government's clear intent to implement wide ranging transformational reforms (both structural and behavioural) with disruptive impact and make optimal use of available resources in order to revitalise the dormant defence industry and help realise its full potential. The national security and national prosperity are interrelated and now it's imperative that the govt plan its future budgetary plan oriented towards S.E.W.D. (Social, Economic, Welfare and Defence).

PM Modi's recent statement showcased government's optimism to make use of this opportune time, move ahead with the much needed *Amrit Manthan* to churn out innovative ideas and solutions. And through good governance that entails efficiency in implementation, accountability and performance linked incentives, the final outcome of result as perceived will be a reality, for sure.

Jai Hind!!.

Ajit Kumar Thakur
Editor & Business Director

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IN NEWS

RAYTHEON'S NEW DEEPSTRIKE MISSILE ROCKET MOTOR PASSES CRITICAL TEST

Rocket Center, W.Va. Raytheon Company completed a successful static test of the new DeepStrike® missile rocket motor, which moved the advanced, surface-to-surface weapon closer to its maiden flight test later this year. Raytheon's new DeepStrike® missile rocket motor passed a recent static test conducted at the Allegany Ballistics Laboratory in West Virginia, which moved the weapon a step closer to its first flight. The company is on a fast track to deliver an advanced, surface-to-surface missile that exceeds the US Army's requirements by doubling



the firepower while reducing the cost. The company is offering the DeepStrike missile for the US Army's Precision Strike Missile, or PrSM, programme to replace the aging Army Tactical Missile System that is approaching the end of its service life. Raytheon's new, long-range precision strike missile features an innovative, two-in-the-pod design and will fly farther, faster, and give the Army twice the firepower at half the cost per missile. It is also more maneuverable and has a modular, open architecture to simplify system upgrades. The DeepStrike missile will defeat fixed land targets 60-499 kilometers away, and get there faster than current systems.



RAYTHEON SUCCESSFULLY COMPLETES US ARMY'S LTAMDS SENSE-OFF

Tewksbury, Mass. Raytheon company completed technical testing during the US Army's Lower Tier Air and Missile Defense Sensor sense-off at White Sands Missile Range in New Mexico, a company press statement said on May 21. The two-week missile defense demonstration highlighted Raytheon's readiness to deliver mission-critical LTAMDS capability to the US Army. "Raytheon's clean-sheet approach and decades-long investments in gallium nitride technology allowed us to demonstrate and deliver a mature solution that will meet the Army's initial operational capability," said Tom Laliberty, vice president of integrated air and missile defense at Raytheon's Integrated Defense Systems business.

During the sense-off, Raytheon's LTAMDS solution:

- Demonstrated the key mission capabilities to service members;
- Validated the maturity of the LTAMDS design;
- Acquired and tracked a variety of threat-representative targets;
- Demonstrated advanced capabilities showcasing Raytheon's solution; and
- Showcased ease of maintenance and sustainment to the Soldiers.

SIKORSKY RECEIVES CONTRACT TO BUILD 12 CH-53K HEAVY LIFT HELICOPTERS

Stratford, Connecticut. Sikorsky, a Lockheed Martin company will build 12 production CH-53K King Stallion helicopters under a new \$1.13 billion contract from the US Navy. These advanced helicopters are part of the 200 program of record aircraft for the US Marine Corps. Under the terms of the contract, known as Low Rate Initial Production (LRIP) Lot 2 and 3, Sikorsky will begin deliveries of 12 CH-53K helicopters in 2022, and also provide spares and logistical support. Sikorsky remains committed



to continuing to reduce costs over the life of the program. Read the Navy's announcement. The CH-53K is the only sea-based, long range, heavy-lift helicopter in production and will immediately provide three times the lift capability of its predecessor. The CH-53K will conduct expeditionary heavy-lift transport of armored vehicles, equipment, and personnel to support distributed operations deep inland from a sea-based center of operations. The new CH-53K will have heavy-lift capabilities that exceed all other DoD rotary wing-platforms and it is the only heavy lifter that will remain in production through 2032 and beyond.

MARKET NEEDS ATTACK AND MULTI-PURPOSE HELICOPTERS: ROSOBORONEXPORT

Moscow. Rosoboronexport, a member of Rostec, is expecting the interest in Russia's military helicopters to spike in the wake of the International Helicopter Industry Exhibition HeliRussia 2019, which was held at Crocus Expo in Moscow from May 16-18.

"We are facing a growing demand for attack helicopters on a global scale. Rosoboronexport responded to this in a timely manner, figured out its major parameters and now offers to the customers the most advanced designs proven in combat, Ka-52 and Mi-28NE. Besides the dynamics is on the rise in the utility sector, where we have the



Ansat and Ka-226T to offer. For production of the latter we have set up a joint venture with India's HAL," noted Director General of Rosoboronexport Alexander Mikheev.

At the exhibition, Rosoboronexport offers its customers Russian helicopters suitable for any task regardless of weather conditions. The company's booth advertises helicopters of all classes, required in the world market, as well as UAV systems.

Apart from attack and utility helicopters, other types boasting high export potential include combat-transport, military transport and transport Mi-35P, Mi-35M, Mi-17V-5, Mi-171Sh, and Mi-26T2. They owe their popularity to the outstanding combat and operational performance, demonstrated in combat during anti-terrorist operations conducted by the Russian military.

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RUSSIAN DEPUTY PM'S VISIT TO INDIA PREPARES GROUND FOR MODI VISIT TO VLADIVOSTOK

New Delhi. Yury Trutnev, Deputy Prime Minister of the Russian Federation and Presidential Plenipotentiary Envoy to the Far Eastern Federal District visited India with a high-level delegation from June 15-19. The visit was undertaken to help both sides prepare ground for the visit of Prime Minister Narendra Modi to Vladivostok in early September to participate in the 5th edition of the Eastern Economic Forum (EEF) as the Chief Guest of the event. The visit also provided opportunity to explore bilateral cooperation in the sectors of Diamond-processing, Petroleum and Natural Gas, Coal and mining, Agro-processing and Tourism which have been identified as the priority areas for development in the Russian Far East. Both sides agreed to work together to promote their bilateral economic engagement in the Russian Far East.



INDIA SUCCESSFULLY CONDUCTS FLIGHT TEST OF ABHYAS

Chandipur, Odisha. India's Defence Research and Development Organisation (DRDO) conducted successful flight test of ABHYAS – a High-speed Expendable Aerial Target (HEAT) -- from Interim Test Range, Chandipur in Odisha on May 13. The flight test was tracked by various RADARS and Electro Optic Systems and proved its performance in fully autonomous way point navigation mode. The configuration of ABHYAS is designed on an in-line small gas turbine engine and uses indigenously developed MEMS based navigation system for its navigation and guidance. The performance of the system was as per simulations carried out and demonstrated the capability of ABHYAS to meet the mission requirement for a cost effective HEAT.

IAF'S AN-32 AIRCRAFT FORMALLY CERTIFIED TO OPERATE ON INDIGENOUS BIO-JET FUEL

New Delhi. Indian Air Force's formidable workhorse, the Russian made AN-32 aircraft, was formally fleet certified to fly on blended aviation fuel containing up to 10 per cent of indigenous bio-jet fuel on May 24. The approval certificate was received at the aero-engine test facilities at Chandigarh by Air Commodore Sanjiv Ghuratia VSM, Air Officer Commanding, 3 BRD, AF on behalf of the IAF from P Jayapal, Chief Executive CEMILAC. It may be noted here that the IAF has undertaken a series of evaluation tests and trials with this green aviation fuel for the last one year. The scope of these checks was in consonance with the international aviation standards. Today's approval is an acknowledgement of the meticulous testing using the indigenous bio-jet fuel by the IAF. The indigenous bio-jet fuel was first produced by the CSIR-IIP lab at Dehradun in 2013, but could not be tested or certified for commercial use on aircraft due to lack of test facilities in the civil aviation sector. On July 27, 2018, Chief of the Air Staff (CAS) Air Chief Marshal BS Dhanoa PVSM AVSM YSM VM ADC had formally announced IAF's intention to permit the use of all its resources for testing and certifying the indigenous fuel. Since then, IAF's flight test crew and engineers have been evaluating the performance of this fuel against international standards. This is a huge step in promoting the 'Make in India' mission as this bio-fuel would be produced from Tree Borne Oils (TBOs) sourced from tribal areas and farmers, augmenting their income substantially.



INDIA'S DRDO SUCCESSFULLY FLIGHT-TESTED GUIDED BOMB

New Delhi. India's Defence Research and Defence Organisation (DRDO) successfully flight tested a 500 kg class Inertial Guided Bomb from Su-30 MKI aircraft from the Pokhran test range in Rajasthan on May 24. The guided bomb achieved the desired range and hit the target with high precision. All the mission objectives have been met. With this achievement, it becomes evident that the weapon system is capable of carrying out different warheads.



INDIA TAKES PART IN MEETING OF COUNCIL OF FOREIGN MINISTERS OF SCO

Bishkek. For the second time in a row as full member, India along with other member nations took part in the meeting of Council of Foreign Ministers (CFM) of Shanghai Cooperation Organization (SCO) held in Kyrgyzstan capital of Bishkek on May 21-22. External Affairs Minister Sushma Swaraj attended the last CFM meeting in Beijing (China) on April 23-24, 2018. India actively took part in various SCO dialogue mechanisms under the Chairmanship of the Kyrgyz Republic over the past year. The CFM meeting has reviewed the preparations for the forthcoming SCO Summit and also exchanged views on topical issues of international and regional importance. External Affairs Minister's programme in Bishkek included the meeting of Council of SCO Foreign Ministers and a joint call of SCO Foreign Ministers on Kyrgyz President Mr Sooranbay Jeenbekov. The next SCO Summit will be held in Bishkek on June 13-14.



EASTERN ARMY COMMANDER VISITS MISA CAMP

New Delhi. Lieutenant General MM Naravane, Army Commander Eastern Command visited Misa Camp and was briefed in detail on the Op-preparedness of the formation.

During the visit, he interacted with the troops and appreciated officer of all ranks for their hard work and dedication and complimented them for a very well maintained military station.

The Army Commander felicitated the meritorious Officers, Junior Commissioned Officer and Other Ranks by awarding commendation cards and called for all ranks to keep up the good work.

The Army Commander was also had an interaction with GOC 4 Corps Lt Gen Manoj Pande at Tezpur wherein he was briefed on prevailing security situation and the operational preparedness of the Corps.

BOEING RECEIVES SECOND US NAVY CONTRACT FOR F/A-18 SERVICE LIFE MODIFICATION

ST LOUIS. Boeing has received a one-year contract, which also includes a one-year option for 2020, to continue modernising the US Navy's F/A-18 fleet under the Service Life Modification (SLM) programme, a company press statement said on May 17. The \$164 million contract for FY19 funds the standup of a second SLM line in San Antonio, Texas, complementary to the line established last year in St Louis.

"The Service Life Modification programme is making great strides as we've already inducted seven Super Hornets into the programme, and will deliver the first jet back to the Navy later this year," said Dave Sallenbach, Programme Director. "This programme is crucial in helping the Navy with its readiness challenges, and will continue to grow each year with the number of jets we induct."



INDIAN ARMY EASTERN COMMAND UNIT TEST- FIRES BRAHMOS MISSILE



Car Nicobar Islands. A BrahMos Supersonic Cruise Missile was successfully test-fired by a Unit of Eastern Command, Indian Army from Car Nicobar Islands on May 22 as part of joint training by Indian Army, Indian Navy and Indian Air Force. The Combat missile was test fired on a specially designed target chosen at a range of 270 Kms, thus validating deep penetration capability by the supersonic cruise missile and accurate engagement of targets in depth. The launch of the BrahMos missile involved coordination with large number of agencies for a successful and smooth conduct of firing. It was a cohesive effort of all three services demonstrating high standards of Inter-Service Synergy. Lt Gen MM Naravane, General Officer Commanding-in-Chief (GOC-in-C), Eastern Command witnessed the launch along with other officers and congratulated the Unit and all agencies involved in the process, resulting in the successful launch of the Combat missile. BrahMos missile has by now established itself as a major 'Force Multiplier' in modern day battlefield with impeccable multi role and multi platform launch capabilities furthering the confidence among Indian Armed Forces.

IN NEWS

LOCKHEED MARTIN RECEIVES \$362 MILLION CONTRACT FOR MULTIPLE LAUNCH ROCKET SYSTEM LAUNCHER (M270A2) RECAPITALIZATION



Dallas. The US Army awarded Lockheed Martin a \$362 million contract to recapitalize 50 of the US Army’s Multiple Launch Rocket System (MLRS) launchers. The US Army’s MLRS recapitalization effort will eventually upgrade its existing fleet of 225 MLRS M270A1 launchers, and 160 decommissioned M270A0’s slated for demilitarization, to M270A2s. In partnership with the Red River Army Depot, these launchers will be completely refurbished as “zero time” launchers with new engines, transmissions, Launcher-Loader Modules, Improved Armored Cabs and the new Common Fire Control System.

MLRS is a heavy tracked mobile launcher, transportable via C-17 and C-5 aircraft, that fires Guided MLRS rockets and Army Tactical Missile System (ATACMS) missiles. MLRS will also be able to fire the Precision Strike Missile (PrSM) and Extended-Range GMLRS rockets, both currently in development.

NAVAL GROUP TAKES PART AT UDT 2019

Stockholm. Naval Group participated at UDT 2019 in Stockholm, Sweden from May 13-15 to present its underwater systems.

During UDT 2019, Naval Group showcased many of its innovative underwater vessels and solutions, developed through its close relationship with the French Navy.

1. SMX® 31: “the electric”
2. D19 multi-mission torpedo drone
3. Smart energy: AIP revolution and a new generation of Lithium-ion batteries system for submarines.

Also during UDT 2019, Naval Group experts took part in a few conferences.



INDIAN NAVY ACHIEVES SIGNIFICANT MILESTONE; TEST FIRES MRSAM

New Delhi. The Indian Navy on May 17 achieved a significant milestone in enhancing its Anti Air Warfare Capability with the maiden cooperative engagement firing of the Medium Range Surface to Air Missile (MRSAM). The firing was undertaken on the Western Seaboard by Indian Naval Ships Kochi and Chennai wherein the missiles of both ships were controlled by one ship to intercept different aerial targets at extended ranges. The firing trial was carried out by the Indian Navy, DRDO and Israel Aerospace Industries (IAI). The successful conduct of the test has been the result of sustained efforts by all stakeholders over the years. DRDL Hyderabad, a DRDO Lab, has jointly developed this missile in collaboration with Israel Aerospace Industries. The MRSAM has been manufactured by Bharat Dynamics Limited, India. These Surface to Air Missiles are fitted onboard the Kolkata Class Destroyers and would also be fitted on all future major warships of the Indian Navy. With the successful proving of this cooperative mode of engagement, the Indian Navy has become a part of a select group of Navies that have this niche capability. The capability significantly enhances the combat effectiveness of the Indian Navy thereby providing an operational edge over potential adversaries.

HENSOLDT’S ‘KALAE TRON’ REVOLUTIONISES ELECTRONIC PROTECTION SYSTEMS

Stockholm / Munich. HENSOLDT, the leading independent sensor house, is introducing the new radar warning system ‘Kalaetron RWR’ (RWR = Radar Warning Receiver) onto the market, which revolutionises the protection of aircraft and helicopters from radar-guided weapons. This new product will be presented to the public for the first time at the Electronic Warfare Europe Conference in Stockholm. Due to its fully digital design, the new radar warner detects and identifies threats incredibly quickly and with a very low false alarm rate, over an extremely wide frequency range. The Kalaetron RWR uses artificial intelligence (AI) techniques to detect new threat patterns from a huge amount of collected raw data. This is especially important to identify the latest air defence radar systems that cover an extremely wide bandwidth or which hop between particular frequencies in fractions of a second. Kalaetron thus enables fighter or transport aircraft to be protected even against upcoming anti-aircraft weapons and integrated air defence systems, while also offering great potential for adaptability to cope with future threats.



DEFENCE MINISTER MEETS COAS, VCOAS AND ARMY COMMANDERS



New Delhi. Defence Minister Rajnath Singh met General Bipin Rawat, Chief of the Army Staff, Lieutenant General Devraj Anbu, Vice Chief of the Army Staff and all the GOC-in-Cs in New Delhi on June 14. The Defence Minister complimented Indian Army for ensuring the highest level of professionalism, the continuous readiness against external and internal challenges and their role in Nation building. During the meeting he said: "it is matter of great pride that Indian Army is ready for full spectrum of challenges and it will be ensured that their capabilities keep getting continuously enhanced. Jointmanship of the Indian Armed Forces will be a key area and due endeavours towards the same will be ensured. Ministry of Defence will remain fully committed to speedily enhance the capabilities of Indian Armed Forces. Ensuring high morale and motivation of all ranks will be priority."



EXTERNAL AFFAIRS MINISTER DR S JAISHANKAR VISITS TAJIKISTAN TO ATTEND 5TH CICA SUMMIT MEETING

New Delhi. External Affairs Minister Dr S Jaishankar visited Dushanbe, Tajikistan to attend 5th Conference on Interaction and Confidence Building Measures in Asia (CICA) Summit from June 14-15. CICA is a pan-Asia forum for enhancing cooperation and promoting peace, security and stability in Asia. India is a member of CICA since its inception and late Prime Minister Atal Bihari Vajpayee had participated in the first CICA Summit held in 2002 in Almaty. India has been actively participating in various activities conducted under the aegis of CICA. The theme of the 5th Summit is "Shared Vision for a Secure and More Prosperous CICA Region". The Summit adopts a Declaration covering issues of cooperation within CICA.

IAF CHIEF REVIEWS COMBINED GRADUATION PARADE AT AFA



Dundigal. Air Chief Marshal BS Dhanoa PVSM AVSM YSM VM ADC, Chairman Chiefs of Staff Committee and Chief of the Air Staff was the Reviewing Officer for the Combined Graduation Parade at the Air Force Academy, Dundigal on June 15. 152 cadets were awarded the President's Commission as they passed through the portals of the Academy parade ground. Chief of the Air Staff reviewed the parade and addressed the graduating course wherein he complimented the cadets on their exceptional drill standards and impeccable turn out.

DEFENCE MINISTER VISITS INS SHIVALIK, INS SINDHUKIRTI AT VISAKHAPATNAM



Visakhapatnam. Defence Minister Rajnath Singh visited indigenously conceived design and constructed frontline stealth frigate INS Shivalik and Indian Naval Submarine Sindhukirti on his maiden visit to Eastern Naval Command, Visakhapatnam on June 30. On his visit, he was briefed on the operational readiness of the Command and other aspects of maritime and

coastal security on the Eastern Seaboard. During the guided tour of the ship and submarine, the Defence Minister interacted with the crew members. Addressing the naval personnel and Defence Civilians, Rajnath Singh lauded the patriotic fervour of every sailor serving in the Indian Navy in maintaining constant vigil against maritime threat and safeguarding our Nation's maritime interests.



HENSOLDT's PrecISR: A SENSOR OF CHOICE FOR SURVEILLANCE



HENSOLDT, the leading independent sensor house, has developed and launched innovative airborne multi-mission surveillance radar which provides armed forces and border protection authorities with unprecedented situational awareness and extremely short reaction time. The software-defined radar named PrecISR translates latest achievements in active array antennas (AESA) and digital receiver technology into a scalable high-performance sensor which can be installed aboard helicopters, UAVs and fixed-wing mission aircraft. Its superior precision and target



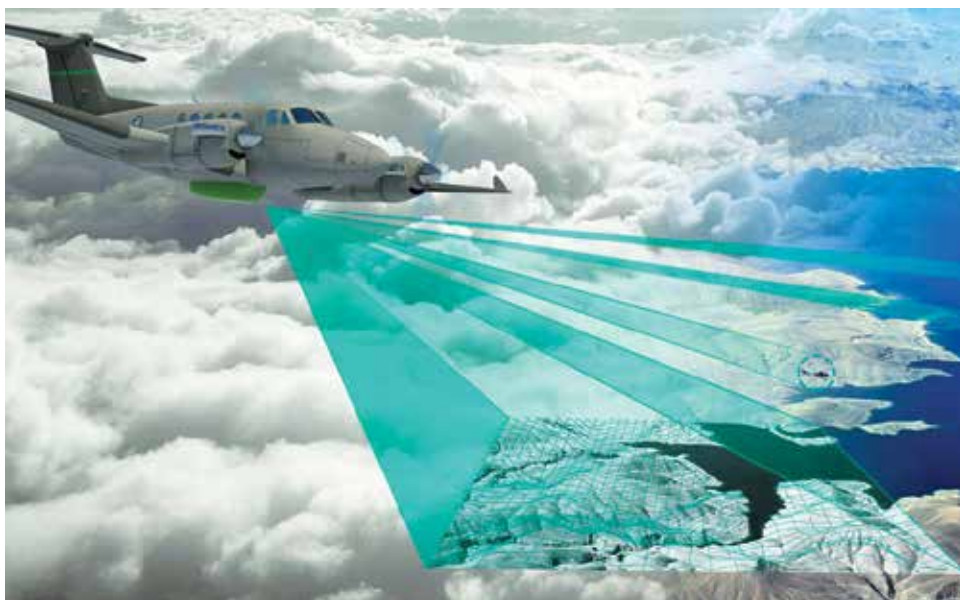
CARSTEN MAIER

accuracy make it the sensor of choice for surveillance of



SHADMAN ANDLEEB

large sea and coastal areas against piracy, trafficking or illicit intrusion.



Can you share with me more about the origin of PrecISR? How did this come about?

CARSTEN: PrecISR™ is the product name for the HENSOLDT ISR Airborne Radar family. The history and experience of HENSOLDT's ISR radars traces back for more than 30 years. The first SAR radars (DO-SAR, ERS-1, X-SAR) were developed and tested in the mid-1980s. These products were developed for the German Federal Ministry of Defence.

In 2006, Hensoldt started producing platform independent ISR radar called SMART Radar.



IN 2006, HENSOLDT STARTED PRODUCING PLATFORM INDEPENDENT ISR RADAR CALLED SMART RADAR. WITH PRODUCT ENHANCEMENTS AND INSERTION OF NEW TECHNOLOGY LIKE GAN MODULES, TRENDSETTING DIGITAL RECEIVER TECHNOLOGY AND COMPACT HARDWARE PACKAGING, A NEW, LIGHT WEIGHT AND COMPETITIVE RADAR DESIGN WAS ACHIEVED IN 2017. THIS WAS THE BIRTH OF THE PRECISR™1000



steering, PrecISR™ can fulfill different tasks virtually at the same time. It is able to detect, track and classify thousands of objects and thus literally find the 'needle in a haystack'.

What are some of the feedback from the Customers?

SHADMAN: Customer feedback on the design and performance has been very good. They appreciate the technology behind the radar as well as its sleek and power-optimized design.

Software defined modes and ease of integration are also another plus point. They need only eight screws and two connectors. That's it!

Due to the fact that many contracts and frame contracts are expected, HENSOLDT ALREADY started the series production of PrecISR™1000 to satisfy customer demands in short time. To further instil confidence in the market, we are willing to demonstrate the radar or share trial reports with potential customers.

With product enhancements and insertion of new technology like GaN modules, trendsetting digital receiver technology and compact Hardware packaging, a new, light weight and competitive radar design was achieved in 2017. This was the birth of the PrecISR™1000.

What are some of the key challenges that users face? How does PrecISR address these key challenges?

SHADMAN: From an operational point of view, customers require high performance in terms of range and detection capabilities fitting into their main mission envelope. Users also attach value to efficient maintainability and high MBTF figures. These concerns of efficiency are optimally addressed by our

PrecISR: First, our product translates tremendous progress regarding reduction of size, weight, space, power consumption and cooling into direct benefits for the customer. Second, the modular approach of our family concept allows for the selection of a target-oriented tailored solution optimized to the platform, mission scenarios and budget.

How would you summarize PrecISR's performance compared to other radars?

CARSTEN: PrecISR™ compact design and the fact that all radar parts are located outside of the airframe, simplifies its airborne platform integration significantly compared to other radars. Due to its software-defined radar modes and electronic beam

SHADMAN ANDLEEB

Managing Director, HENSOLDT India

CARSTEN MAIER

Product Manager Airborne ISR Radars

MODI 2.0: HEXAD EFFECT ON INDIA'S STRATEGIC AFFAIRS

In view of prevailing geopolitical condition, Modi-led BJP having got a clear majority on its own has formed a strong cabinet with the Hexad comprising the Prime Minister along with Defence Minister Rajnath Singh, Home Minister Amit Shah, Finance Minister Nirmala Sitharaman, National Security Adviser (NSA) Ajit Doval with cabinet rank and External Affairs Minister S Jaishankar, who are capable of taking tough decisions on sensitive issues ranging from national security to diplomacy and strategic partnerships

By **SRI KRISHNA**



Keeping in mind the national security landscape which is stressed and susceptible to conflict with its neighbours, there is an imperative need to boost the capabilities of the defence forces and the BJP-led NDA of Prime Minister Narendra Modi is focused on this since assuming office with emphasis on strengthening ties with neighbouring nations. But, what is indeed surprising is that the outlay for Defence in the Budget 2019-20 presented on July 5 by Union Finance Minister Nirmala Sitharaman has kept it constant as in the Interim Budget presented on February 1 this year when she was Defence Minister.

With the government focusing so much on national security which had virtually occupied centre stage during Modi's election campaign, it is hoped that allocation for defence would be made on need basis.

The Interim Union Budget 2019-20, presented before the Lok Sabha elections, allocated Rs 4.31 lakh crore (\$60.9 billion) to the Ministry of Defence (MoD). Of this total allocation, Rs 3.01 lakh

crore (\$42.7 billion) had been earmarked for the defence budget.

"Defence has an immediate requirement of modernisation and upgradation. This is a national priority. For this purpose, import of defence equipment that are not being manufactured in India are being exempted from the basic customs duty," Sitharaman said.

Describing this as a "significant development," the Defence Ministry said that



"this will have an impact of augmenting the Defence Budget by approximately Rs 25,000 crore on account of savings in expenditure on customs duty over the next five years."

Considering the prevailing scenario, Modi-led BJP having got a clear majority on its own has formed a strong cabinet with the Hexad comprising the Prime Minister along with Defence Minister Rajnath Singh, Home Minister Amit Shah, Finance Minister Nirmala Sitharaman, National Security Adviser (NSA) Ajit Doval with cabinet rank and External Affairs Minister S Jaishankar, who are capable of taking tough decisions on sensitive issues



ranging from national security to diplomacy and strategic partnerships.

The six have a unique understanding between them to do the job in consensual and collaborative manner and there are expectations of deeper and far-reaching reforms.

Modi, Shah, Rajnath Singh have immense experience in administrative as well as organisational matters and Sitharaman and Jaishankar bring to the table their grounding in academics having been products of Jawaharlal Nehru University (JNU) while Doval brings his immense experience in the field of intelligence having a police background.

Diplomat turned politician Jaishankar has served as India's Ambassador to China and US, which are key to the present government's foreign policy. He had also been foreign secretary and was a member of the triumvirate comprising of Modi and Doval.

With Modi 2.0 focussing on security related matters while also pushing ahead with diplomatic initiatives, what American journalist Bill O' Reilly said becomes very relevant in contemporary scenario "gross negligence in handling national security is a felony," and the current government has been paying immense attention to ensuring that internal and

external security are properly taken care of.

With the two Ministers in the current government – Amit Shah in Home and Rajnath Singh in Defence -- a tough stance can be expected on both fronts strongly supported by Modi.

The Ministry of Defence (MoD), having already undertaken a plethora of reforms during the last five years, is expected to walk along the reform path and build on previous initiatives to further strengthen defence preparedness and build a credible defence industrial base.

This mandate gives Modi Government 2.0 a virtual free hand to pursue certain policies concerning national security



“Defence has an immediate requirement of modernisation and upgradation. This is a national priority. For this purpose, import of defence equipment that are not being manufactured in India are being exempted from the basic customs duty”

*Nirmala Sitharaman,
Union Minister
of Finance and
Corporate Affairs*

such as “zero tolerance” on terrorism, deepening of reforms in defence echelons as well as fine-tuning of policies towards US, China and Pakistan.

All these would form the cornerstone of his avowed aim of making India a “leading” power and launch big-ticket economic reforms that will give a major push to the economy and in turn result in greater resources for the defence budget aiding modernisation.

TOUGH STANCE ON TACKLING TERRORISM

On the continuity front, one of the key policies which is expected to

sustain is the government’s tough stance on terrorism. His first term was marked by the “surgical strikes” against terrorist launch pads across the Line of Control in Kashmir in September 2016 and the air strike on a terrorist training camp in Balakot, in Pakistan’s Khyber Pakhtunkhwa province on February 26, 2019.

“The strike on Balakot will compel future governments to go beyond PoK (Pakistan occupied Kashmir) in response to any future strike. Anything less will reduce the strategic space we have opened up now and will be rejected by public opinion,” said former Foreign Secretary Kanwal Sibal who is of the view that the strikes against Pakistan

have meant rewriting the rules of engagement with Pakistan and dealing with terrorism.

On the diplomatic front, the Modi government was successful in rallying countries in its support to ensure that Pakistan-based Jaish-e-Mohammed (JeM) terrorist group chief Maulana Masood Azhar was declared a terrorist by the United Nations.

DEFENCE INDUSTRY

Besides the possibility of a two-front military threat posed by Beijing and Islamabad, New Delhi faces trade-offs between importing weaponry and developing domestic capacity for an indigenous defence industry.



Given its heavy dependence on military imports, India sought to diversify risk by forging partnerships with multiple external partners.

It has significantly upgraded military ties with and defence purchases from the United States in particular, and also has crucial strategic ties with France and Israel. However, Russia remains the single largest defence supplier in aggregate terms, despite having been displaced by the United States in some key acquisitions India has made in the past decade. While purchasing weapons from numerous sources has created more options for India, it also generates challenges, in that New Delhi needs to keep many players

satisfied as they compete for shares in the Indian defence market. This requires New Delhi to respond to pressures and incentives from the leading weapons supplier states.

The military procurement models New Delhi has pursued are less than optimal, reflecting the difficulties faced by the Indian state in indigenising capabilities, building core capacities within the defence bureaucracy, and exploring integrative solutions to deal with the challenges facing higher defence management. In the absence of a productive defence-industrial base, New Delhi will have no choice but to forge strategic partnerships, in order to redress the gap in its conventional capabilities vis-à-vis its immediate adversaries.

BOLDEST DEFENCE REFORM

In one of the boldest defence reforms, Modi Government in first term had set up in April 2018 the Defence Planning Committee (DPC) under the chairmanship of the National Security Advisor (NSA). The NSA also replaced the Cabinet Secretary as the chairman of the Strategic Policy Group (SPG), one of the three-tier structures of the Prime Minister-led National Security Council (NSC). With the DPC Chairman getting Cabinet status, the purpose of the powerful DPC is to facilitate comprehensive and integrated defence planning, which has been a grey area in the Defence Ministry's planning mechanism since it was put in place in the aftermath of the Sino-Indian 1962 war.

With the mandate, inter alia, to articulate a national security strategy, develop a holistic defence plan, keeping in view the critical requirements of the armed forces as well as resource constraints, and prepare a comprehensive Research and Development and

manufacturing plan, the DPC's role assumes critical importance in bridging the historical shortcomings.

DEFENCE PLANNING COMMITTEE (DPC)

The DPC in the coming days should come out with a National Security Strategy spelling out the key security challenges and objectives.

There is need for a realistic 15-year Long-Term Integrated Perspective Plan (LTIPP) and five-year Services Capital Acquisition Plan (SCAP), taking into account both inter- and intra-service priorities, to focus on the capability development of the armed forces and meet the requirements of the modern warfare in its various forms.

It is also imperative to chalk out a roadmap for defence R&D and manufacturing to support Make in India and achieve self-reliance in defence procurement.

While there is a need to increase defence spending for modernisation of the armed forces, it is also important to generate resources by using existing defence assets and streamlining defence expenses.

With the Defence Ministry being the largest landholder in the government, having about 1.73 million acres with large areas being either unused or under-used, there is need to take steps to generate income from them.

With much of this being prime land, there is need for judicious commercial exploitation, while keeping security concerns so as to generate resources that could be channeled for modernisation.

Meanwhile, for optimal use of resources, the Defence Ministry has started implementing some of the recommendations of the Committee of Experts (CoE)

MODI, SHAH, RAJNATH SINGH HAVE IMMENSE EXPERIENCE IN ADMINISTRATIVE AS WELL AS ORGANISATIONAL MATTERS AND SITHARAMAN AND JAISHANKAR BRING TO THE TABLE THEIR GROUNDING IN ACADEMICS HAVING BEEN PRODUCTS OF JAWAHARLAL NEHRU UNIVERSITY (JNU) WHILE DOVAL BRINGS HIS IMMENSE EXPERIENCE IN THE FIELD OF INTELLIGENCE HAVING A POLICE BACKGROUND



BESIDES THE POSSIBILITY OF A TWO-FRONT MILITARY THREAT POSED BY BEIJING AND ISLAMABAD, NEW DELHI FACES TRADE-OFFS BETWEEN IMPORTING WEAPONRY AND DEVELOPING DOMESTIC CAPACITY FOR AN INDIGENOUS DEFENCE INDUSTRY. GIVEN ITS HEAVY DEPENDENCE ON MILITARY IMPORTS, INDIA SOUGHT TO DIVERSIFY RISK BY FORGING PARTNERSHIPS WITH MULTIPLE EXTERNAL PARTNERS

which was chaired by Lt Gen DB Shekatkar (Retd) with the mandate of suggesting measures to “enhance combat capability and rebalance defence expenditure”.

DEFENCE ACQUISITION

Even though the acquisition procedure has over the years been streamlined since the creation of the Defence Procurement Procedure (DPP) in 2001, there is a need to revamp the organisational structure for this has come in the way of efficiency and efficacy of procurement.

The government auditor, Comptroller and Auditor General (CAG) of India, in a performance audit report of 2019 dealing with 11 capital acquisition projects of the Indian Air Force (IAF) unambiguously pointed out that the existing organisation has “resulted in diffused accountability” as it involves numerous agencies that are accountable to different

administrative heads.

Elaborating upon this complex chain of agencies involved, the CAG noted that, on an average a high value procurement proposal has to pass through 80 members across eight different committees before being sent to the Cabinet Committee on Security (CCS). Such a cumbersome committee system with multiple decision points is a perfect recipe for inefficiency and delays.

As part of streamlining the acquisition procedure, a suggestion made is the setting up of a separate, integrated Department of Defence Acquisition (DDA) by centralising all acquisition related functions and headed by a dedicated Secretary level official to provide the required authority and importance to the organisation.

MAKE IN INDIA

The government has taken numerous steps under the

Make in India initiative to promote indigenous defence manufacturing.

The Defence Ministry announced an ambitious defence production policy that aims at arms production and export turnover of Rs 1,70,000 crore and Rs 35,000 crore, respectively, by 2025. It launched two defence industrial corridors in Uttar Pradesh and Tamil Nadu with an initial investment of over Rs 6,800 crore, identified a number of items in which local suppliers would enjoy purchase preference and announced a number of initiatives to support start-ups and innovation. These initiatives have begun to show results as can be seen in the continuous increase in defence production, which reached nearly Rs 64,500 crore in 2017-18 including about Rs 6,000 crore worth of production by the private sector. ■

– The author is a senior journalist and media consultant.



Self-Reliance in Strategic Electronics

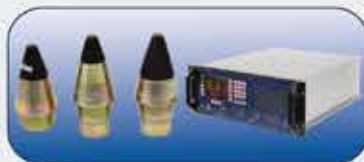
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AMIT COWSHISH

DEFENCE PROCUREMENT NEEDS A MAKEOVER

Several steps have been taken since 2001-02 when, on the recommendations of a group of ministers, new procurement structures and procedures were established, but their efficacy continues to be anything but reassuring

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ith an average expenditure of over USD 10 billion for the past several years on capital acquisitions for the armed forces, a large proportion of which is sourced from abroad, it is intriguing that the Ministry of Defence (MoD) has not been able to fix the problems that bedevil the procurement process. This is not for want of trying, though.

Several steps have been taken since 2001-02 when, on the recommendations of a group of ministers, new procurement structures and procedures were established, but their efficacy continues to be anything but reassuring. Chronic delays are endemic, and imports continue to be the predominant source of the military hardware. In a broad sense, three factors account for this state of affairs.

UNREALISTIC ACQUISITION PLANS

What India buys, or aspires to buy, is supposed to flow from the annual acquisition plans which, in turn, are based on the long- and medium-term plans. Arguably, these plans are not

realistic as the system of defence planning itself is riddled with several drawbacks, starting with the absence of an overarching National Security Strategy (NSS) which many consider to be sine qua non for efficient planning.

Recent reports suggest that the draft NSS is ready and the three service chiefs have even agreed in writing to creation of a Permanent Chief of the Chiefs of Staff Committee (PC-CoSC), who, among other things, is expected to make defence planning more efficient. It may not be that simple though, especially in the absence of an overarching and composite planning organisation and other measures that need to be taken to improve defence planning.

The government had set up a Defence Planning Committee last year to facilitate comprehensive planning but considering its composition and other factors it can only serve the limited purpose of evolving a framework for planning. It cannot be a substitute for an internal Defence Planning Board, recommended

by the Defence Expenditure Review Committee in 2008, for overseeing formulation, review and execution of composite defence plans.

A permanent high-level planning organisation is also essential for making broad-based defence plans, encompassing every organisation under the ministry's administrative control, and not just the three services. A plan which is made

without concurrent and continuous consultation with, and excludes, the Coast Guard (CG), Border Roads Organisation (BRO), ordnance factory Board (OFB), Defence Research and Development Organisation (DRDO), and even the Defence Public Sector Undertakings (DPSUs), cannot be called an overarching defence plan. But that is precisely the case as of now.

A true defence plan should cater for the requirement of organisations like the CG and BRO which supplement and complement the hardcore military capabilities and must envision the role to be played by the OFB, DRDO

A PERMANENT HIGH-LEVEL PLANNING ORGANISATION IS ALSO ESSENTIAL FOR MAKING BROAD-BASED DEFENCE PLANS, ENCOMPASSING EVERY ORGANISATION UNDER THE MINISTRY'S ADMINISTRATIVE CONTROL, AND NOT JUST THE THREE SERVICES

and DPSUs, or even the private sector in India, in meeting the military's requirement of new equipment, ammunition and maintenance of the in-service hardware, especially through indigenous efforts.

It is no secret that the plans are made in isolation by the individuals services and then put together by the Integrated Defence Staff (IDS). Consequently, the Services Capital Acquisition Plan (SCAP) which stems from the long- and short-term defence plans lacks jointness. No wonder then that each service pursues its own acquisition plan rather than being a part of the MoD-driven concerted effort to acquire military capabilities required by the armed forces as a composite fighting force.

Lastly, and arguably most importantly, implementability of any plan is heavily dependent on its being financially realistic, something that the defence plans generally are not. According to the media reports, in July 2017, the forces sought Rs 27 lakh crore over the next five years for various defence projects. This would have required the defence budget to be increased by about 100 per cent every year for the next five years.

It is surprising that someone should have thought it possible to secure such a hike in the defence outlay, in addition to the funds required for other organisations, such as the DRDO, CG and BRO, and for meeting the steeply rising obligation to pay pensions. As a first step towards any makeover, the Defence Plans, which include the capital acquisition plans, will have to be financially realistic.



DISJOINTED ACQUISITION ORGANISATION

A Capital Acquisition Wing (CAW) was created in MoD's Department of Defence (DoD) in 2001, but it is not responsible for the acquisition process in its entirety. Besides the DoD, DRDO, Department of Defence Production (DDP) and the Finance Division of the MoD, the individual Service Headquarters (SHQs) and the Headquarters IDS also play a role in the process.

The process of in-principle approval of an acquisition proposal – or, Acceptance of Necessity (AoN) – itself involves four committees, two of which [Services Capital Acquisition Plan Categorisation Committee (SCAPCC) and Services Capital Acquisition Plan Categorisation Higher Committee (SCAPCHC)] are embedded in HQ IDS while the other two [Defence Procurement Board (DPB) and Defence Acquisition Council (DAC)] are embedded in the MoD.

Acquisition proposals

up to Rs 300 crore each are dealt with under the powers delegated to the Vice Chiefs (Deputy Chief in the case of the Air Force), Chief of the Integrated Defence Staff to the Chairman, Chiefs of Staff Committee (CISC), and the Director General Coast Guard, after the AoN for such cases is accorded by the SCAPCHC.

Irrespective of whether the acquisition proposal is to be processed by the MoD or under the delegated powers, it has to pass through as many as nine stages before the contract is awarded. Such a fragmented and disjointed organisational structure is repugnant to single-point accountability as the responsibility keeps shifting from the SHQs (including HQ IDS) to the MoD and back throughout this acquisition cycle.

A committee, set up by the MoD in 2016, had recommended setting up of a bespoke acquisition organisation, at an arm's length from the MoD but answerable at the apex level to the DAC, to deal with every aspect of acquisition. The proposed organisation was to take over the process once the operational requirements were identified by the armed forces and

ACCORDING TO THE MEDIA REPORTS, IN JULY 2017, THE FORCES SOUGHT RS 27 LAKH CRORE OVER THE NEXT FIVE YEARS FOR VARIOUS DEFENCE PROJECTS. THIS WOULD HAVE REQUIRED THE DEFENCE BUDGET TO BE INCREASED BY ABOUT 100 PER CENT EVERY YEAR FOR THE NEXT FIVE YEARS

GUEST COLUMN

take it forward till the delivery of the desired capability.

The proposed organisation was also to be responsible for coordinating research and development, reaching out to the private sector, channelizing the defence offsets, maintenance and life-cycle support, related revenue procurements, and indeed all other functions incidental to equipping the armed forces with the requisite capabilities.

The then Defence Secretary, G Mohan Kumar, revealed in a recent article in the Economic Times (21 June 2019) that the report was hurriedly rejected mainly on the irrational plea that it necessitated creation of new posts.

Creation of such an organisation is an absolute must. If there is one thing to be learnt from the experience of other countries, it is that reforms have to be spearheaded by the top leadership; bottoms-up approach does not work well in such matters.

PROCEDURAL FRAMEWORK

The first time a detailed procurement procedure was promulgated by the MoD was in 2002 by way of the Defence

Procurement Procedure (DPP). The DPP of 2002 has been revised seven times since then to factor in the feedback from the stakeholders, remove the difficulties faced by them, and improve the system. Along the way, many new features were added, offsets and strategic partnership models being prime examples.

The current 2016 version of the DPP was based on the recommendations of a committee set up by the MoD to interact with all stakeholders and suggest measures required to align the procedure with the Make in India policy of the government. While years of painstaking changes made in the DPP, especially the last round of changes, should have made the procedure efficient and outcome-oriented, it continues to be seen widely as time-consuming and complex.

Probably the time has come to stop making incremental changes in the DPP and to replace it with a new set of instructions, focussed exclusively on the procedure. Presently, both the policy and the

ACQUISITION PROPOSALS UP TO RS 300 CRORE EACH ARE DEALT WITH UNDER THE POWERS DELEGATED TO THE VICE CHIEFS, CHIEF OF THE INTEGRATED DEFENCE STAFF TO THE COSC, AND THE DIRECTOR GENERAL COAST GUARD, AFTER THE AON FOR SUCH CASES IS ACCORDED BY THE SCAPCHC

procedure are mixed up in the DPP with the result that any procedural deviation is seen as a deviation from policy. While deviation from policy is a serious issue, the flexibility to make procedural deviations to suit the acquisition programme-specific requirements, is the key to expediting the procurement process.

It is equally important to pay attention to details and textual clarity. The vendors can live with the rigours of the policy but procedural ambiguities are difficult to deal with. There are several gaps in the DPP, and some provisions thereof lend themselves to varying interpretations.

For example, one of the existing provisions says that where a vendor who chooses to discharge the offset obligation by way of transfer of equipment to the Indian Offset Partner will be required to buyback a minimum of 40 percent of the eligible product and/or service (by value) within the permissible period for discharge of offset obligations. Which is fine, except that the text does not make it clear what is the extent of offset credit the vendor will get if he complies with the stipulated buyback requirement.

Lastly, the best of systems and procedures can be brought to a naught by tardy decision-making. This has been the bane of the capital acquisition regime all along. The ministry will have to look inward and do all that it requires to improve its track record on decision-making to make the makeover work. This is where the leadership would count. ■

- The author is Ex-Financial Advisor (Acquisition), Ministry of Defence



MARGINAL INCREASE IN BUDGET 2019-20 FOR DEFENCE

Defence allocation in proportion to the GDP has been more or less constant through the years hovering in the range of 1.5-1.6 per cent of the GDP except for figures of 1.48 per cent and 1.46 % in 2018-19(RE) and 2015-16 respectively



New Delhi. With the focus almost throughout the recent elections having been on national security and Balakot, the allocation for defence by the Finance Minister Nirmala Sitharaman in her debut budget has been a marginal increase of 0.01 per cent over the interim budget in February though she had held the Defence portfolio in the earlier Modi government.

Defence has been allocated Rs 4,31,011 crore and of this Rs 3,05,296 crore have been earmarked for Defence Expenditure (the actual defence budget), while the rest is civil expenditure which includes pensions and miscellaneous expenses.

However, it is an increase of 8.2 per cent over the Revised Estimates (RE) and 9.3 per cent over the Budget Estimates (BE) of the union budget 2018-19,

respectively. The defence budget had crossed the rupees three lakh crore mark in the interim budget for the first time.

There had been expectation that Sitharaman, being a former defence minister, would hike the budget allocation for defence.

Considering the prevailing security scenario along the borders with Pakistan and China, there is an imperative need for strengthening the

three wings of the armed forces.

The Indian Air Force desperately needs hundreds of combat planes and helicopters to replace its Soviet-era aircraft while the Navy has long planned for a dozen submarines to counter the expanding presence of the Chinese navy in the Indian Ocean.

The Army, a large part of which is deployed on the border with Pakistan, has been seeking everything from assault rifles to surveillance drones and body armour.

But tight government finances have further delayed a long-planned military modernisation programme.

Surprisingly, defence and national security found little mention in the two-hour long budget speech of the Finance Minister in Parliament though she announced that the government has decided to do away with basic customs duty on imports of defence equipment.

“Defence has an immediate requirement of modernisation and upgradation. This is a national priority. For this purpose, import of defence equipment that are not being manufactured in India are being exempted from the basic customs duty,” she said. The defence allocation is 10.95 per cent of the total Union Budget of Rs 27.86 lakh crore, which is again a minor increase of 11 basis points from what had been allocated in the interim budget. The overall share of the defence budget in the total union budget has been continuously falling over the years.

Meanwhile, defence allocation in proportion to the Gross Domestic Product (GDP) has been more or less constant through the years hovering in the range of 1.5-1.6 per cent of the GDP except for figures of 1.48 per cent and 1.46 per cent in 2018-19(RE) and 2015-16 respectively.

But, India’s defence budget of US\$ 44.6 billion is over six times more than the defence budget of Pakistan (US\$ 7.27 billion) presented in June this year. However, it is miniscule in comparison to the defence budget of China (US\$ 177.6 billion) and the United States of America (US\$ 716 billion). ■

IF AMERICA FEARS THE S-400, WILL IT BE A NIGHTMARE FOR THE PAF?

India must build its own analogues of the S-400 and apply the squeeze on Pakistan. Being a much smaller country, its economy will simply collapse because of diversion of funds into buying weapons. The S-400 could be the 'Brahmashastra' that destroys India's most bothersome enemy

By **RAKESH KRISHNAN**



The United States has stopped delivery of parts and manuals of the F-35 stealth fighter to Turkey in retaliation for Ankara's decision to move ahead with the purchase of the deadly Russian S-400 surface-to-air missile system. Halting the deliveries of parts and manuals needed to prepare for the aircraft's planned delivery this summer is the first step toward ending the actual aircraft sale.

Turkey has tried to assure the Americans that no secrets would be compromised by using the F-35 in the vicinity of the S-400. But the US and

other NATO (North Atlantic Treaty Organisation) allies have repeatedly complained about the purchase, saying it would represent a threat to the F-35.

NATO worries about how much, for how long, and how close the F-35 would operate near the S-400s. The missile defence system's powerful counter-stealth radars could track the secret stealth fighter on a regular basis, giving the Russians valuable information on countering the F-35 in actual combat. In the words of NATO Allied Air Commander General Tod Wolters, "Anything that a



Russian S-400 air defence system all set to arrive in India in 2020

the Russians would have the ability to sweep the skies and scoop up data on how effective the S-400 really is against the F-35. As Katie Wheelbarger, Acting Assistant Secretary of Defence for International Security Affairs, said: "The S-400 is a computer. The F-35 is a computer. You don't hook your computer to your adversary's computer and that's basically what we would be doing."

IMPLIED THREAT TO PAKISTAN

If the United States, with all its high-tech wizardry, is paranoid about the safety of its air force, one can only imagine what would be the state of the Pakistan Air Force (PAF) when the S-400 system arrives in India in the early 2020s.

Widely acknowledged as the world's most powerful anti-aircraft and anti-missile system, the S-400 is a development of the S-75 missile that famously shot down the American U-2 spy plane over Russia in 1960.

Its potency is the reason why countries like China, India, Turkey and Saudi Arabia are lining up to buy the missile

defence system. With a tracking range of 600 km; the ability to destroy hostile aerial targets at a range of up to 400 km and altitude of 30 km at a blistering speed of 17,000 km an hour, the S-400 is a truly lethal air defence weapon. First deployed by Russia in 2010, each S-400 regiment has eight launchers, a control centre, radar and 16 missiles available as reloads.

The system is able to detect, track and destroy strategic bombers, stealth fighters, spy planes, missiles and drones. Plus, it can also destroy aircraft or cruise missiles flying five metres above ground level by targeting them from above. While the system is often labelled Russia's Patriot, in many key aspects it is more capable than the US Patriot series, and in later variants offers mobility performance and thus survivability much better than that of the Patriot.

Unlike the overhyped US Patriot missile, the S-400 was designed to create the daddy of Iron Domes. "Given its extremely long range and effective electronic warfare capabilities, the S-400 is a

IF THE UNITED STATES, WITH ALL ITS HIGH-TECH WIZARDRY, IS PARANOID ABOUT THE SAFETY OF ITS AIR FORCE, ONE CAN ONLY IMAGINE WHAT WOULD BE THE STATE OF THE PAKISTAN AIR FORCE (PAF) WHEN THE S-400 SYSTEM ARRIVES IN INDIA IN THE EARLY 2020S



Lockheed Martin's F-35

S-400 can do that affords it the ability to better understand a capability like the F-35 is certainly not to the advantage of the coalition."

The Americans have a point. The fact is the S-400 systems will come with a complement of Russian military advisors who would remain in Turkey for years as part of training and ongoing maintenance, repairs and upgrades. As trainers,

AIR DEFENCE SYSTEM

WIDELY ACKNOWLEDGED AS THE WORLD'S MOST POWERFUL ANTI-AIRCRAFT AND ANTI-MISSILE SYSTEM, THE S-400 IS A DEVELOPMENT OF THE S-75 MISSILE THAT FAMOUSLY SHOT DOWN THE AMERICAN U-2 SPY PLANE OVER RUSSIA IN 1960

game-changing system that challenges current military capabilities at the operational level of war,” says Paul Giarra, president, Global Strategies and Transformation.

To illustrate how effective this class of the missiles are, on April 14 Syria intercepted 71 out of 103 cruise missiles fired by the US and its allies. The missile strikes were repelled by Syrian air defence using Soviet-era weapons systems such as S-125, S-200, Buk, Kvadrat and Osa. These missiles are two generations older than the S-400 that the Russians have moved into Syria.

The Triumph is the reason why Turkey and the western air forces don't venture into Syrian airspace anymore. After the downing of a Russian ground attack jet by Turkey near the Syria-Turkey border in 2017, a single S-400 system deployment at Khmeimim Air Base has effectively turned

Syria into a no-fly zone for the Turkish Air Force.

NEUTRALISING PAKISTAN

The most devastating impact of India acquiring the S-400 Triumph will be on the Pakistani military's psyche. The S-400 will have the effect of turning a defensive system into an offensive system, and extend India's A2/AD (anti-access/area-denial) umbrella over the territory of Pakistan as well as on China's fringes. The Russian built air defence system will increase the vulnerability of all Pakistani air assets, especially fighter aircraft, cruise missiles and drones, by several orders of magnitude.

Due to their massive 600 km tracking range – and a 400 km kill range – just three S-400 battalions located on the border will cover all of Pakistan, except the largely barren western extremity of the



HOW INDIA CAN RESPOND

Ahead of US Secretary of State Mike Pompeo's visit to India, the US has been ramping up the pressure, asking India to scrap the S-400 deal with Russia or risk facing CAATSA – the Countering America's Adversaries Through Sanctions Act. The legislation allows the US to punish Moscow's military partners on the basis that their business dealings violate American law. The S-400 deal with Russia has made India vulnerable to Section 231 of the new law, which imposes sanctions on individuals and countries that deal with Russia's intelligence and defence sectors.

Because CAATSA is an

American law that prevents global free trade, it is patently illegal and can be challenged. Nevertheless, if enforced it could choke the supply of weapons from Russia and blow a gaping hole in India's war fighting capability. It will also earn India considerable hostility in Moscow and drive the Russians closer to Pakistan and China, creating a different set of complications.

Secondly, any American interference in India's fiercely independent defence procurement policies will create a backlash in India and torpedo the growing strategic and defence partnership between New Delhi and Washington.

The strain CAATSA could place on the resurgent India-US relationship was in focus at a hearing of the US Senate Armed Services Committee in March 2018. Admiral Harry Harris, the former commander of the US Pacific Command (now IndoPaCom), said: "Seventy per cent of their military hardware is Russian in origin. You can't expect India to go cold turkey on that. I think we ought to look at ways to have a glide path, so that we can continue to trade in arms within India."

His comments were made in the context of US Secretary of Defence James Mattis seeking exemptions from Section 231

China-manufactured HQ-9 surface-to-air missile



TO AMERICAN PRESSURE?

for a number of US partners and allies. India is believed to be part of this list.

The general consensus in the US is that both houses of Congress would have to consider ways to give a waiver to India. As Admiral Harris remarked, India is “a key partner and a great strategic opportunity”. Translation: India has deep pockets and the US needs the money to keep its factories running.

Simply put, applying CAATSA against India could put the US foreign policy and defence establishments in a bind and slow down their expanding cooperation with India. Due to India’s large market and manpower, it is the

US that needs India more than the other way round. Instead of getting into a heated diplomatic scrap, India should explore ways to sidestep CAATSA’s punitive measures in a number of ways.

Firstly, India should enact its own legislation which declares that decisions based on extraterritorial foreign laws that prevent free trade are unlawful and therefore not applicable to it.

Secondly, New Delhi can complain at the World Trade Organization and threaten counter sanctions to protect its legitimate interests.

Thirdly, India’s leverage as the world’s second largest weapons importer needs to be communicated

clearly to the Americans. Prime Minister Narendra Modi has an ambitious \$250 billion plan to modernise India’s military and a hefty chunk of that amount will go to import advanced weapons. The US – which has been the biggest beneficiary of India’s arms diversification programme in the past two decades – will end up as the biggest loser if it slaps sanctions.

At any rate, it looks like a done and dusted deal. In January, the government informed the Lok Sabha that India will start receiving the missile systems from Russia from October 2020 and the deliveries will be completed by April 2023.

AIR DEFENCE SYSTEM



(Top) Indian Air Force MiG-29 inflight (Below) Pakistan Air Force's F-16 on-ground

restive Balochistan province. With Afghanistan turning hostile and upending Pakistan's grandiose plans of acquiring strategic depth, the arrival of the S-400 will severely limit the operational capabilities of both its offensive and defensive assets.

For instance, Pakistani jets will have to operate hundreds of kilometres west of the Indian border and will have to fly in a narrow strip of airspace along the borders of Iran and Afghanistan. If it comes to a land war, the PAF will not be able to come to the defence of Pakistani armour and troop concentrations which would be taking a pounding from the IAF at the border. Both the PAF and the Pakistan Army will suffer as a result of the S-400's deployment.

Just three S-400 systems deployed along the western border can create a sanitised corridor over Pakistani airspace.

Attacking Indian aircraft can use this corridor to launch sorties without much risk of interception by enemy aircraft. Such a tactic was demonstrated – albeit with a different weapon – during the 1999 Kargil War. At the peak of the conflict, the Pakistani armed forces – in particular the PAF – couldn't come to the rescue of their comrades who were being pounded by the IAF and Indian Army in the Kargil area. For instance, PAF F-16 jets maintained a distance of 16-32 km from the LoC because IAF MiG-29 interceptors would buzz them with their beyond visual range (BVR) missiles.

Since nearly all Pakistani territory can be swept by deploying three S-400 systems on the western border, the Pakistanis will suffer from the fishbowl effect – being observed from all sides. Islamabad could

try and overwhelm Indian air defence systems by launching a large number of missiles of which it has plenty. However, this would be suicidal as it will invite a massive retaliation from India's strategic command.

What is undeniable is that India's purchase of the S-400 – plus the induction of other SAMs – will force Pakistan to spend heavily on more aircraft and missiles needed to neutralise the huge Indian advantage. Given the Pakistani military's obsessive desire to achieve parity with India, it may even acquire the HQ-9 – the Chinese knockoff of the older Russian S-300 system.

The Pakistanis could also try to jam the S-400, but the missile may not be easy to shake off. "It has many features specifically designed to overcome countermeasures and stealth, such as a larger, more powerful radar that is more resistant to jamming. It also actually has a set of three missiles of varying range that provide overlapping layers of defense," Ivan Oelrich, an independent defence analyst told a strategic affairs magazine.

At any rate, Pakistan will be forced to spend large amounts of money on countermeasures. Whether they work or not are debatable and only time will tell. What is however certain is the additional spending will come at the expense of economic growth needed to employ, feed and house Pakistan's young population. Growing disenchantment in restive provinces will set in motion the same set of forces that led to the country's breakup in 1971. ■

–The author is a New Zealand based defence analyst. His work has been quoted extensively by leading think tanks, Universities and publications world wide

INDIA SHOULD AIM AT BECOMING STATE-OF-ART TECHNOLOGY DEVELOPER: DR G SATHEESH REDDY

The academia, R&D institutes and the industry should work in close tandem to create an international market for indigenous State-of-Art technologies

N

ew Delhi. Offering an in-depth insight into the role of technology in National Security Dr G Satheesh Reddy, Secretary, Department of Defence R&D and Chairman, DRDO on May 10 said India should step out from being a technology follower and should work towards becoming State-of-Art Technology developer in order to emerge as a leader in futuristic defence systems.



Dr Reddy was delivering a lecture on 'Technology for National Security' at the Institute for Defence Studies and Analyses (IDSA). His lecture was a part of the Eminent Persons' Lecture Series on issues of National Security.

Highlighting the importance of self-sufficiency in defence technology, DRDO Chairman

emphasised upon the need for joining hands with the academia in conducting focused research in identified areas. The academia, R&D institutes and the industry should work in close tandem to create an international market for indigenous State-of-Art technologies, he said.

Dr Reddy said DRDO has

been working hard on numerous fronts. Be it a diverse range of missiles, or tanks like Arjun Tank or Tejas Light Combat Aircraft or nuclear submarine like Arihant, DRDO is working on all.

Commenting on the changing war and battlefield scenario, Dr Reddy observed that technologies and materials

TECHNOLOGIES AND MATERIALS USED IN DEFENCE SYSTEMS ARE UNDERGOING A RAPID CHANGE. THE MANNED SYSTEMS ARE BECOMING UNMANNED AND UNMANNED SYSTEMS ARE GIVING WAY TO AUTONOMOUS SYSTEMS

used in defence systems are undergoing a rapid change. The manned systems are becoming unmanned and unmanned systems are giving way to autonomous systems.

The organisation is working on several futuristic technologies, starting with materials. Most of the materials that the country needs for its defence systems and weaponry are being indigenously produced, Dr Reddy said.

Director General IDSA Amb Sujan R Chinoy speaking on the occasion lauded the contributions of DRDO and said that the organisation has enabled India to emerge as a technology developer instead of being a technology follower. ■

WHAT THE QUADRILATERAL OF USA JAPAN AUSTRALIA AND INDIA MEANS FOR INDIA—THE QUAD IS WITNESSING A ROLLER COASTER RIDE

The need for security dialogue among the four QUAD nations was initiated in 2007 by Japan Prime Minister Shinzo Abe, goaded by US Vice President Dick Cheney with Australian Prime Minister John Howard and Indian Prime Minister Manmohan Singh

By **CMDE RANJIT B RAI (RETD)**

The Quadrilateral Security Dialogue commonly referred to as the QUAD has evolved as an informal grouping of United States, Japan, Australia and India whose leaders have met at various levels for strategic talks since 2007. The QUAD is an extension of the series of trilateral meetings held at official level, between the United States and its allies Japan and Australia since 2002 and then raised to Ministerial level called the Trilateral Strategic Dialogue (TSD).

Originally, the TSD was the attempt of the United States to rope in its allies in the East to facilitate an evolving US global strategy to fight terrorism and nuclear proliferation after the horrific 9/11 attacks in 2001 on the Twin Towers in New York, and the Pentagon in Washington. The perpetrators who claimed responsibility were found to be Islamic, and USA retaliated against Al Qaeda in Afghanistan with a 'War on Terror' and with a military tilt to the East. President George W Bush made it clear that US foreign policy was "to defend the US, the American people, and US interests at home and abroad by identifying and destroying the threat before it reached US borders". In turn Japan and Australia looked to the benefits of ensuring continued US strategic involvement and the maintenance of strategic guarantees in the region. US

Intelligence agencies co-operated in the sharing of information and so began cooperation between US and Indian Intelligence agencies.

The need for security dialogue between the four QUAD nations was initiated by Prime Minister Shinzo Abe of Japan, goaded by US Vice President Dick Cheney with Prime Minister John Howard of Australia and India's Prime Minister Manmohan Singh. The spark for the dialogue was paralleled by Exercise Malabar 2007 conducted by the Indian Navy in September with warships, submarines and aircraft from India, the United States, Japan, Australia and Singapore. China raised concern, calling it a Quad against China, as it was the first time ever a joint exercise of this scale involving twenty five multinational warships with two aircraft carriers was conducted by the

Indian Navy. The exercise was previously a bilateral India-US engagement that was expanded for the first time. Australia and Singapore have not been included in Exercise Malabar since. In January 2008, Prime Minister, Manmohan Singh, clarified that, "India is not part of any so-called contain China effort," when asked about the Quadrilateral

Due to increased concerns over China's rise and incidents on the border and its support to Pakistan, India evinced interest to work with US administration in addressing security concerns and to combat terrorism emanating from Pakistan. India looked to further the Indo-US Nuclear Deal, when Pentagon offered to supply latest weapons. India tilted to USA and showed keenness to partner with USA for what is viewed as China's aggressiveness in the South China





QUADRILATERAL SECURITY DIALOGUE WAS PARALLELED BY EXERCISE MALABAR CONDUCTED BY INDIAN NAVY IN SEPTEMBER 2007 WITH WARSHIPS, SUBMARINES AND AIRCRAFT FROM INDIA, THE UNITED STATES, JAPAN, AUSTRALIA AND SINGAPORE

Prime Minister Narendra Modi with US President Donald Trump, Japanese Prime Shinzo Abe and others dignatories (Below) PLA (Navy) displays 051 Luhai Ships and 091 HAN Submarines with an aircraft carrier design

Seas who showed disregard for the laws of UNCLOS (1982) and freedom of Navigation(FON).

In April 2009 with a change in Australian leadership, Prime Minister, Kevin Rudd terminated the informal quadrilateral, signalling closer relations with China after he met China’s foreign minister Yang Jiechi before visiting Japan. Rudd subsequently organized a meeting between Yang Jiechi and the Australian foreign minister Stephen Smith in which Australia unilaterally announced its departure from the Quadrilateral. A cable authored by US Ambassador Robert McClum and published by Wikileaks reveals that Rudd did not consult United States before leaving the QUAD. In June 2010 Rudd’s replacement Prime Minister Julia Gillard



steered a shift in Australian foreign policy towards a closer relationship to the United States with a distancing from China. It led

to increased military cooperation between the United States and Australia with US stationing its Marines near Darwin.

QUAD: THE STRATEGIC HEDGE

China's First Island Chain Maritime Chokepoints



(Above) China first island chain (Below) China claims Paracel Spratly Islands



India showed its desire to work with USA and on January 25, 2015, President Barack Obama on a visit to India at a meeting with Prime Minister Narendra Modi spelt out the US-India Joint Strategic Vision for the Asia-Pacific and Indian Ocean Region to bridge the Asia-Pacific and Indian Ocean region. It

reflected an agreement that a closer partnership between the United States and India is indispensable to promoting peace, prosperity and stability in the Indo-Pacific. The leaders agreed on a Joint Strategic Vision document for the region. In June 2017 Prime Minister Modi on a visit to USA met President Donald Trump and the two leaders issued a India-US Joint Statement, 'The United States and India: Enduring Global Partners in the 21st Century,' and so the dice of US-India closeness was cast.

In 2017, India supported the revived QUAD at the 31st ASEAN and the 12th East Asia Summit which was held in Pasay in the Philippines from November 13. A day earlier, India participated in the first official-level QUAD discussions represented by the Joint Secretary in charge of the East Asia division in MEA, Pranay Verma, and the Joint Secretary in charge of South division, Vinay Kumar. Later Prime Minister Modi interacted with Japanese Premier Abe and U.S. President Trump at a gala

dinner thrown by President Rodrigo Duterte of the Philippines for the leaders. The Ministry of External Affairs (MEA) in a statement on the quadrilateral said, "the discussions focused on cooperation based on their converging vision and values for promotion of peace, stability and prosperity in an increasingly inter-connected region that they share with each other and with other partners. They agreed that a free, open, prosperous and inclusive Indo-Pacific region serves the long-term interests of all countries in the region and of the world at large. The officials also exchanged views on addressing common challenges of terrorism and proliferation linkages impacting the region as well as on enhancing connectivity".

THE TRIGGER FOR QUAD AND THE PROGNOSIS

The trigger for the QUAD was the rise of China and its aggressive attitude in the South China Sea and increased strategic footprint with China's BRI and maritime ingress into the Indian Ocean with bases in Pakistan and Djibouti which threatens the strategic primacy of USA and India's interests in the in the region. In addition both China and South Asia are getting linked with growing trade with Africa and increasing the strategic importance of the Indian Ocean. The QUAD'S diplomatic and military arrangements with naval exercises is widely viewed as a response to increased Chinese economic and military power. The Chinese government responded to the Quadrilateral dialogue with protests to its members and China's naval leadership intent on increasing its strategic reach. China's naval expansion programme has planned additional aircraft carriers, and two could be deployed or one could even be based in the Indian Ocean in the future like USA does in Singapore

at Changi for short durations and Yokosuka in Japan, and has a base in Diego Garcia.

The bigger Chinese footprint in the Indo-Pacific prompted USA to rename the Pacific Command in Hawaii as the Indo-Pacific Command and is prompting Japan and the United States to expand their own maritime operations. In 2018 the then Chief of Naval Staff Admiral Sunil Lanba warned that the Indian Navy had concerns with the increased presence of the People's Liberation Army Navy (PLAN) which was adding a second aircraft carrier and increased its presence in the Indian Ocean, dubbing it a resurgent force with a near permanent presence in the northern Indian Ocean. Lanba suggested that China's ongoing naval modernisation was a challenge to the Indian Navy in its maritime backyard. "With over 80 large warships commissioned in the last five years, the PLAN is indeed seen by many as a threat to India's strategic primacy in South Asia", he stated.

The Indian Navy is dubbed the principal naval security provider

(NSP) in the Indian Ocean Region but the definition of naval security provider has not been expanded and USA would like Indian Navy to join QUAD as the NSP for the Indo-Pacific, as US assists the Indian navy to keep track of Chinese submarines in the near seas, and has supplied P8I Maritime Reconnaissance aircraft with inter-operability. Japan has shown willingness to help and support underwater sonar platforms like their Fish Hook to track submarines near the Malacca Straits in the Andaman and Nicobar islands.

It is no doubt Beijing's military aid to Pakistan and nations in the IOR through BRI which is sparking fears of a Chinese String of Pearls around India. With the impending supply of four Chinese Type 054A ships armed with the CM-302 SSM anti-ship missiles and up to eight submarines including four Yuan class with missiles at friendship prices to be based at Ormara, Pakistan's maritime capabilities are likely to rise. Seeking time for the China Pakistan Economic Corridor, Chinese President Xi Jinping met Prime Minister Modi at Wuhan

in May 2018 urging reduction in tension over the border and other regional issues.

In conclusion there is lack of clarity over what a naval Quad really means for India's interests and the idea of any alignment has still to be accepted as a military maritime grouping by India as USA would like with experience of NATO. India has still not included Australia's request to join the Malabar exercises, and looks to QUAD as a forum for discussion at official level on maritime security in the Indo-Pacific. India's official statement is, "India doesn't see the Indo-Pacific Region as a strategy or as a club of limited members," as clearly distinguishing the Quad from the Indo-Pacific. India has also resisted raising the level of the Quad from the current joint secretary level to that of Foreign Secretary or Foreign Minister level as the US and Japan have been pushing for. Finally, there are concerns amongst ASEAN countries that are ringed by the Quad countries that would need to be addressed. Prime Minister Modi's speech at the Shangri-La dialogue which officials from all four nations of the Quad present conceded that while the Quad has made some progress over the year, many areas of divergence exist. Takeshi Osuga spokesman for Prime Minister Abe in Osaka at G20 stated, "India is the key country towards realizing the Free and Open Indo-Pacific (strategy). We have a lot of expectations from the leadership of Prime Minister Modi, who just won a re-election bid and is in a good position to decide on bold policies in the coming years". However India is reluctant to play its trump card on the QUAD, which is seeing a roller coaster ride. ■

THE TRIGGER FOR THE QUAD WAS THE RISE OF CHINA AND ITS AGGRESSIVE ATTITUDE IN THE SOUTH CHINA SEA AND INCREASED STRATEGIC FOOTPRINT WITH CHINA'S BRI AND MARITIME INGRESS INTO THE INDIAN OCEAN WITH BASES IN PAKISTAN AND DJIBOUTI WHICH THREATENS THE STRATEGIC PRIMACY OF USA AND INDIA'S INTERESTS IN THE IN THE REGION



That's the Type 815G intelligence ship No. 855 in the distance trying to keep formation with cruiser; PLANS Sirius (AGI-854)

—The author is former DNI and DNO is an author. His latest Novel An Underhand Affair (Addhyan ISBN 9789388644167 Variety Books) includes intrigues in the world of Naval Intelligence

FLIGHT TESTING IN INDIAN NAVY: SYNERGIES FOR THE FUTURE

“Let’s talk synergy. Let’s talk collaboration. Let’s talk research, data, scientific methods. It’s not about me, the navy, IAF or the Army. It’s about us,” with this statement the writer talks about making synergy among the services, rather working in isolation, to achieve success

By **KP SANJEEV KUMAR**



Ten years ago, I was flying a desk in Naval Headquarters called ‘Aviation Plans’. We had ambitious plans to induct over 300+ aircraft and helicopters over the next few decades. But there was no single agency equipped and authorised to undertake trial and evaluation of naval aircraft and airborne systems. Trials were undertaken by different commands independently of each other, sometimes involving the same equipment. Teams were drawn up on ‘as required’ basis from operational units that had their own share of primary responsibilities. A gentle nudge from then Flag Officer Naval Aviation (FONA) prompted me to put pen to paper to define what capability exists and what could be created (I called it NAFTU, standing for Naval Flight Test Unit). I marked that paper to FONA who sent it to Naval Headquarters with his blessings.

In couple of months, the service paper routed from Goa through the Deputy Chief’s office in Delhi landed back on my own table in ‘A Block’ by virtue of a naval mechanism called ‘on file please’. In due course, I got transferred to the naval Advanced Light Helicopter (ALH) project office at HAL, Bangalore. The case followed me there faithfully. Many fine minds & diligent hands have since shaped what stands proud as Naval Flight Test Squadron (NFTS) at Goa today.

ROADMAP OR GOOGLE MAPS?

While we were busy writing service papers, attending seminars and sponsored lunches, Google Maps have replaced roadmaps. Disruption and innovation is the new order. Young 20-somethings are minting ideas that go on to become billion-dollar companies. There is an ‘App’ for virtually everything today. Drones, e-VTOLs and unmanned craft are taking to the skies. The globe has shrunk virtually; battles are waged sitting



NFTS Badge 2018

in front of consoles. This is the setting we find ourselves in today. While fundamental principles don’t change, we can ill-afford to hold on to old ideas just because we have become comfortable with them. Nothing is off the table today. Please welcome new ideas, new concepts, even if they fly in the face of conventional wisdom. That’s my opening message.

We have indeed come a long way from No. 5 Production Test Pilots Course (1976) that my panel moderator Adm Arun Prakash, former Chief of the Naval Staff attended, to 24 FTC (2001-02) I attended, to NFTS today. In this long journey, the Indian Air Force, ASTE and AFTPS have been our constant companions. So a small tribute is due for the air warriors without whose support many of us wouldn’t have reached where we did.

POOL TOGETHER, PULL TOGETHER

As we speak, the three services are pulling in different directions. Even within each service, I see a distinct drift to shrink into narrow silos of excellence.

All three services should



Clockwise from left: No.5 Production Test Pilots Course, May 1976; Indian Navy pilots onboard USNS Saturn during Dynamic Interface Testing course with USNTPS, 2006; 24 FTC this writer attended, 2001-02

AVOID BECOMING THE GOD OF SMALL THINGS

Our ambitious tri-service helicopter project ALH Dhruv got derailed many times because we wanted one helicopter to be everything for everyone. Each service came up with their so-called 'unique requirements' list. Nobody said NO till ugly design challenges raised their head. Where were the sane voices when the tough decisions had to be taken? Everybody and their Principal Director was a specialist in his own right and nobody wanted to give an inch. As a result of our collective inability to say NO when required – and not support wholeheartedly either – the project suffered. Yet, today we have a world-class helicopter flying. It always fills me with pride when I see them flying over my home in Bangalore. That said, all is not rosy. Today is a good point in time to revisit those lessons.

Another example. A debate on whether to go in for an analog or digital altimeter display for the naval ALH dragged on for years. Navy's contention was based on legacy analog 'steam gauges' that we had gotten used to. A

ALL THREE SERVICES SHOULD AVOID CREATING THEIR OWN TESTING INFRA-STRUCTURE, DUPLICATING WHAT ISN'T NECESSARILY REQUIRED. THE GREAT COST TO EXCHEQUER ASIDE, WHAT WE DON'T NEED ARE BLUE, OLIVE-GREEN AND WHITE ISLANDS OF EXCELLENCE WITH NO BRIDGES BETWEEN THEM



avoid creating their own testing infrastructure, duplicating what isn't necessarily required. The great cost to exchequer aside, what we don't need are blue, olive-green and white islands of excellence with no bridges between them.

The National Flight Test Centre (NFTC) that could have been a tall edifice of jointmanship in flight testing remains committed to a single-point agenda – LCA.

Setting up of NFTS I hope is first among many steps towards integrating tri-service requirements for sea level testing. Air warriors, how about trying our Mi-17s, Mi-35s, Apaches and Chinooks from naval carriers or the LPD? As NFTS grows in scope

and mandate, it should become the catalyst for such synergy. Nobody but testers can either visualise this or make it happen. We shouldn't let organisational ego or narrow parochial interests come in the way. There is a widespread, rather unfounded feeling in the service that testers complicate simple things. Actually, it should be the other way round. If you receive a task or suggestion for anything that builds tri-service synergy, please think 'synergy' & not just 'energy'. Why divide or subtract when we can add?

To borrow from the title of writer Arundhati Roy's famous book: avoid becoming the God of small things. Let me illustrate this with some simple anecdotes.



Analog Radalt display – Naval ALH



Glass cockpit PFD – ALH Dhruv Mk III

digital readout of radio altitude didn't cut ice with our 'experts' who wrote reams to blockade the equipment. Today, digital altimeter displays adorn all glass cockpits, including those on helicopters that dunk at night. In the process, we lost years going back and forth, even dragging Vice Chiefs into the discussion. Every one had an opinion. But no one had the altimeter.

Similarly, test pilots wrote pages why an analog chronometer is needed on the Chetak (Alouette III) to do Rate 1 turns during instrument flying (IF). Nobody questioned the wisdom of doing limited-panel IF on a basic, VFR-only aircraft; or flying without floats over sea. We should avoid such anachronisms in future.

While astute analysis and role-relation is a must, we should guard against becoming the 'God of small things'. Our pet theories or gift for the language shouldn't run riot in programs of scale. Please borrow from your Seaking, Kamov or Sea Harrier experience. But don't make it your pet peeve, block new ideas or throw out the baby with the bathwater.

Examine each new idea, assess it independently devoid of bias, but always with the rich context that separates test crew from the boys in frontline.

That brings me to my next point.

YOU ARE ONLY AS GOOD AS YOUR EXPERIENCE

Your qualifications, what you read, train for or have seen is but one half. The other, more important half, is the

length, breadth & depth of your operational experience, particularly when the chips are down – something I fear may fast become our Achilles heel in flight testing.

This is the picture of an AW 139 cockpit. Today, I have close to thousand hours on this machine. There was a time when I had less than ten hours of glass cockpit time, but I was an active, on-duty test pilot. Not that I could help it; the navy simply didn't have any glass cockpit helicopters. What kind

WHILE ASTUTE ANALYSIS AND ROLE-RELATION IS A MUST, WE SHOULD GUARD AGAINST BECOMING THE 'GOD OF SMALL THINGS'. OUR PET THEORIES OR GIFT FOR THE LANGUAGE SHOULD'NT RUN RIOT IN PROGRAMS OF SCALE. PLEASE BORROW FROM YOUR SEAKING, KAMOV OR SEA HARRIER EXPERIENCE



The AW139 cockpit (picture via www.kaypius.com, courtesy GHC, Doha AW139 type-rating manual)

of challenges this can throw up when you are suddenly pitch forked into a full-fledged trial involving modern, fully-automated, glass cockpit aircraft is something I have experienced personally. It takes thousands of hours of operational experience before we can fully comprehend or begin tampering with HMI issues on such aircraft. If we don't build up that kind of exposure or experience, we run a real risk of repeating the ALH radio altimeter story. Pet peeves may get dragged into the discourse. Years will be lost and programs will meander rudderless.

We test based on our knowledge, experience and openness to new concepts. If we do not induct modern technology in time, our test procedures and understanding of modern concepts will also not keep pace. There is an invisible back-link to our flight testing methodologies and what flies off our frontline. This is yet another reason to look at our fleet composition and much-delayed induction programs more closely. Meanwhile, use every opportunity to expose our flight test personnel to modern technology so that they are neither overawed nor underwhelmed when their acumen is put to test.

Rethink pulling out naval test crew from ASTE soon after the course. There are some key benefits we stand to lose if we do that. Rethink the 'sea riders' concept or senior officers making symbolic demonstration flights during airshows. Pass on those (& more) opportunities to our test crew to build up a rich repertoire of experience and exposure.

That brings me to my next point:

CAREER MANAGEMENT OF TEST CREW

Completing the experimental flight test course requires an extremely high level of motivation and hardwork. It is arguably the toughest practical course in aerospace worldwide. Aircrew who are selected for the course are well above average and highly motivated.

Since in the navy we 'also fly', our peers from IAF and Indian Army have significantly higher flying experience. The course makes no differentiation; it gives no quarter to the weak or less-experienced. The course also adds another year to the already extended training pipeline of the naval aviator. That's one annual appraisal (ACR) less than their general service peers. Compare this to their general service counterparts who rarely

undergo any such extended training between long course and staff course.

After completion of FTC, naval test crew typically spend between 1-2 years at ASTE for initiation into actual flight trials and consolidation. It is an uphill task for naval test crew to leave a great impression either during the FTC or during their stint at ASTE as the odds are stacked against them with respect to experience, qualifications or sheer utility for air force-oriented trials. Of course, there are exceptions and some naval TPs have indeed left lasting impressions at ASTE.

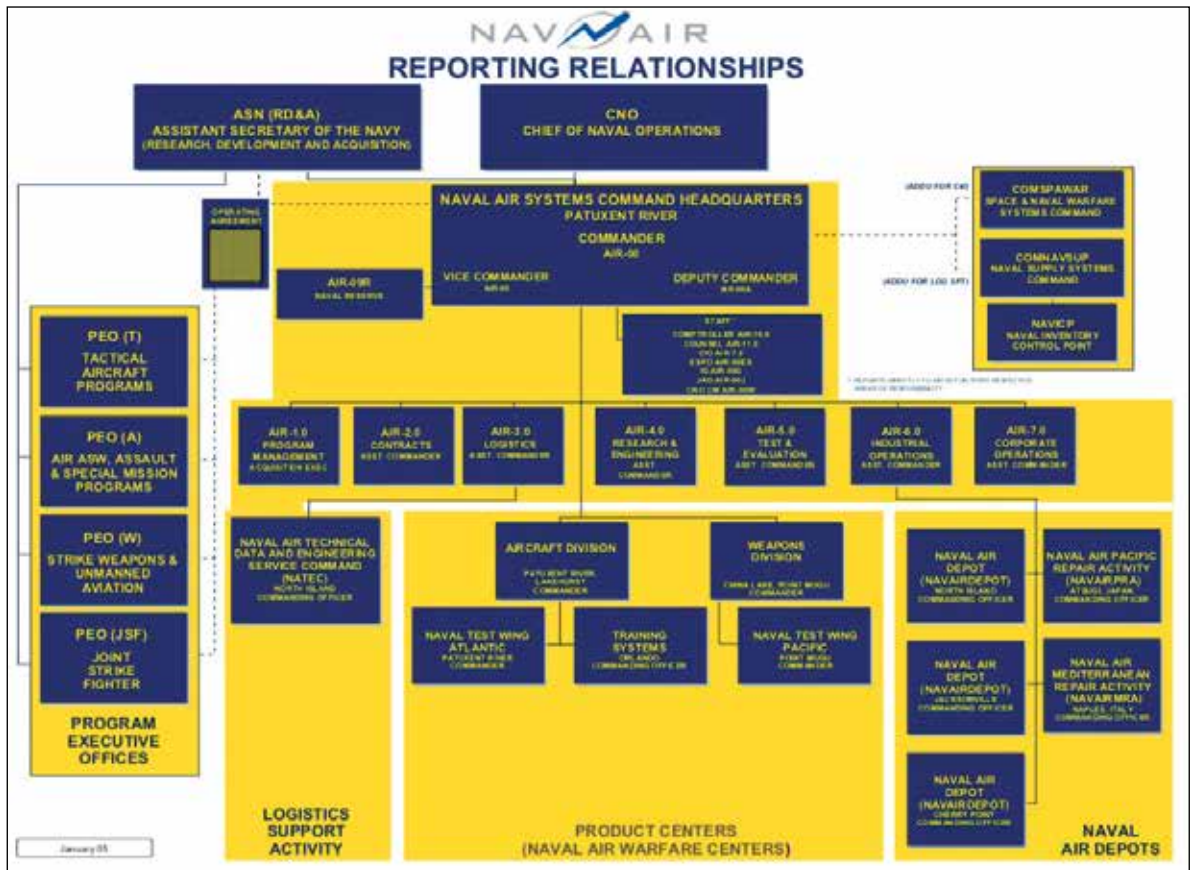
The time spent at ASTE by naval test crew is 'prime time' of their career where their counterparts in general service or mainstream aviation are notching up flying hours, afloat ACRs, specialist tenures, staff

AFTER COMPLETION OF FTC, NAVAL TEST CREW TYPICALLY SPEND BETWEEN 1-2 YEARS AT ASTE FOR INITIATION INTO ACTUAL FLIGHT TRIALS AND CONSOLIDATION. IT IS AN UPHILL TASK FOR NAVAL TEST CREW TO LEAVE A GREAT IMPRESSION EITHER DURING THE FTC OR DURING THEIR STINT AT ASTE AS THE ODDS ARE STACKED AGAINST THEM WITH RESPECT TO EXPERIENCE, QUALIFICATIONS OR SHEER UTILITY FOR AIR FORCE-ORIENTED TRIALS



The IAF Test Pilots School Graduate Badge

UNKNOWN TO NAVAL TEST CREW, THE IAF'S MARKING SYSTEM (RATHER CONSERVATIVE, WHEN COMPARED TO NAVY) AND ABOVE MENTIONED FACTORS USUALLY GET THE BETTER OF OUR TEST CREW BY THE TIME THEY EXIT ASTE FOR LT CDR'S SEA TIME. THE HIGH QUALITY OF PROFESSIONAL EXPERIENCE GAINED AT ASTE AND ORGANISATIONS SUCH AS HAL/NFTC ABRUPTLY ROLLS TO AN END WITH LT CDR'S SEA TIME



NAVAIR Reporting Chain – 2005 (courtesy USNTPS)

billets etc. Unknown to naval test crew, the IAF's marking system (rather conservative, when compared to navy) and above mentioned factors usually get the better of our test crew by the time they exit ASTE for Lt Cdr's sea time. The high quality of professional experience gained at ASTE and organisations such as HAL/NFTC abruptly rolls to an end with Lt Cdr's sea time. There is potential for 'professional disenchantment' at this stage.

In case the TP has been posting a good professional record, he usually loses out precious frontline or testing time with at least a 2-year break brought about by sea time followed by staff course. Back in their squadrons, they were again left playing 'catch up' since by this time even their juniors would've overtaken them in 'on type' qualifications

and flying experience.

With limited number of TPs, most rotary TPs are engaged in cross-coast or outstation trials thereby being of little practical use in the squadron for their flying or admin tasks. This generates alienation and cannot be expected to yield high ACR returns since most of the good work is being done for agencies who do not come in the reporting chain. At a crucial juncture where staff/ops streaming happens, the resultant situation can work against test crew. It is an irony that such highly trained aircrew, engaged in very specialised, exacting work should run the risk of being marginalised by a system which recognises only time spent outside the cockpit and at sea.

There is no easy solution. As things become more complex, we may have to move away from

making everyone a 'jack of all trades' and recognise the time and costs involved in creating such trained assets. Such skilled resources cannot be bought or created overnight. But we could lose them overnight if the system does not have a mechanism to keep them engaged, motivated and rewarded. The IAF has ASTE (headed by an AVM), ACAS (Plans), Directorate of Projects and Dte of ASR in Air HQ which is mostly manned by test crew. How many test crew do we have today in key acquisition directorates at NHQ?

The navy also needs to have certain appointments, including at Flag rank that are earmarked for deserving test crew basis their contribution to flight testing, not by driving ships. Consider that the US Navy has its own Naval Air Systems Command (NAVAIR, Pax River). Consider giving

test crew an option to remain in flight testing with assured career progression if they excel in that field. Some incentives are urgently required to retain their talent and also to attract right talent into the fold. Of course, we can continue to hold the ‘nobody is indispensable’ view. Who loses, who gains, only time will tell. That brings me to my next point.

ARE GOOD TEST CREW REALLY DISPENSABLE?

Can we afford to lose them? Is there a ‘best by’ date for test



Pic courtesy: Prism Defence



The author with Air Marshal P Rajkumar(Retd), one of the doyens of flight testing in India and Founder-Director of NFTC

crew? What happens when they retire? A huge bag of experience is lost. Neither is it fair to stop people from leaving, especially due to lack of career prospects. In all my 23 years in the navy – close to half of it spent in flight testing – I have repeatedly come across a wet blanket called ‘shortage of test crew’, the other being

‘shortage of aircrew’ itself. If so, how come we haven’t thought of engaging their services, even in a limited manner, beyond retirement? Every few years, a test crew or two walks out with his retirement papers. What stops us from enlisting their support for tasks that only need them to fulfil recency experience?

Test crew from other countries

like US, Australia, UK, and even small countries like Norway or The Netherlands actively support national projects through a thriving industry and their armed forces’ policies that support such engagement. Our test crew struggle to get a commercial pilots licence and a foothold in civil aviation. Or put on a suit and do business development for companies that are interested in their ‘insider info’ and connections. This ‘spy versus spy’ outlook must change. In the business of flight testing, salt & pepper is gold, even after they have overgrown their cockpit utility. That brings me to my next point. What kind of higher education must we seek?

HIGHER EDUCATION FOR TEST CREW

Between aircrew like Commanding Officer of NFTS and that elusive flag rank stand courses like DSSC, NDC or War College. The experimental test pilot course comes very close to being a doctorate in practical aviation. But while the Flight Test Engineers (FTE) received an MTech in Flight Testing, test

TEST CREW FROM OTHER COUNTRIES LIKE US, AUSTRALIA, UK, AND EVEN SMALL COUNTRIES LIKE NORWAY OR THE NETHERLANDS ACTIVELY SUPPORT NATIONAL PROJECTS THROUGH A THRIVING INDUSTRY AND THEIR ARMED FORCES’ POLICIES THAT SUPPORT SUCH ENGAGEMENT

pilots had to contend with a course completion certificate issued by ASTE.

That parchment is very dear to me, make no mistake. But it is not an engineering degree. Sound engineering knowledge is a must for test crew, in my view (a view shared by Air Marshal P Rajkumar, a doyen of flight testing from the IAF and founder-director of NFTC).

With BTech becoming the entry-level qualification for all naval officers, this lacuna has been corrected by the navy. Hopefully, other services too will follow. We must remain ahead of the curve by sending our test crew into higher academic orbits and research, not to browbeat competition or add to an expanding list of honorifics, but because the time has come to question the wisdom of letting Staff Course, Higher Command Course (HCC), National Defence Course (NDC) etc. decide the future of aviation.

We all know Neil Armstrong

was an American astronaut and the first person to walk on the Moon. Some of us may even know that he was a naval aviator and test pilot. How many of us know that he was an aeronautical engineer? Do you know he went on to become a university professor? I didn't know this until Air Marshal Rajkumar pointed it out to me over a casual conversation.

Quoting from Wikipedia, "*A graduate of Purdue University, Armstrong studied aeronautical engineering with his college tuition paid for by the U.S. Navy under the Holloway Plan. He became a midshipman in 1949, and a naval aviator the following year. He saw action in the Korean War, flying the Grumman F9F Panther from the aircraft carrier USS Essex. In September 1951, he was hit by anti-aircraft fire while making a low bombing run, and forced to bail out. After the war, he completed his bachelor's degree at Purdue, and became a test pilot at the National Advisory Committee*

for Aeronautics" (NACA, which later became NASA).

In Jul 1969, he stepped onto the lunar surface. After he resigned from NASA in 1971, Armstrong taught in the Department of Aerospace Engineering at the University of Cincinnati till 1979.

It is 2018. Should we still need convincing for higher education for test crew beyond the beaten path of DSSC, NWC & NDC? Maybe a few test crew graduating from IIT or Cranfield might prove to be the proverbial "one small step for man, one giant leap for Indian testers" we badly need. As testers, we must never shy away from going back to our universities and books.

If we all start thinking and behaving like mainstream aviators or ship drivers, there cannot be one from our navy of the mettle of Armstrong. Neither will an indigenous aircraft like SR71 Blackbird ever streak across our skies. Books. Reminds me of my next point. Where are the rule books?



Neil Armstrong (Pic from open source)

WHERE ARE THE RULE BOOKS?

I hope our rule books for flight testing are evolving. A small insert in INAP 2 will not suffice in the days to come. For the longest time in SHOL we have been using free downloads of BRd766 – the Royal Navy’s handbook for shipboard helicopter operations, and US Navy’s Dynamic Interface Manual. Then there is CAP437, CAA’s bible for offshore operations.

One lesson we can learn from the west is to first set the systems and processes right. How far have we gotten to writing the guidebooks for naval flight testing? I am willing to collaborate in any effort towards that end.

I recall an incident from the past. A massive air-sea search operation was launched in the wake of a fatal Sea Harrier crash off Goa. Our squadron helicopters were flying day & night for the rescue. Yours truly, a qualified ETP who had joined squadron after the staff course, had to retire to my cabin after sunset because the prevailing rules didn’t differentiate between test pilots and line pilots. A small, man-made obstacle called ‘green rating’ stood between me and night flying because the weatherman said moon was less than 30% and waning. My advice: Please write those rule books with an eye on the future. Because first we make the rules, then the rules make us.

The conservative outlook in writing rules is not the exclusive bane of Indians. We all like to form exclusive communities and put up entry barriers just to protect our turf. The British have done it in the offshore industry and we continued that legacy in our own spheres. But while they have moved on to collaboration in place of competition, we have much to change. Lateral osmosis of knowledge between



(Above) A civil helicopter under 5000-Hrly inspection (Below) Dynamic Interface Testing Course at USNTPS, Pax River, 2006

associated fields and vocations is an example.

ENCOURAGE LATERAL OSMOSIS OF KNOWLEDGE

At one time while in uniform, my word carried a lot of weight in matters relating to helicopters. It has taken me four years cutting my teeth in the offshore O&G industry to realise there is much osmosis that can take place between civil offshore flying and naval helicopter

operations. It is a win-win situation for both. At one end of the spectrum lies commercial aviation where passenger safety and bottom lines reign supreme. But we hardly talk to each other because we think we know it all. Or maybe, like the lyrics of an old Scorpions’ song “pride has built a wall so strong that I can’t get through” (Scorpions, Still Loving You).

For starters, I encourage some of you to visit Juhu aerodrome where you will see how aircraft in above condition are put

ONE LESSON WE CAN LEARN FROM THE WEST IS TO FIRST SET THE SYSTEMS AND PROCESSES RIGHT. HOW FAR HAVE WE GOTTEN TO WRITING THE GUIDEBOOKS FOR NAVAL FLIGHT TESTING? I AM WILLING TO COLLABORATE IN ANY EFFORT TOWARDS THAT END

SHORT COURSES CAN ALSO FILL UP SOME CRUCIAL GAPS IN OUR UNDERSTANDING. FEW INTERNATIONAL TEST PILOTS SCHOOLS RUN SUCH COURSES.

A 3-WEEK SHORT COURSE ON DYNAMIC INTERFACE TESTING WITH USNTPS I ATTENDED IN 2006 USHERED IN SOME QUALITATIVE CHANGES IN THE WAY WE INTEGRATE HELICOPTERS WITH SHIPS. SIMILAR COURSES ARE AVAILABLE WITH MANY INSTITUTES IN THE WORLD TODAY



'SHOL Baba' (Art courtesy Capt Anshuman Chatterjee (Retd), former airborne tactician and ace cartoonist

together within two weeks and safely take to the skies again! Some of the offshore deck landings we do with skid-fitted helicopters can make you rethink your specifications for future ships and multirole helicopters. The tempo of operations is like a continuous, unending Operational Readiness Inspection. Flying never stops, come hell or high water, till Juhu airfield goes underwater or visibility drops below 1 km. There are no gallantry awards or commendations to be won either. Can we learn something from each other? Yes, absolutely!

As another example of lateral knowledge transfer from offshore to navy, I recall how we revived the flight deck of Floating Dock Navy (FDN) in 2010. Concepts like drop-down height, single engine getaway, performance classes and Category A operations, CAP437 TD/PM markings, obstacle free

sector etc. were alien to me then. Today, with four years of civil offshore experience, I can help fix some of our naval afloat helicopter issues. Naval folks have also contributed richly to the high level of safety in offshore helicopter operations. The key operative word here is 'synergy'. But how many of us really care about that?

Short courses can also fill up some crucial gaps in our understanding. Few international test pilots schools run such courses. A 3-week short course on dynamic interface testing with USNTPS I attended in 2006 ushered in some qualitative changes in the way we integrate helicopters with ships. Similar courses are available with many institutes in the world today. Without looking at it as an expensive indulgence, I would urge planners to seek out courses that are tailor made for our

requirements. For starters, why not send some of our Observers and airborne tacticians for a basic methods course in systems testing till such time that the concept of 'Test Observers' becomes a reality? The money has to come from somewhere. If finance folks don't agree, what are we test pilots for?

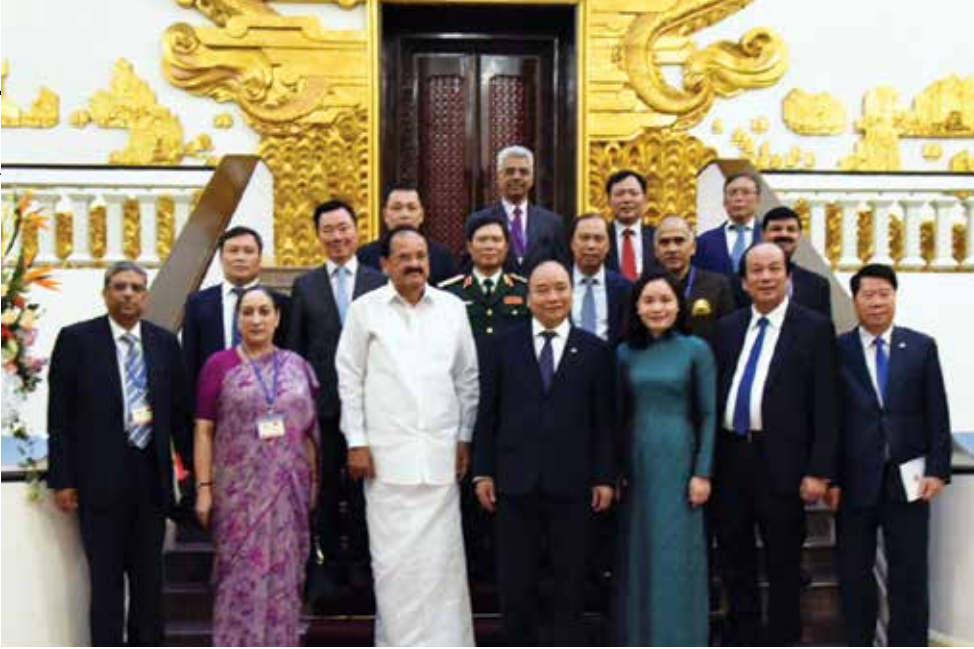
MORE QUESTIONS, AND WE ARE RUNNING OUT OF TIME!

Why is the Indian Navy on Facebook but not on LinkedIn? Why don't we have a SETP membership? Why aren't our testers presenting more papers in international flight test seminars? Why, after more than half a century of producing test pilots, we still don't have a registered society for testers in India?

Many more questions bother me. But i am afraid we are running out of time. No, not for this seminar or my panel. We are running out of time to get our act together and take flight testing, naval flight testing included, to the next, more appropriate level. I don't see how this can happen without somebody pushing the envelope. It's time to put pen to paper once again – like i did in 2008.

Let's talk synergy. Let's talk collaboration. Let's talk research, data, scientific methods. It's not about me, the navy, IAF or the Army. It's about us. ■

–The author is a former navy test pilot who has flown over 4200 hours on 24 different aircraft. He has worked closely with HAL and industry in projects of national importance and undertaken flight test projects in India and abroad. He calls himself 'full-time aviator, part-time writer' and maintains a diligent blog at www.kaypius.com. He can be reached at kipsake1@gmail.com



VICE PRESIDENT M VENKAIHAH NAIDU VISITS VIETNAM TO STRENGTHEN BILATERAL RELATIONSHIP, DEFENCE COOPERATION



anoi. Vice President Venkaiah Naidu undertook an official visit to Vietnam from May 9-12 at the invitation extended by Ms Dang Thi Ngoc Thinh, Vice President of Vietnam. He was also invited by the Vietnam Buddhist Sangha and the organisers of the 16th UN Day of Vesak that is being held at the Tam Chuc Pagoda in Hanam Province in Vietnam to deliver the keynote address during the inaugural session.

Vice President Naidu held delegation level talks with Vice President Thinh and held discussions with Prime Minister Nguyen Xuan Phuc and Chairperson of the National Assembly Ms Nguyen Thi Kim Ngan.

The Vice President paid respects at the Monument of National Heroes and Martyrs and at the Ho Chi Minh Mausoleum at Hanoi. He addressed members of the Indian Community and Friends of India on May 9 and visited the Embassy of India, Hanoi on May 11 and paid floral tributes at the bust of Mahatma Gandhi there.

He, thereafter, interacted with beneficiaries of the Jaipur Foot Artificial Limb Fitment Camp that is being held Quang Ninh and Yen Bai provinces under the “India for Humanity” Initiative launched by Ministry of External Affairs (MEA) to commemorate the 150th Birth Anniversary of Mahatma Gandhi.

India and Vietnam have a strong

bilateral relationship based on mutual trust, understanding and convergence of views on regional and international issues. Vice President’s talks with his Vietnamese interlocutors were extensive and productive and covered whole range of bilateral and multilateral cooperation.

Both sides agreed to further strengthen cooperation in defence and security, peaceful uses of atomic energy and outer space, oil and gas, renewable energy, agriculture and innovation-based sectors.

Vietnam is an important trade partner of India. Bilateral trade stood at nearly US Dollars 14 billion last year having nearly doubled from US Dollars 7.8 billion three years ago. Vice President Naidu and Prime Minister Phuc expressed commitment to enhancing trade and investments and agreed to facilitate direct air connectivity to promote tourism, trade and people-to-people relations.

Both sides reiterated the importance of building a peaceful and prosperous Indo-Pacific region on the basis of respect for national sovereignty and international law, and expressed full commitment to an open, transparent, inclusive and rules-based regional architecture based on freedom of navigation and overflight, unimpeded economic activities and peaceful settlement of disputes in accordance with international law.

Vietnam’s leaders appreciated India’s long-standing development partnership engagement, especially scholarships and training programmes provided under ITEC and by ICCR. They also thanked India for extending concessional Lines of Credit for defence industry cooperation and implementing other socio-cultural infrastructure projects in Vietnam under Indian grants-in-aid. In his keynote address at the Vesak Day, Vice President Naidu spoke on “Buddhist approach to global leadership and shared responsibilities for sustainable societies”. President of Myanmar Win Myint, Prime Minister of Nepal KP Sharma Oli, and Chairman of the National Council of Bhutan Tashi Dorjee also participated.

The importance of parliamentary exchanges and cooperation was emphasised by Vice President Naidu and Chairperson Ngan. Vice President Naidu invited Vice President Thinh to undertake a visit to India at mutually convenient dates.

Vice President Naidu’s visit has imparted momentum to the bilateral relationship and provided an opportunity to review various areas of collaboration and cooperation of the Comprehensive Strategic Partnership, with Vietnam’s leadership. His participation at the UN Day of Vesak Celebrations emphasised shared civilisational heritage of the two countries. ■

CONSOLIDATING NAVAL POWER: A NATIONAL IMPERATIVE

India needs a strong Navy to embark on a growth trajectory that not only meets but also furthers its security and foreign policy objectives

By **CMDE ANIL JAI SINGH (RETD)**

W

hen the NDA government came to power in May 2014, national security and more specifically, maritime security figured high on the agenda. Within a month of taking over, in his first trip outside Delhi, the Prime Minister Narendra Modi spent a day on board the aircraft carrier INS Vikramaditya. This was followed soon thereafter by his presence at the commissioning of INS Kolkatta, the indigenously built guided missile destroyer. The interim Defence Minister at that time, Arun Jaitley stated that maritime security was his top priority.

In February 2016 an International Fleet Review was held in Visakhapatnam in which more than 50 navies participated and was indicative of India's growing stature on the global stage. This was followed in April 2016 by a Global Maritime Summit held in Mumbai in which more than 40 countries participated. The Government also initiated two transformational maritime

programmes - the multi-crore rupee Sagarmala programme for port-led development of the maritime sector in India and SAGAR (Security and Growth for All in the Region) to enhance maritime capacity, capability and connectivity in the region of our interest.

From a foreign policy perspective too, these five years (2014-2019) were significant as the Prime Minister's proactive policies like the Act East Policy and the Neighbourhood First Policy led to much greater

engagement with the countries of the Indo-Pacific and strategic cooperation with many. India's relations with the Big Powers also saw an incremental improvement. The presence of extra-regional powers was no longer seen as adversarial to India's interests.

As a result, the Indian Navy which is an important instrument for furthering the country's foreign policy objectives became more visible than ever before in the Indo-Pacific. It was much sought after as an exercise partner by regional navies. Existing bilateral exercises like Simbex (with Singapore), Malabar (with the USA), Varuna (with France), Konkan (with the UK), Indra (with Russia) and various others increased in scope and included advanced manoeuvres toward improving interoperability and a common security outlook. Regular interaction with foreign navies has now become the norm. More than a dozen IN ships are now deployed at any given time in various parts of the Indo-Pacific on a variety of missions. This has also enabled the IN to become more pro-active as the first responder in providing humanitarian assistance and disaster relief (HADR) during natural and man-made calamities besides improving Maritime Domain Awareness which is critical to pre-empt a developing security threat, either

national or trans-national. This has also greatly enhanced the navy's credibility as an effective provider of net security in the Indian Ocean region.

While this naval presence is essential to project India as a major Indo-Pacific power which has been the thrust of the country's foreign policy initiatives in recent years, the government has been found wanting in providing the means for the navy to do so. In the last few years, the defence budget has been showing a steady decline as a percentage of the country's GDP. The navy's share of this budget too has declined. As a result, while the navy has responded magnificently to the increased demands and has maintained an unprecedented operational tempo over the last few years, the existing constraints in providing the adequate resources has placed a considerable strain on the navy's full spectrum combat capability with critical gaps becoming increasingly apparent.

India is the dominant naval power in the Indian Ocean and amongst the top three resident powers in the Indo-Pacific but it still lacks the ability to shape the maritime environment in its favour. Maritime power is integral to becoming a great



power, a Mahanian concept that China has embraced with both arms.

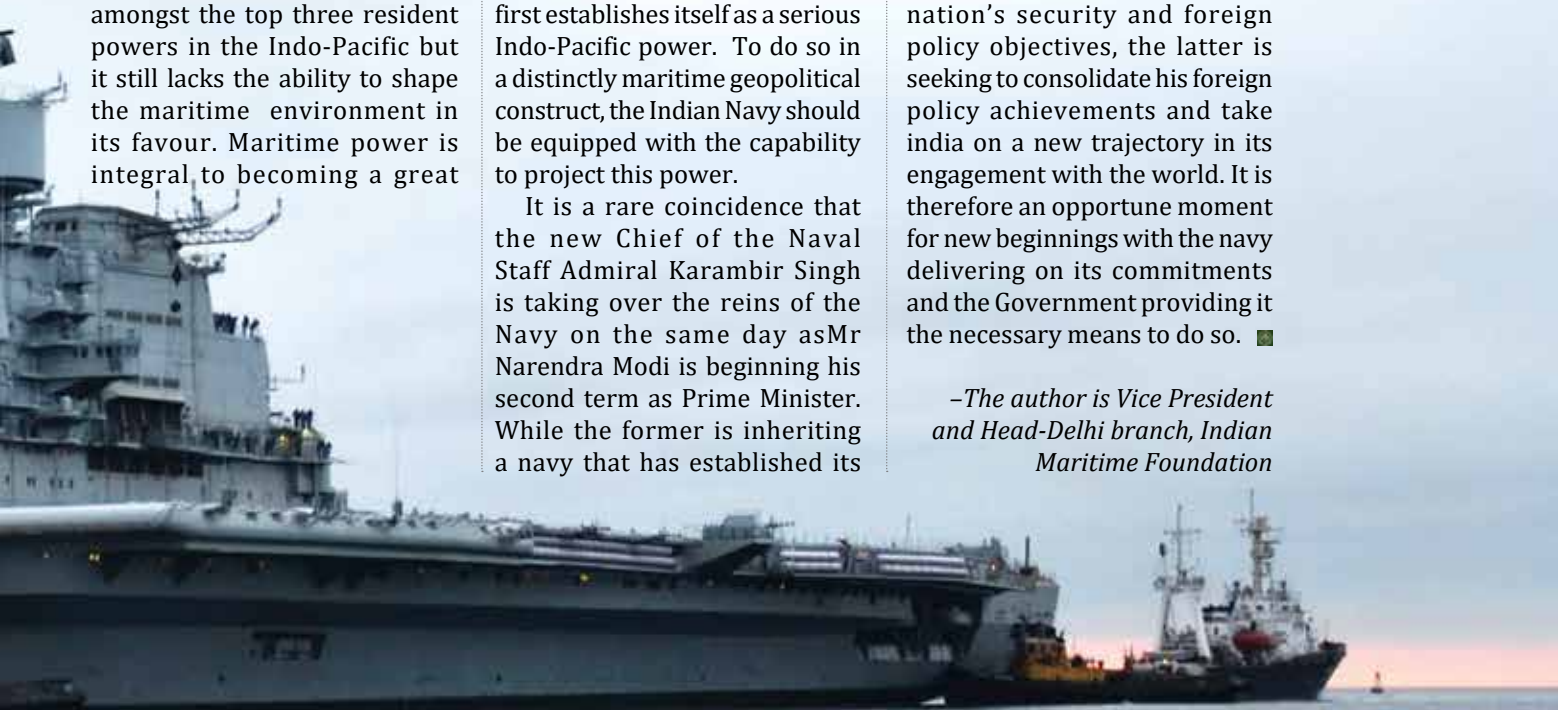
It is certain that Mr Modi, in his second term as Prime Minister will seek to further enhance India's status as an emerging big power. In 2020, India will take on the presidency of the G20; it is actively seeking to become a permanent member of the UN Security Council and in the interim is looking to get elected as a non permanent member. It is therefore imperative that India first establishes itself as a serious Indo-Pacific power. To do so in a distinctly maritime geopolitical construct, the Indian Navy should be equipped with the capability to project this power.

It is a rare coincidence that the new Chief of the Naval Staff Admiral Karambir Singh is taking over the reins of the Navy on the same day as Mr Narendra Modi is beginning his second term as Prime Minister. While the former is inheriting a navy that has established its



professional credentials in no uncertain terms and is fully committed to furthering the nation's security and foreign policy objectives, the latter is seeking to consolidate his foreign policy achievements and take India on a new trajectory in its engagement with the world. It is therefore an opportune moment for new beginnings with the navy delivering on its commitments and the Government providing it the necessary means to do so. ■

–The author is Vice President and Head-Delhi branch, Indian Maritime Foundation





‘WITH GOVERNMENT POLICY FRAMEWORK IN PLACE, NEW ORDERS NEEDED TO ENCOURAGE DOMESTIC PLAYERS’



A

Amandeep Singh is the current Head of the Defence Business in Ashok Leyland Ltd. He is an alumnus of Institute of Management Technology (IMT). Amandeep has been associated with Ashok Leyland for past more than two and half decades. In a chat with Ajit Kumar Thakur, Editor, Raksha Anirveda he dwelt upon the various areas of defence production Ashok Leyland is in. An excerpt of the interview.

Ashok Leyland has been in defence business in India for about three decades. What have been its achievements so far (with supportive figures)?

A. Ashok Leyland is the largest supplier of logistics vehicles to Indian Army. In partnership with VFJ, we have supplied over 70,000 Stallions which have performed exceedingly well over the years in all sorts of terrains and operations. In last 4-5 years we have entered Specialist Role vehicles as well, such as HMV 8x8, Ambulances, FAT 6x6, MBRL etc., and delivered more than 1000 of them to Indian Army. More than the numbers and quantum of business, it is partnering Armed

Forces in security of our nation that makes Ashok Leyland proud. Being there with the Indian Army even in forward areas for repair and maintenance of these vehicles during various operations and the trust that Army has on ALS, is our real achievement.

Ashok Leyland has been closely working with Indian Armed Forces and contributing in its modernisation initiatives. How has been your experience till date?

A. We have invested significantly in continuous improvement of our flagship model Stallion over last so many



“We have indigenously developed new Platforms like HMV 8x8, FAT 6x6, MBRL with all Defence specific features like CTIS, Self-Recovery winch, High capacity Towing system etc”



Medium Bullet Proof Vehicle (MBPV)

years. Currently Stallion MK IV vehicles are being delivered to Indian Army and we have ensured that specification and performance parameters have kept pace with changing technology. We have also indigenously developed new Platforms like HMV 8x8, FAT 6x6, MBRL and Smerch 10x10 with all Defence specific features like Centralised Tyre Inflation System (CTIS), Self-Recovery winch, High capacity Towing system etc. While we have quoted very competitively and won Capital Procurement tenders for these, there have been no follow up revenue route orders. Significant investments that go into development of these Platforms cannot be recovered in Capital procurement orders of limited quantities. We are hopeful



Amandeep Singh interacting with business delegates at DefExpo 2018

IN CONVERSATION



INDIA IS PITCHING ITSELF TO BE A SUPER POWER IN THE NEW EMERGING WORLD ORDER. NO COUNTRY HAS BEEN ABLE TO ACHIEVE THIS STATUS WITHOUT ROBUST AND SELF-SUFFICIENT DEFENCE CAPABILITY

that Revenue route orders will commence.

Q. *Kindly provide an insight into the Ashok Leyland's entire defence product portfolio and the R&D work in partnership with DRDO being undertaken currently?*

A. Ashok Leyland's Defence Portfolio can be divided into following segments:

Logistics vehicles: We have vehicles for all applications such as Troop carriers, Water Browsers, LRVs, Reefer Trucks, Refuelers etc. in 4x4 as well as 6x6 range.

Specialist Vehicles: Starting from 4x4, 6x6, 8x8, 10x10 and going up to 12x12 we have complete range of Platforms for varied Applications such as Missile Carriers, Gun Towers, Rocket launchers, Ammunition Carriers, Radars etc.

Armoured Vehicles: Bullet Proof, Blast Proof and Mine protected vehicles in Light, Medium and heavy categories.

All-Terrain Vehicles (ATVs):

These are 4x4 Light vehicles with Independent suspension, Space frame and mid mounted Engine for excellent Stability.

Tracked vehicles: We have now ventured into Tracked vehicles wherein we are offering complete mobility solution including Power Pack, Suspension and other mobility items. We are also getting into offering solutions for Repower of BMPs and T-72s.

Q. *The defence industry has the potential to drive the future industrial growth and is being considered as the next big thing that will have positive impact on national security, technological advancement, economy, skill development, job creations etc. Do you agree with this? Kindly express your views.*

A. India is pitching itself to be a Super Power in the new emerging world order. No country has been able to achieve this status without robust and self-sufficient Defence capability.



Stallion 4x4 MK V

This gives Defence Industry huge opportunity as well as responsibility to build capability and capacity to a scale which would then become a significant contributor towards Industrial Growth.

India has one of the largest Armed force and is also unfortunately geographically placed in one of the hotspots on the Risk map of the world. This would lead to continuous significant spending on Defence in foreseeable future. Defence Industry is inherently Technology and labour intensive.

Super Stallion 8x8



If we can substitute even 50% of our Defence imports with localized production over next 10 years, Defence Industry has the potential to grow in near term and future industrial growth.

In what ways Ashok Leyland has been contributing towards self reliance in defence under the Make in India initiative?

A. All the Specialist Role vehicles which we are now supplying to Indian Army such as HMV 8x8, FAT 6x6, MBRL and Smerch 10x10 have replaced

vehicles which were earlier imported. All these Platforms have been designed, developed and manufactured here in India in our Technical Center and Plants. Ashok Leyland is the only vehicle manufacturer in India having indigenous capability to design, develop and manufacture Engines above 350 HP. We do this at our State-of-the-art Technical Centre near Chennai.

Finally, do you think the new government will give defence industry the top

priority now and make impactful policy changes to take it forward on the development path?

A. We have made investments and provided Indian Army with indigenised mobility solutions which have cleared all trials and on various parameters performed even better than imported vehicles. Policy framework by Government is now in place to encourage domestic players. What is needed now, is orders. ■

A PARADIGM SHIFT IN INDIA-ISRAEL DEFENCE DEAL SINCE MODI'S VISIT IN 2017

Prime Minister Narendra Modi's visit to Israel in 2017 opened a new chapter of strategic relationship between India and Israel. The major outcome of the visit was de-politicisation of the bilateral relations of military-security and defence deal between the two nations

By **SANGEETA YADAV** AND **SHEKHAR KUMAR PATEL**

Prime Minister Narendra Modi's visit to Israel in 2017 brought a paradigm shift in military-security and defence deal with a de-hyphenation policy in West Asia. The major outcome of the visit was de-politicisation of the bilateral relations of military-security and defence deal between two nations. Under PM Modi, military-security and economy-centric approach seeking closer ties with Israel with much of the attention has been on the de-hyphenation of Israel and Palestine conflict. This results into the marginalisation of the Palestinian in Indian foreign policy. The dominant aspect of the India-Israel partnership remains in defence, with Israel emerging as a strong partner in times of need. Currently, India is the largest importer of Israeli arms and latest defence deal of Barak 8 Long Range Surface to Air Missile (LR-SAM) defence system has crossed \$6 billion between the two nations.

BACKGROUND OF INDIA- ISRAEL RELATIONS

More than two decades ago in January 1992, India and Israel established full diplomatic relations; however, even before that Israel had a Consulate in India since the 1950s. Since the beginning of diplomatic relations, bilateral trade, defence, and economic relations progressed rapidly. Israel always came

forward to provide ammunition and military equipment to India when most needed during wars even though India did not recognise Israel till 1950. More so, India voted against the creation of Israeli state at United Nation in 1948. This shows the special relationship of India-Israel friendship for a long time. Israel also provided military support to India in its wars in 1962, 1965, 1971 and even in 1999 Kargil conflict. Israel helps India in every



(Left) Israeli Prime Minister Benjamin Netanyahu

crucial time when the US and its allies impose sanctions after the 1998 nuclear test. Israeli support resulted in becoming it a reliable partner for India.

The Cold War Era: During the Cold War Era the relations between the nations were mostly influenced by the two power blocs whereas India was always sticking to its non-alignment policy. Even though tagged as the biggest democracies of those times many thinkers labeled India as a socialist state due to its closer relations with Russian leaders. On the other hand, Israel was trying to get recognition as a separate state (new nation) while sharing vivid relations with other nations. The two states relations became better after India's official recognition of Israel in 1950. But before that India refused the recognition



with his Indian counterpart Narendra Modi in New Delhi; President Pranab Mukherjee (Centre) with Mr Netanyahu (Left) during the former's visit to Israel in 2015

of Israel many times because of various factors: This include partition of India on religious grounds, and India's relationship with other nations. Mahatma Gandhi and Jawaharlal Nehru were more encouraging towards the Arabs. India's foreign policy was influenced by the Cold War alignments, while at the same time newborn India did not want to estrange its considerably large Muslim community.

Jawaharlal Nehru on September 17, 1950 quoted as saying: "We would have [recognised Israel] long ago because Israel is a fact. We refrained because of our desire not to offend the sentiments of our friends in the Arab countries." As a result in 1953, Israel was permitted to open a consulate in Mumbai. However, the government didn't chase full diplomatic relations with Israel

as it consolidated the Palestinian cause and believed that allowing Israel to open an embassy in New Delhi would vandalise relations with the Arab world. However, on the contrary, India was the first non-Arab state to recognise the "State of Palestine" in 1988, while in 2012 it called for Palestinian statehood to be acknowledged by the United Nations. And since then India has been disapproving its relations with Israel in public and has continued to covertly receive assistance from the country. Although Israel came to India's aid during the war with China in 1962 by providing the latter with strategic advice and powerful arms, yet the diplomatic relations between the two nations' cemented only in the 1990s.

The Kargil: The year 1999, however, was the age of consular

rejuvenation between the two countries. The consequential and direful Kargil War proved to be a crossroad. Israel proved to be an important ally and defence apparatus of aid, providing India with ammunition when Pakistan invaded the Kargil-Dras region located in the debated state of Jammu and Kashmir. India's petrifying discernment of its military inadequacy was a wakeup call for the country to strengthen its border-control and counter-terrorism abilities. Ties were strengthened with technologically advanced Israel by the then BJP government. The situation was flipped during the Kargil War because of Israel being on India's side. A laser-guided missile for Indian fighter jets along with the necessary weaponry for army warfare was provided by Israel as they took the step up. Israel's

CURRENTLY, INDIA IS THE LARGEST IMPORTER OF ISRAELI ARMS AND LATEST DEFENCE DEAL OF BARAK 8 LONG RANGE SURFACE TO AIR MISSILE (LR-SAM) DEFENCE SYSTEM HAS CROSSED \$6 BILLION BETWEEN THE TWO NATIONS

DEFENCE COOPERATION

NARENDRA MODI IS THE FIRST INDIAN PRIME MINISTER TO HAVE MADE AN OFFICIAL VISIT TO ISRAEL IN JULY 2017. PRIME MINISTER MODI MADE A CLEAR DISTINCTION BETWEEN THE ISRAELI AND PALESTINIAN ISSUE BY VISITING ONLY ISRAEL, CONTRARY TO EARLIER INDIAN OFFICIALS VISITED PALESTINE FOR THE SAKE OF DIPLOMACY



PM Modi with Mr Netanyahu at the latter's arrival in New Delhi in 2018

aid was god-sent; President Pranab Mukherjee recognised and admired Israel's support during the war and thanked it for providing "critical defence supplies" in his visit in 2015. Prime Minister Modi's visit to Israel in July 2017 and Israeli PM Benjamin Netanyahu visit to India in January 2018 has presented a new government outlook which many strategists have called a significant change in India's foreign and defence policy. The visit also hinted at the growing closeness in relations between India and Israel. The relationship between

the two countries has truly become multi-dimensional. In 2018, the Prime Minister of Israel Benjamin Netanyahu was in India on a five-day visit which has boosted the relationship shared by the two countries.

INDIA-ISRAEL DEFENCE DEAL: POST MODI

The most dramatic and paradigm shift took place at the political-diplomatic level between both nations when Prime Minister Narendra Modi came to power in 2014. Prime Minister Modi's

unique stance towards Israel proves that leaders are a focal point for making big and tectonic shift in the relations between countries. He is the first Indian Prime Minister to have made an official visit to Israel in July 2017. Prime Minister Modi made a clear distinction between the Israeli and Palestinian issue by visiting only Israel, contrary to earlier Indian officials visited Palestine for the sake of diplomacy. There is unique development from the Israeli side as well. Under Modi, India abstained from voting against Israel in the United Nations in several resolutions.



Sr No.	India's Main Suppliers		Israel's Main Clients	
	Country	Total imports %	Country	Total exports %
1	Russia	58%	India	46%
2	Israel	15%	Azerbaijan	17%
3	US	12%	Vietnam	8.50%

Source: SIPRI Fact Sheet March 2019, <https://www.sipri.org/databases>

cooperation and economic field. However, military-security and defence deal is the most dominated partnership which is shared among both nations. Since the 1990s, India has been importing weapon systems from Israel however, defence deal between the two countries drastically increased with the surge of Modi Government in India.

Prime Ministers from both the sides have agreed for the Israeli companies to enter into joint ventures with Indian companies in defence sector under Make in India initiative. Both nations consider it important to set more business models and partnerships in manufacturing and transfer of technology in the field of defence and security. The two sides are ready for the active involvement of the public and private sectors for long term

sustainable cooperation in the defence industry.

Currently, Israel has become number two defence supplier of India after Russia and India has become the largest arms importer from Israel (Reference to data 1). Since 2013, it has been the biggest buyer of Israeli equipment, purchasing 49 per cent of Israeli military exports in this period. In 2017 alone, India imported equipment worth \$715 million, including Harop drone, Phalcon AWACS aircraft, and Barak 8 LR-SAM defence systems.

Indian government, driven by BJP and Modi at helm, is visibly vocal and serious about prioritising its partnership with Israel. Strong ties with Israel therefore will not only promise an excellent patron for technologically advanced arms

PRIME MINISTERS FROM BOTH THE SIDES HAVE AGREED FOR THE ISRAELI COMPANIES TO ENTER INTO JOINT VENTURES WITH INDIAN COMPANIES IN DEFENCE SECTOR UNDER MAKE IN INDIA INITIATIVE. BOTH NATIONS CONSIDER IT IMPORTANT TO SET MORE BUSINESS MODELS AND PARTNERSHIPS IN MANUFACTURING AND TRANSFER OF TECHNOLOGY IN THE FIELD OF DEFENCE AND SECURITY

However, the chemistry between Prime Minister Modi and his Israeli counterpart Benjamin Netanyahu has been an important ingredient in boosting bilateral relations between the two nations. The friendship became more robust with PM Modi's visit to Israel in 2017 and Netanyahu's visit to India in January 2018. Both nations signed scores of agreements aimed at boosting cooperation in the field of military-security and various other fields.

India-Israel relationship working along two major planks namely military-security



Mr Modi with Israeli PM Netanyahu during his visit to Israel in 2017



and surveillance equipment; but Israel's willingness to share technical know-how (more than the other suppliers) will also help mould the strong defence apparatus. In the notion of this, Israel is the second-largest defence supplier to India after Russia. And India still continues to have a soft-corner for Palestine. Certain newspapers in Israel noted during Modi's visit that while the Prime Minister's "focus" was on establishing stronger Indo-Israeli ties, President Mukherjee in the past had been vocal about the country's pro-Palestinian leanings.

India has signed a \$2 billion defence deal with Israel for

purchasing trailblazing medium-range surface-to-air missile systems (MRSAM). India's relations with Israel have been growing extensively and another agreement has only been shaping the future of both these nations' relations with each other. Both nations have their own regional issues and it is threatened by neighboring countries with political unrest which result in the cooperative relationship as a strategic imperative.

INDIA-ISRAEL DEFENCE DEAL: OPPORTUNITIES IN ABUNDANCE OR WITH LIMITED OPPORTUNITIES?

During Prime Minister Modi's visit to Israel in 2018, Israeli Prime Minister Netanyahu quoted: "I remember what you (PM Modi) told me in our first meeting- when it comes to India and Israel relations, the sky is the limit. But now, prime minister, let me add even sky is not the limit". However, limits to the cooperation are visible especially in the field of defence deal but both sides need to work on resolving the sensitive issues happening in the Arab world.

The overall relationship between both nations getting stronger day-by-day which is a sign of mature partnership. India's vote at the UN against US President Donald Trump's decision on Jerusalem and also reported cancellation of the Spike anti-tank guided missile deal did not change the relationship between both the countries. Israeli Prime Minister Netanyahu himself pointed out, "I don't think it [India's UN vote] materially

changes the tremendous flowering of relations between India and Israel."

CONCLUSION

Recent marginalisation of the Palestinian issue has immensely benefitted India-Israel relationship. The decreased focus on the Palestinian issue has enabled India-Israel better ties and both the nations have been pursuing their broader interests in the West Asia. In 2019, India elected Modi as Prime Minister and the emergence of Modi will boost the bilateral trade with Israel.

In April 2019, Benjamin Netanyahu won Israel's election and re-elected as PM, however, failed to form a government and Israel will have re-election. This short term political unrest of Israel will not be going to have a major impact in India-Israel relationship, but certainly will be good for India if Benjamin Netanyahu comes to power. Both the leaders chemistry will augur well.

The India-Israel relationship must continue to expand in the coming years. The defence is dominated part of India-Israel relationship, but apart from that Israelis have shown great progress in several other fields such as industry, agriculture, science & technology, and water management which will bolster the relationship between both the nations. Mutual interests between the two sides run deeper as both Israel and India are more willing to have better future cooperation even if the Palestinian issue regains prominence. ■

-The authors are strategic affairs expert and have presented their papers at various international fora

INDIAN ARMY RESTRUCTURED



ew Delhi. In a move aimed at making the Army agile, lethal and capability-based to face the challenges of future warfare, the Defence Ministry cleared the proposal to restructure the Army Headquarters under which the Army would have three Deputy Chiefs and 229 officers would be optimized from Army Headquarters and relocated to units and formations of the field armies giving teeth to the Army.

“The Defence Ministry has approved the proposal to restructure the Army Headquarters. Now we will start the implementation of the plans,” Army Chief General Bipin Rawat said.

Restructuring is part of transformation plans of Army chief Gen Rawat for the reorganisation of the army headquarters which would result in saving of 20 per cent officers posted in Delhi who would now be posted to field fighting formations along the borders.

According to this restructuring, the army will get a third deputy chief who would be known as Deputy Chief (Strategy) and look after all the important directorates of military intelligence, information warfare and



operations in the force.

Information Warfare will also get a major boost as an officer of Lt Gen rank would monitor this aspect along with cyber warfare.

Currently, there are two deputy chiefs in the Army. The first Deputy Chief is known as Deputy Chief

(Planning and Systems) who looks after capital procurement in the force while the second one is known as Deputy Chief (Informations systems and Training), officials said.

According to the restructuring which is the brainchild of the Army Chief, the Deputy Chief (Planning and Systems) would be redesignated as Deputy Chief (Capability Development) and this assumes significance as the officer would be in charge of entire modernization and revenue procurement of the Indian Army. Besides, the Army will do away with the post of the Director General of Rashtriya Rifles who would now be shifted to Northern Command in Udhampur and will now be looked after by a Major General rather than a Lieutenant General.

To look after the cases of corruption and ensure probity and transparency, a new officer of the Major General rank has been appointed under the Army Chief who would report directly to him while another post has been created for the Army who will look after human rights.



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SKILL DEVELOPMENT

Dynamatic spearheads “Aerospace & Defence Skill Development”



Dynamatic Technologies Limited designs and builds highly engineered products for Automotive, Aerospace & Defence, Hydraulic and Security applications. With manufacturing facilities in Europe and India, we are able to meet customers’ exacting requirements across 6 continents. We are geared towards providing innovative and creative solutions to our customers on a continuous basis.

Aerospace & Defence Industry in India has opened up with its manufacturing businesses and is on the rise. Bangalore has remained the hub of Aerospace Industries. While the Organisations are setting up manufacturing facilities, it is required to hasten and build a pipeline of skilled workforce who are industry ready.

In order to bridge this gap between the Job Opportunities for the young Technicians v/s Skilled Workforce Availability for the Aerospace industry, Dynamatic has set up an exclusive ‘Aerospace Skill Development Centre’ at Government ITI Devanahalli, Bangalore.

As an extension of Prime Minister Narendra Modi’s “Make in India” vision and Skill Development activities, Dynamatic Technologies has partnered with the Director General, Ministry of Skill Development and Entrepreneurship, Government of India and with the Government of Karnataka, for Skill Upgradation at the Industrial Training Institute (ITI), Devanahalli, and to participate in the management of the ITI on a Public Private Partnership basis.

Dynamatic has developed a Training curriculum for ITI students preparing them for Aero-structural work. ITI Devanahalli to impart requisite training in Aerospace & Defence related areas to ITI students, under the guidance of Institute Management Committee (IMC). This training provides necessary exposure into the aero-structural activities and helps the students to get into employment with confidence in any Aerospace & Defence industry.



Aerospace Skill Development Center, Bangalore



Shopfloor of the Aerospace Skill Development Center

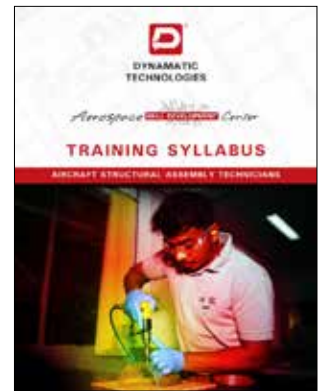
Dynamatic, as the Chairman of IMC, has also developed a bridge course of three months' duration to develop ITI/Diploma holders to take-up work in any aerospace industry. This short term course includes imparting training in theoretical & practical subjects such as Drilling, Riveting, Sealant Application, Inspection Material Handling, Storing, Packing & Administration etc.

First batch of students have been passed out and have been absorbed by various companies. This has not only given job opportunity to the students, but the aerospace companies have got industry ready skilled workforce.



Graduation of 1st Batch Bridge Course Students

Dynamatic strongly believes such customized training focused on Aerospace & Defence related areas will enhance the skill and competency of the young technicians and help the industry with readily available adequate trained skilled workforce. This bridge course enables the students to work on shop floor independently with confidence and rise in their career path.



Dynamatic Technologies received the **Special Commendation from the Institute of Directors for the Golden Peacock National Training Award 2019** held in Dubai on 6th March 2019.



Development Center



Practical Training

JAISHANKAR'S RISE AS EAM: INDIA'S MULTI-FACETED FOREIGN POLICY TO WITNESS MORE DYNAMISM

The appointment of former Foreign Secretary Subrahmanyam Jaishankar as External Affairs Minister (EAM or Foreign Minister) will provide a new direction to Indian Foreign Policy and therefore be welcomed by major powers across the world as a positive development

By **DR TARA KARTHA**

N

ew Delhi. The Modi Government's new cabinet appointments are obviously of interest to a great many people not only in India, but also in the region and outside in terms of the signalling the direction that the new dispensation is likely to take. Nowhere is this more critical than in the area of foreign policy. The appointment of former Foreign Secretary Subrahmanyam Jaishankar as External Affairs Minister (EAM or Foreign Minister) will therefore generally be welcomed by major powers as a positive development since they will be dealing with a man who knows his business and has learnt along the way.

They will equally realise that as a former Foreign Secretary with a zero political base, he is there because of the trust factor from the top. That is a winning combination – expertise, and the backing of the man who counts.

Many eulogies will be written about the new Foreign Minister, most of them well deserved. This article focuses only on the one aspect of his thinking which is central to how India conducts its foreign policy. In an interaction with a Think Tank in April, Mr Jaishankar had outlined some of his thoughts, where he warned against an 'immutable' foreign

policy which ignored the reality of a highly dynamic international environment. Simply put, foreign policy practitioners had to chop and change all the time, not just using all levers available, but also taking up far wider issues than before. In that he included the 'securitisation of foreign policy', a statement that would have had his predecessors thrown up their hands in horror. The Ministry of External Affairs (MEA), with some brilliant exceptions, been very 'immutable' indeed, wedded to precedent and protocol in equal measure. Security was a bad word, implying almost a breakdown of Ministry's core belief system which was directed towards avoidance of conflict at almost any cost. The security aspect was usually left to the 'army wallas' as one former Foreign Secretary put it.

Young cadres of the Ministry had ample opportunities to see this 'securitisation' at work in policy matters. As Foreign Secretary, Jaishankar oversaw the marriage of an expanding relationship with the United States with the speeding up of



Dr S Jaishankar during his swearing-in-ceremony as External Affairs Minister



Dr Jaishankar in a delegation-level talks during his stint as Foreign Secretary

interoperability with the US Navy in particular and later the eventual enunciation of a “Indo-Pacific’ concept. That was a classic forging of diplomacy and security. The hard nosed but quiet diplomacy that marked the Doklam stand off with China in June 2017, when troops faced each other for 73 days, was another side of the same coin, sending a signal that India would not back off, but was not desirous of escalation.

The clarity in what India wanted to project, was evident in keeping the US out of the picture, with Delhi signalling that it would deal with the situation on its own strength. Then there was a shrewd manoeuvring apparent in the inclusion of Japan into the Indo-US Malabar exercises in July 2017, even while balancing this with a Russia-India-China (RIC) dialogue and the BRICS summit in the same year. Since then, under a new Foreign Secretary, the Ministry has chosen the path of a ‘summit’ with China, even while showing its hackles in preserving its sphere of influence in Maldives safe from Beijing. Suddenly India was on the world stage as a regional power that was not afraid to speak its mind and act on it.

Critics will rather reasonably point being that it’s not a lot of use being muscular in diplomacy

even while being weak at the knees in hard defence capabilities, a point highlighted by the Parliamentary Standing Committee on Defence last year. This misses the point. Securitisation doesn’t mean running to get a gun every time the situation hots up. It means using diplomatic means to strengthen your security clout so you don’t have to pull the trigger. ‘Securitisation of diplomacy’ sits very well with a government that has not just the parliamentary strength, but also the conviction to carry its policies through. While there are any number of challenging issues that are coming up, one immediate event will demand a decision.

The Shanghai Cooperation Organisation (SCO) meeting in Bishkek is due in June, and there is speculation whether Prime Minister Modi will meet his Pakistani counterpart on the sidelines. On one level, such a meeting is a wasted exercise, since nothing at all has changed in Pakistan, with the military holding the reins even more firmly. Pakistan’s stated desire to resume talks is due to its seriously jeopardised economic

and diplomatic situation. On one hand it makes sense to ignore it altogether and keep political capital for other uses. On the other hand, post Balakot, a certain message has been sent. If there is a sense that this message has been received and acted upon, then it’s as well to move towards offering Pakistan help to exploit its geographical position through connectivity projects including roads, pipelines and power across the Central Asia



Jaishankar with former Secretary of State Rex Tillerson during the former’s visit to US in 2017

and beyond. That will not change the Pakistani mindset or internal power imbalances. But it will give a strong profit motive in maintaining peace.

Meanwhile it is hoped that the new Foreign Minister will again sweep a brisk broom in the Ministry, by throwing out the over reliance on protocol and tepid prose, to allow the very real talent in the Ministry to race ahead. Don’t just think outside the box. Throw out the box itself. ■

– The author is a Distinguished Fellow at IPCS. Earlier, she was Director, National Security Council Secretariat



SCO SUMMIT 2019: A GLIMPSE OF MODI 2.0 STRONG FOREIGN POLICY PUSH

With the participation in recently-concluded Shanghai Cooperation Organisation (SCO), Prime Minister Narendra Modi has sent a strong signal about his government's foreign policy that goes stronger with stronger regional bloc

By **RANA ROY**

T

he presence of India and Prime Minister Narendra Modi was clearly felt by the global leaders in two days Shanghai Cooperation Organisation (SCO) Summit 2019. After the re-election it was first multi-lateral summit where Modi Government clearly indicated his strong foreign policy maintaining the sovereignty of the country.

In the 19th SCO Summit, the leaders of eight full-fledged members including China & Russia and other Central Asian countries discussed on various issues in Bishkek, Kyrgyzstan on June 13 and 14 and concluded



Prime Minister Narendra Modi at the Plenary Session of SCO Heads of State/Government meeting in Bishkek, Kyrgyzstan

There were no meetings or talks between both the leaders of two nations. Prime Minister Modi had his plenary session of the SCO Summit on day two presenting his views and India's stand on various issues. Few updates on the issues discussed in SCO Summit and India's stand on those issues are as under:-

CO-OPERATION AGAINST GLOBAL TERRORISM

The member countries had a consensus on the issue and they urged the international community to strengthen the United Nations Charter and principles of international law without any double standard and respecting each-other's sovereignty. They also had a consensus regarding the adoption of the Comprehensive Convention on International Terrorism. The members supported the effort of Afghanistan government for restoring peace in the region. Syria situation to be resolved through dialogue maintaining

Syria's sovereignty and independence. India stood for a terrorism free society and PM Modi called for an international conference on the challenges faced to combat terrorism.

In his speech PM Modi though did not mention the name of Pakistan, but categorically said -"Countries that sponsor, aid and fund terrorism must be held accountable." In his bilateral talk with Xi Jinping, Mr Modi firmly mentioned that Pakistan is yet to take any concrete action to create a terror free atmosphere and it is necessary to facilitate forging ties between India and Pakistan.

ECONOMY AND TRADE

The member countries agreed to increase their cooperation and participation in trade, finance, investment, innovation and technology. While during the on-going trade war between the US and China, PM Modi mentioned: "We need a rule-based, transparent, anti-discriminatory, open and all inclusive WTO-centred multilateral trading

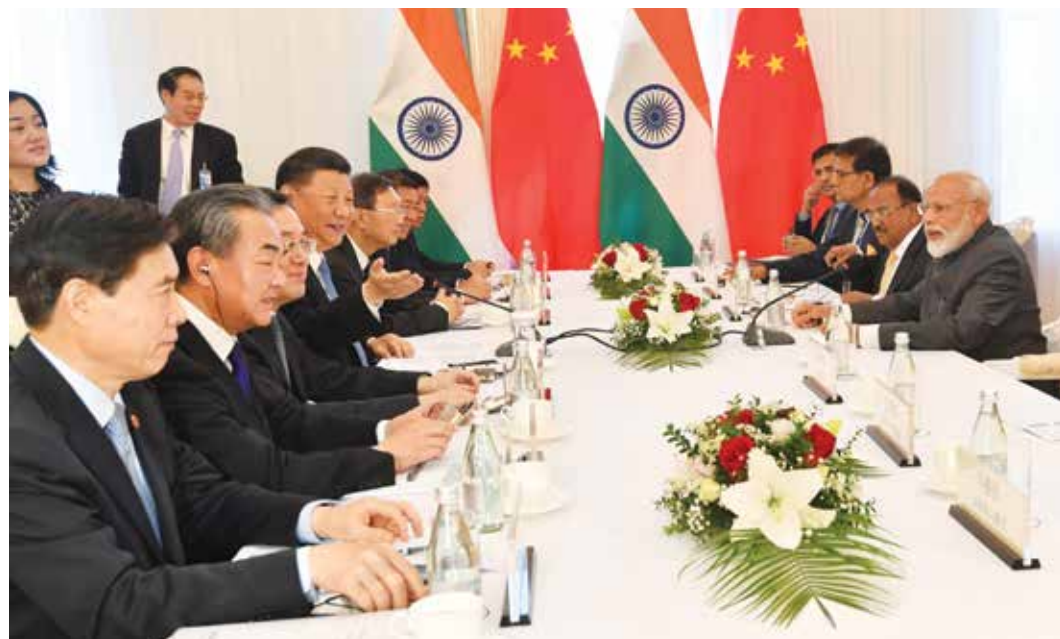


"WE NEED A RULE-BASED, TRANSPARENT, ANTI-DISCRIMINATORY, OPEN AND ALL INCLUSIVE WTO-CENTRED MULTILATERAL TRADING SYSTEM FOCUSED SO THAT THE INTERESTS OF EVERY COUNTRIES SPECIALLY THE DEVELOPING ONES CAN BE TAKEN CARE OF"

- PM MODI

with focused outcome. On the sidelines of SCO Summit, PM Modi had bilateral meetings with Chinese President Xi Jinping and Russian President Vladimir Putin on day one. In both the meetings, talks were held to improve the economic, cultural and bilateral relations with the two countries.

While different countries had different approach in the SCO Summit, there were reports of Pakistan PM Imran Khan breaking the diplomatic protocol at the opening ceremony, being seated while everyone else were standing to welcome the dignitaries entering the hall. There were reports of pleasantries exchanged between Mr Modi and Mr Khan, however those were very casual and not good enough to portray any improvement in the relationship between the two countries.



Mr Modi with Chinese President Xi Jinping in a bilateral meeting on the margins of SCO Summit

system focused so that the interests of every countries specially the developing ones can be taken care of”.

CONNECTIVITY AND ROAD PROJECTS

Though in his speech PM Modi highlighted the importance of connectivity, however, he refused to endorse China’s connectivity programme. In Bishkek declaration, six-member backed China’s infrastructural Belt & Road Initiative (BRI) without naming China, PM Modi maintained that such initiatives must be based on “respect for sovereignty, regional integrity, good governance, transparency... and reliability”. To mention, India has protested BRI because the China-Pakistan Economic



Mr Modi addressing India-Kyrgyzstan Business Forum

Corridor (CPEC) passes through Pakistan occupied Kashmir (PoK). However significantly Chinese President Xi Jinping told Prime Minister Narendra Modi on June 13 that India and China “do not pose threats” to each other.

INDIA-KYRGYZ BUSINESS FORUM

On the sideline of SCO Summit, in Bishkek, Prime Minister Modi and Kyrgyz President Sooronbay Jeenbekov jointly addressed the India-Kyrgyz Business Forum which is an endeavour to promote the commercial linkages between the two nations. PM Modi announced the USD 200 million lines of credit for Kyrgyzstan and said the two sides have decided to upgrade their strategic ties to a partnership level. Both the countries have prepared a five-year roadmap to increase the bilateral trade. The two countries



Prime Minister Modi with Heads of State/Heads of Government of SCO Member States in Bishkek

shared views on several issues and they have signed 15 agreements, including on the Double Taxation Avoidance Agreement (DTAA), Bilateral Investment Treaty (BIT), and MoUs in the field of Health, Security, Defence and Information and Communication Technology.

In this SCO Summit, Prime Minister Narendra Modi met president of Kazakhstan Kassym-Jomart Tokayev on June 14 and also held bilateral meeting with Iranian President Hassan Rouhani. PM Narendra modi also had a 'pull-aside' meeting with President Alexander Lukashenko of Belarus and President Khaltmaagiin Battulga of Mongolia.

On the way forward to SCO Summit 2019, it was announced that Russian Federation will host a regular SCO Heads of State Council Meeting. For India, the Summit seemed to be the beginning of better ties and co-operation with the global powers. There will be a Russia-



Mr Modi with Kyrgyz President Sooronbay Jeenbekov on the sidelines of SCO Summit 2019

India-China (RIC) trilateral meeting on the sidelines of the G-20 Summit in Osaka, Japan on June 28- 29 this year. Russian President Vladimir Putin invited PM Modi to be the main guest at Eastern Economic Forum in Vladivostok, Russia in early September, and Mr Modi has accepted the invitation. The two-day visit in SCO Summit

2019 was packed with bilateral meetings, discussions and ties. It is very much apparent that PM Modi has started his journey to conquer the world with SCO Summit 2019 and it is just a new beginning for the newly re-elected Modi government. ■

-The author is a Strategic Affairs and Central Asia expert

OVERCOMING THE FICV JINX: A SIMPLISTIC SOLUTION

The task is cut out for the new government to foresee an early manifestation of FICV through prioritised, responsible, responsive decision making and adequate funding. It will have to blend its policies with twin objectives – national prosperity aligned with national security

By **AJIT KUMAR THAKUR**

It is hard to fathom the ongoing delay in FICV (Future Infantry Combat Vehicle) project. Despite having spent almost a decade on planning the blueprint, the project has not taken off yet and deliberations are still on to arrive at a roadmap that is well planned, acceptable and executable with time-line urgency roadmap. The fate of FICV project still hangs in uncertainty – will it move forward and come to its logical end or will final curtains be put on it under the safe cover of quick fix import solution.

Why this stalemate? As a keen observer on the other side of the fence, it has been taking a heavy toll on my thought process and hopefully the same may be the case with others as well. Can India as a nation that has been striving hard to strengthen its strategic autonomy and establish itself as a key player in the global new order, be at leisure with a laid back attitude? No, would be the unanimous response. A nation's strategic autonomy can't be achieved until and unless it achieves the goal of self-reliance in its defence capability along with an effective military deterrence build-up. After all, these two are the most critical aspect that forms the core of strategic autonomy.

The project originally was to be executed as a 'Make' project under the Defence Procurement Policy

2008 involving indigenous design, development and production for procuring the Future Infantry Combat Vehicle. Conceived as a system-of-system project, the focus was to have FICVs with advanced technical features and operational capabilities, embedded with challenging technologies and lethal weapon systems. The box items provide a glimpse of the key operational and technical parameters:

Later, after being tossed up for years as tennis ball from one end to other and getting smashed/hit as a shuttle cock, project FICV finally landed into the Make-II category with an assumption that henceforth, the project will be fast-tracked and further speed up the modernisation of the armoured vehicles of the Indian Army. Additionally, it will also bring

THE SALIENT OPERATIONAL CAPABILITIES OF FICV

FIRE POWER

- (i) Long range capability to destroy enemy tanks
- (ii) Accurate cannon & machine gun fire power to destroy enemy ICV/APC, soft skinned vehicles and infantry soldiers
- (iii) Ability to destroy/damage significantly field fortifications
- (iv) With significant enhanced armament to provide direct fire support to the dismounted infantry
- (v) Infantry stick capable to fire from sides and rear while mounted.

MOBILITY

- (i) Matching mobility with all current and Future Main Battle Tanks (MBT) over all kinds of terrain.
- (ii) Amphibious capability
- (iii) Transportable by road, rail and by in-service aircrafts of IAF.

PROTECTION

- (i) Capability to transport a combat mechanised infantry section along with crew of three.
- (ii) All round protection from small arms fire and medium artillery splinters along with protection from direct cannon fire in the frontal arc.
- (iii) Protection from under belly mines and IEDs
- (iv) Possession of active and passive protection systems to include stealth and signature management technologies
- (v) Ability to operate in NBC environment and protect the crew and stick for at least four to six hours
- (vi) Smoke generation ability on its own to hide its own movement.

COMMUNICATION

- (i) Arrangements to communicate on two to three radio nets.
- (ii) Intercom facility for the crew as well as the stick.
- (iii) Stick's ability to communicate with the FICV when dismounted.

NAVIGATION

GPS and/or Inertial Navigation System based advanced land navigation facility.

REPAIR & MAINTENANCE

High mission reliability and should facilitate easy repair and maintenance under field conditions.

FICV: KEY POINTERS

Projected Induction: Around 2,600 FICVs

Estimated Project Cost: \$8 billion / Rs 60,000 crore approx.

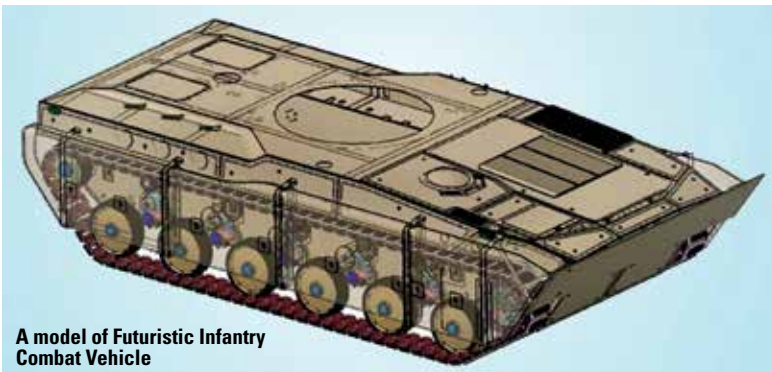
Purpose: Modernisation drive of the Indian Armed Forces to replace old Russian-origin BMP-2 Infantry Combat Vehicles (ICVs).

Production Category: Make – II under Make in India initiative with active Private Sector Involvement.

Indigenous Content: 40 per cent (40%)

Project Completion Time: Initially planned to be completed by year 2025, it's now expected to be completed by year 2026-27. The complete fleet replacement will be earliest by 2040.

Life Span: 32 years



A model of Futuristic Infantry Combat Vehicle

in the energetic involvement of the private sector in the defence sector and Make in India initiative. Under Make -II, there will be no government funding for prototype development purposes, but there will be assurance of orders on successful development and trials of the prototype. It was a major shift to focus on development of equipment/system/platform or their upgrades or their subsystems/sub-assembly/assemblies/components.

This shift of category change from Make to Make-II highlighted the major differences of opinion between the end user (Indian Army) and the Ministry of Defence (MoD). Moreover, in the absence of clarity and lack of any commitment from the end user regarding its requirement of the vehicles, the industry too has been reluctant to participate in the project. The wait

and watch game continues.

At present, Indian companies that have sent in their proposals to MoD are Titagarh Wagons, Reliance Defence and Engineering and Mahindra and Mahindra. And in due course, subject to approval some of the potential Original Equipment Manufacturers (OEMs) that include Russian companies under the umbrella of Rosoboronexport, US-based General Dynamics and German Rheinmetall among others will join the fray as strategic partners.

Thus, it becomes clear that project funding issue and indecisiveness to spell out the actual order requirement of the FICVs were the major factors among others that kept the project off the track till date. Though with Make-II, the initial funding issue has been resolved (till prototype development); clear numbers of the

FICV requirements are still missing. Taking the aforementioned into consideration, the chart below is an attempt to present a simplistic solution to break the complex FICV jinx. It is for the experts and people at the helm of affairs to decide its worthiness with their own interpretation.

As mentioned above selection of two winners at the design selection will make way for competitive playing field and will help in building a vibrant defence ecosystem in the long term. Bringing in academia and start-ups through a special design competition into the play would be a plus. Further, with declaration of the actual requirement number of FICVs at the design selection or

FICV: KEY TECHNICAL PARAMETERS

PORTABILITY

Capable of being air transported by the in-service aircrafts, broad-gauge railway, existing tank transporters and by in-service LSTs.

AMPHIBIOUS CAPABILITY

Amphibious and should have positive buoyancy without any external aids with full comb load.

OPERATING RANGE

Minimum 400 km of range of operation without external fuel tanks.

FIRE POWER

- (i) ATGM - All weather, day-night third generation.
- (ii) Main Gun: The system should have the capability of firing different types of ammunition.
- (iii) Automatic Grenade Launcher (AGL).
- (iv) Medium Machine Gun (MMG).
- (v) Integrated fire control system with requisite sights and complimentary DRI ranges.

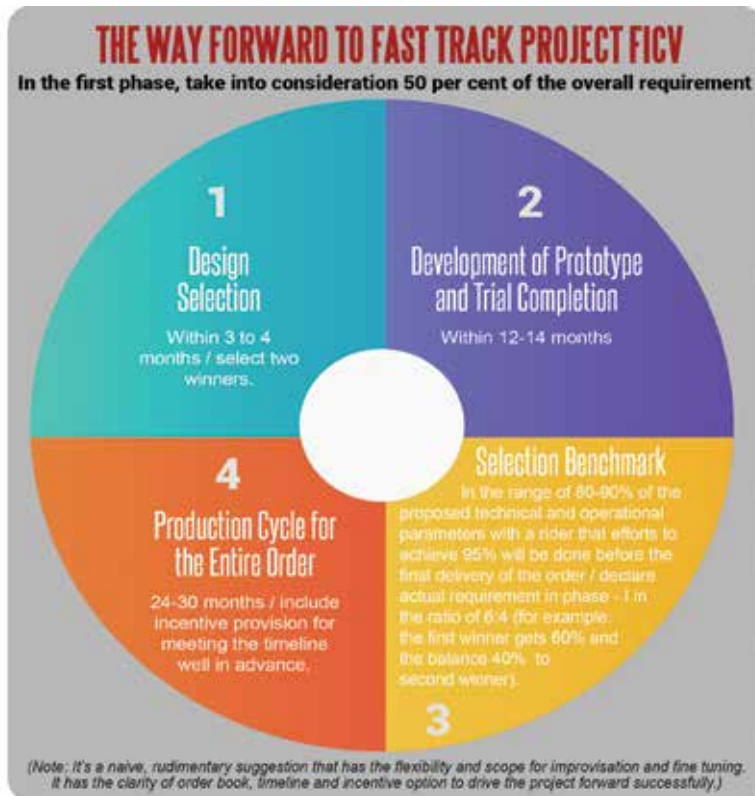
PROTECTION

Adequate protection to withstand the increased lethality of the battlefield through current proven technologies.

CARRIAGE CAPACITY

Provision to carry a crew of three and a stick of minimum eight personnel with combat loads.

UNDER MAKE -II, THERE WILL BE NO GOVERNMENT FUNDING FOR PROTOTYPE DEVELOPMENT PURPOSES, BUT THERE WILL BE ASSURANCE OF ORDERS ON SUCCESSFUL DEVELOPMENT AND TRIALS OF THE PROTOTYPE. IT WAS A MAJOR SHIFT TO FOCUS ON DEVELOPMENT OF EQUIPMENT/ SYSTEM/ PLATFORM OR THEIR UPGRADES OR THEIR SUBSYSTEMS/ SUB-ASSEMBLY/ ASSEMBLIES/ COMPONENTS



prototype selection stage (after successful completion of trials) and proportionate distribution of the order to both participants, efficient execution of the order and timely delivery of the FICVs will be fully secured. The incentive provision will help overcome the

existing trust deficit and enhance the confidence level of the industry to take up the future challenge.

When the incumbent government starts a new inning, the task will be cut out for it to foresee an early manifestation of FICV through prioritised, responsible,

responsive decision making and adequate funding. It will have to blend its policies with twin objectives – national prosperity aligned with national security.

The new and strong India has chosen modernisation and it demands from government a sensible purpose that's driven by right perspective. Therefore, in order to streamline defence procurement, capability building and re-energise the Indian defence ecosystem – the future economic policy will have to take defence (national security) into its ambit along with the current socio-economic-welfare objective. Doing so may require lots of hat rolover, change in perspective, mindset alterations and inclusive cooperation for initiating the sprint run into the future.

The massive mandate and faith imposed in the incumbent government for another full term, instils a reasonable optimism that massive reforms/ changes, some being radical ones are on the anvil to be unleashed by the determined government/ executives sooner than later. Hopefully, the FICV jinx too will be broken and achieve its realistic optimisation. ■

INTROSPECTIVE THOUGHTS

Is the FICV concept in its present form heavily flawed?

Why a new ICV was planned when the Army had the complete wherewithal for BMP2?

It would have been more pragmatic to select BMP2 as the base design for FICV and then designs sought through competition. The way Russians have incrementally evolved their tanks from T34 to T90, Indian FICV concept should have replicated this philosophy and hopefully, the end result would have been positive.

Do we have the required bandwidth to make FICV a reality? Whether it's Make I or Make II, it seems that in reality FICV might never come through. Many reasons are in play...the lack of clear roadmap, funding issues, trust deficit among various stakeholders and varied opinion in deciding the design (everyone has its own). Hence, evaluation will be tricky and problematic.

Have we complicated the FICV issue beyond normal or in the first place a flawed concept altogether? We need to seek an answer to these on priority.



INDIAN AIR FORCE SUCCESSFULLY TEST FIRES BRAHMOS MISSILE FROM SU-30 MKI AIRCRAFT

The air launched BrahMos missile is a 2.5 tonne supersonic air to surface cruise missile with ranges of close to 300 km, designed and developed by BAPL



New Delhi. Indian Air Force (IAF) successfully test fired BrahMos air version missile from its frontline aircraft Su-30 MKI fighter aircraft on May 22. The launch from the aircraft was smooth and the missile followed the desired trajectory before directly hitting the land target. The air launched BrahMos missile is a 2.5 tonne supersonic air to surface cruise missile with ranges of close to 300 km, designed and developed by BrahMos Aerospace Private Limited (BAPL). The IAF became the first Air Force in the world to have successfully fired an air launched 2.8 Mach surface attack missile of this category on a sea target on November 22, 2017.

Today's was the second such live launch of the weapon. The integration of the weapon on the aircraft was a very complex process involving mechanical, electrical and software modifications on aircraft.

The Indian Air Force has been involved in the activity from its inception. The software development of the aircraft was undertaken by the IAF engineers while Hindustan Aeronautics Ltd (HAL) carried out mechanical and electrical modifications on the aircraft. The dedicated and synergetic efforts of the IAF, DRDO, BAPL and HAL have proven the capability of the nation to undertake

such complex integrations.

The firing could be successfully undertaken with dedicated support from Indian Navy by way of ensuring availability of a large number of monitoring ships to ensure range safety clearance.

The BrahMos missile provides Indian Air Force a much desired capability to strike from large stand-off ranges on any target at sea or on land with pinpoint accuracy by day or night and in all weather conditions. The capability of the missile coupled with the superlative performance of the Su-30MKI aircraft gives IAF the desired strategic reach.

RAYTHEON WINS \$234 MILLION US NAVY CONTRACT FOR 23 JOINT PRECISION APPROACH AND LANDING SYSTEMS

Paris. Raytheon won a four-year \$234 million initial low-rate production contract from the US Navy to outfit all of its nuclear-powered aircraft carriers and amphibious assault ships with 23 Joint Precision Approach and Landing Systems. JPALS is a GPS-based precision landing system that guides aircraft to precision landings in all weather and surface conditions.

"The US Navy understands how JPALS contributes to their mission success and safety of its people," said Matt Gilligan, vice president of Raytheon's Intelligence, Information and Services business. "Other military services could also benefit from the system's ability to safely land both fixed and rotary-wing aircraft in almost any low-visibility environment."

Since 2018, US Marine Corps F-35B Lightning II fighter pilots have used JPALS to guide them onto the USS Wasp amphibious assault ship during deployed operations in what US Navy Captain B. Joseph Hombuckle III, program manager, Naval Air Traffic Management Systems Program Office called "the most difficult conditions on Earth."

Earlier this year, F-35B pilots participated in two demonstrations of a new expeditionary version of the JPALS system that brings the same precision capability from sea to shore. The proof-of-concept events showed how the GPS-based system could be reconfigured into a mobile version to support landings in a traditional airport setting.



FIRST EVER INDIA-SOUTH KOREA 2+2 DIALOGUE TO BOLSTER DEFENCE AND STRATEGIC TIES

The upcoming India-South Korea 2+2 dialogue, which is the manifestation of India’s “Act East Policy” and Korea’s “New Southern Policy (NSP)”, will bolster the defence and strategic ties between the two nations. The dialogue is expected to concentrate on the issues of mutual importance in the domestic, regional and global context

By **DR BHUSHAN KUMAR**



The first-ever India-South Korea 2+2 dialogue is scheduled to take place in coming months. The defence secretaries of both the nations were expected to meet in May 2019. However, it couldn’t materialise following the rigorous ongoing process of new government formation. It’s expected that a new date will soon be announced.



BACKGROUND OF INDIA-SOUTH KOREA 2+2 DIALOGUE

The prospect of India-South Korea 2+2 dialogue was initiated during Prime Minister Narendra Modi’s State Visit to the Republic of Korea (ROK) from on May 18-19, 2015. Modi visited ROK at the invitation of former South Korean President Park Geun-hye. During the visit a Joint Statement on India-ROK Special Strategic Partnership’ was issued and both sides agreed to establish a joint Vice-Ministerial level defence and foreign affairs dialogue in the “2+2” Format.

India-South Korea 2+2 dialogue is an extension of India and ROK Strategic Partnership. India sees South Korea as one of its most important strategic allies in its

The upcoming defence secretary level 2+2 dialogue is important for many reasons. India’s “Act East” Policy and South Korea’s “New Southern Policy (NSP)” have many prospects to contribute to peace and stability in both regions as well as in the Asia Pacific. The strategic aspect of India’s “Act East” Policy has been gaining ground with the focus being put on the wider political-security issue. The India-Korea 2+2 dialogue is the manifestation of India and the Republic of Korea’s (ROK) strategic goals.



PM Modi with South Korean President Moon Jae-in at the Joint Press Statements in Seoul, South Korea



Prime Minister Narendra Modi on State Visit to South Korea in February, 2019

“Act East” policy, and both nations recognise the value of the bilateral relationship which will result in bringing peace, stability and security in the Asia Pacific Region (APR). On the other hand, South Korea looks at India not just as an economic partner but a key strategic ally, which will help contribute peace and security in both the regions. South Korean President Moon Jae-in under ‘New Southern Policy’ has realised the importance of India in South Korea’s foreign policy matters, and understands the role India can play as a key player to strengthen the peace and prosperity on the economic and strategic fronts in the Asia Pacific Region.

India and South Korea made a remarkable progress from bilateral consular relations in 1962 to the present. In recent years, both

nations have become truly multi-dimensional in their exchange of interest which has resulted in significant partnership in the Asia Pacific Region. South Korea has been a part and parcel of the maritime strategy and naval diplomacy of India, from India’s “Look East Policy” to the “Act East Policy”. On the same account South Korean policy of “New Asia Initiative” and recently “New Southern Policy (NSP)” reaffirm to confirm and expand South Korea’s role as an emerging middle power, by assuming a pivotal role in representing the interests of Asian nations on the world stage.

South Korea President Moon Jae-in made a State Visit to India in July 2018. During this visit President Moon and Prime Minister Modi shared a vision for peace and

prosperity between the two nations and agreed to strengthen existing bilateral dialogue mechanisms under the much awaited 2+2 dialogue. Under this 2+2 dialogue, defence secretaries of both the nations will make a roadmap for the future strategy and a cooperative vision for the Indo-Pacific Region (IPR). South Korea becomes the third country to hold 2+2 dialogue with India, the first two being Japan and the United States.

PROSPECTS OF 2+2 DIALOGUE AND DEFENCE AGREEMENTS

Defence companies from South Korea have been establishing a crucial India-Korea defence industry cooperation. India is one of the world’s biggest

DEFENCE COMPANIES FROM SOUTH KOREA HAVE BEEN ESTABLISHING A CRUCIAL INDIA-KOREA DEFENCE INDUSTRY COOPERATION. INDIA IS ONE OF THE WORLD’S BIGGEST ARMS IMPORTING COUNTRIES AND SOUTH KOREAN DEFENCE COMPANIES WORKING HARD WITH INDIAN LOCAL PARTNERS TO GRAB THE OPPORTUNITIES UNDER INDIA’S MAKE IN INDIA INITIATIVE

BOLSTERING TIES

arms importing countries and South Korean defence companies working hard with Indian local partners to grab the opportunities under India's Make in India initiative.

In August 2018, ROK Defence Minister Song Young-moo in a statement said: "South Korea is reviewing a variety of measures to establish a special defence industry cooperation partnership with India. South Korea is highly interested in the plans to set up defence corridors in Tamil Nadu and Uttar Pradesh. South

Korea has exported FA-50 light attack aircraft, based on KT-1 Basic Trainer and T-50 Advanced Trainer to many countries, and shows its interest to make business with India."

India's private defence major Larsen & Toubro has signed a deal with the South Korean firm Hanwha Techwin to jointly manufacture guns like K9 Vajra 155mm/52 caliber. Hanwha CEO Hyun Woo Shin stated, "A total of 100 guns will be produced, of which 10 will be sent from Korea. The remaining 90 units will be

assembled in India by L&T." There are several other small and big defence companies from both sides, which are keen on setting up joint collaboration to boost the defence deal and Transfer of Technology (ToT) to increase the production.

India and ROK have also inked a Memorandum of Understanding (MoU) in the shipbuilding for military use under 'Special Strategic Partnership'. India's state-owned company Hindustan Shipyard Limited (HSL) teamed with Hyundai Heavy Industries



Mr Modi and Mr Moon unveiling the bust of Mahatma Gandhi at the Yonsei University in Seoul, South Korea

of South Korea to build five fleet-support ships as well as two strategic operating vessels. In another shipbuilding project, Kangnam Corporation from South Korea provides consultancy, design and technical assistance to India's state-owned Goa Shipyard Limited. Kangnam Corporation will help Goa Shipyard to build 12 mine countermeasures vessels.

India lately demonstrated the "Act East Policy" with the arrival of Indian Naval Ships Kolkata and Shakti in Busan, South Korea. The

Indian Navy Ships participated in ADMM-Plus (ASEAN Defence Ministers Meeting) Maritime Security Field Training Exercise (FTX) in Busan. The kind of partnership both the nations are enjoying will definitely benefit the defence industry from both sides and the upcoming "2+2 dialogue" will surely serve as bedrock for the new development between India and ROK.

However, everything is not going well with India-Korea defence deal. In 2018, India signed a contract with ROK for

the acquisition of K-30 Biho missile developed by the Korean aerospace manufacturer LIG Nex1. The contract was fraught with a controversy of the bidding process. K-30 Biho is considered to be superior to an upgraded Tunguska-M1 model and Pantsir missile system from Russia.

Pressure has been created by some pro-Russian forces within the Indian government. Russia has been a strong and time-tested partner of India. This is the need of the hour that ROK needs to reinvent and revive the bidding process of K-30 Biho, and it is expected that this will come up to the discussion table during India-South Korea 2+2 dialogue. Therefore, the upcoming dialogue will play very a crucial role for both the sides.

CONCLUSION

India and the ROK's first-ever 2+2 dialogue will be focused on bolstering their defence and strategic ties. The dialogue will concentrate on the issues of mutual importance in the domestic, regional and global context. The 'India-Korea 2+2 dialogue' is the manifestation of India's "Act East Policy" and Korea's "New Southern Policy (NSP)". The much awaited India-Korea 2+2 will be a good opportunity for many defence companies from both the countries to enhance and strengthen their partnerships. Defence companies from both sides welcome the first-ever 2+2 dialogue and several important MoUs are likely to be signed during the meeting. This first-ever 2+2 dialogue will undoubtedly open a new road for diplomatic relations between India and ROK. ■

—The author is a Seoul-based strategic affairs analyst

THE KIND OF PARTNERSHIP BOTH THE NATIONS ARE ENJOYING WILL DEFINITELY BENEFIT THE DEFENCE INDUSTRY FROM BOTH SIDES AND THE UPCOMING "2+2 DIALOGUE" WILL SURELY SERVE AS BEDROCK FOR THE NEW DEVELOPMENT BETWEEN INDIA AND ROK



"A TOTAL OF 100 GUNS WILL BE PRODUCED, OF WHICH 10 WILL BE SENT FROM KOREA. THE REMAINING 90 UNITS WILL BE ASSEMBLED IN INDIA BY L&T"

—Hanwha CEO Shin Hyun-Woo

DEALING BANGLADESH STRATEGICALLY: INDIA MUST PERCEIVE AFRESH

India needs to shun off age-old perception regarding Bangladesh, and develop afresh strategic thinking order in the backdrop of changing geopolitics, more importantly in the neighbouring countries of South-Asian region

By **SHIBDAS BHATTACHARJEE**

Baring Pakistan and China, India seems to be accepting too many things for granted in case of other neighbouring nations till date. One of the reasons behind this is obviously the basis on which foreign policy prerogatives of New Delhi were framed; doctrines of Non-Aligned Movement (NAM) and the spirit of the Commonwealth which never allowed evolving India's bilateral and multi-lateral relations with a proper strategic vision. India's relationship with Bangladesh is a case in point in this context. Saga of Indo-Bangla relations since 1971 proves it very well. This becomes crystal clear if things are seen from strategic point of view.

From every parameter, be the threat coming from other side of the border, anti-India elements sneaking into India's territory and vulnerability because of demographic dividend of India at the international border with Bangladesh. Hence, it is logical to see India's state and stature across India-Bangladesh border under this light. What is the state of strategic preparedness of India in this front? Is the existing logistic strength of India enough? What are the challenges and how can these be faced more

effectively with a proper strategic vision and mission? All these are of great significances.

I know that this will be hard to digest for many in this country. This is not surprising considering the conventional perspective with which India judges Bangladesh. But there is logic behind such assessment. To heed the reality, we need to trace back a bit. For India, emergence of sovereign Bangladesh meant ending of Islamabad's rule and losing a lot of strategic ground by Pakistan in the eastern frontier of India.

But, this is one side of the larger picture. How Bangladesh evolved as a radical nation violating the Indira-Mujib pact delineates a different picture and indicates callous approach of Indian leadership regarding larger implications of such developments in the neighbour next-door. Seikh Mujib was also radical at heart and there are lots of incidents that prove this. But process of radicalisation Bangladesh enhanced under General Zia.

Another important point overlooked by Indian leadership was the foreign policy prerogatives of Bangladesh, architect of which was General Ziaur Rahman. In fact, *"under General Ziaur Rahman, Bangladesh perished secularism under military boot and adopted strong Islamic rule. Pakistan which had been unhappy and skeptical about Bangladesh naturally became happy regarding the political*



developments in Bangladesh. Islamisation of Bangladesh under Ziaur Rahman initiated a new relationship between Pakistan and Bangladesh. This was the turning point of India-Bangladesh relations following Dhaka's policies to resume relations with Pakistan and other Islamic nations. China was long been keeping close watch on the affairs in Bangladesh but abstained from direct intervention got the much-awaited opportunity to unfold its strategy regarding Bangladesh in that phase. Bangladesh-Pakistan, Bangladesh-China, Bangladesh-Arab World and Bangladesh-United States relations got fomented by the special initiative taken by General Ziaur Rahman."

Magnitude with which Bangladesh emerged as a threat for India can be understood how Ziaur Rahman shaped things against India's strategic and military interests. Fact is: "Ziaur Rahman made all efforts to build anti-India nexus



North East route used to smuggle cattle into Bangladesh

with both Pakistan and China. His role in Islamabad's policy framing to create disturbance in Punjab during the Khalistan movement, instigating Pakistan to provide logistic support to the insurgent outfits in India's Punjab proved to be a new security and strategic challenge for India in the Western frontier.

Similarly, his policy sabotaged India's interests in the Eastern and Northeastern frontier as far as growing intimacy between Bangladesh and China is concerned..” Similarly, “Bangladesh's Foreign Policy during Ershad regime was the enhanced co-operation between Bangladesh and Pakistan as well

FROM EVERY PARAMETER, BE THE THREAT COMING FROM OTHER SIDE OF THE BORDER, ANTI-INDIA ELEMENTS SNEAKING INTO INDIA'S TERRITORY AND VULNERABILITY BECAUSE OF DEMOGRAPHIC DIVIDEND OF INDIA AT THE INTERNATIONAL BORDER WITH BANGLADESH

as Bangladesh and China which bear great strategic significance for India."

But what is today's reality? *"Bangladesh has already allowed China to use the military and naval bases in its territory. Similarly, pro-Pakistani radical Islamic terror organisations have made bases in Bangladesh. Added to this is the strategy of Pakistan and China to provide logistic support to the India's northeast-based insurgent outfits. Even Sheikh Hasina has proved on repeated occasions that Bangladesh wants to keep relations with India and China-Pakistan following different doctrines. In case of India Bangladesh's policy is mostly rhetorical..."*

Naturally, India-Bangladesh relations are not confined in mere socio-economic issues but very much issue of grave strategic concerns for India as Bangladesh evolved as another breeding-ground of

Islamic terrorism. Many of the insurgent activities unleashed against India so far have been found having Bangladeshi connections. Attitude of Bangladesh Rifles (BDR) towards India has always been suspicious and antagonistic. So also, there are the issues like illegal Bangladeshi immigration, insurgency, smuggling, and more importantly jihadi elements taking shelter in the vast areas across India-Bangladesh. All these show vulnerability of India-Bangladesh border and makes it imperative to look into India's preparedness on the border. *"India lacks in infrastructure in this region. Road and railway connectivity with the international borders with China, Myanmar, Nepal, Bhutan and Bangladesh are still dismal. The region also lacks adequate airport facilities to be used for military purpose to face emergency. The airports built in this region during the World*

War-II and on the backdrop of 1962 Chinese aggression have not maintained to keep operational to use even military purpose. Despite great strategic significance of the Rupsi airport near Gouripur town of Dhubri district, this is now abandoned. Similarly, Coochbehar airport of eastern part of North Bengal has not developed to that level. Even at present the vast area comprising almost 300 kilometres from Hashimara military airport in the newly formed Alipurduar district of North Bengal to Gopinath Bordoloi International airport at Guwahati is bereft of aviation facilities."

So also, important point is the vigilance in the Brahmaputra river. This is a grim reality that *"there is no government vigilance in the vast swathes of chars on the Brahmaputra in Assam.– The total char area in the eight districts of Dhubri, Barpeta, Bongaigaon, Darrang, Kamrup,*



Rupsi Airport, (Airstrip in inset)

Nalbari, Dhemaji and Goalpara is included in government records. The remaining other districts of the State have many chars on the Brahmaputra, but these chars are not included in the government records. Sources said no survey to calculate the char area in Kamrup (Metro) district had yet been conducted. The maximum char area is in Nalbari district, which is 17,102 bighas, three kathas and 11 lessa. Dhubri district has 12,682 bighas, one katha and 16 lessa of char area. Barpeta district has 2,665 bighas, 19 lessa of char area. Bongaigaon district has 3,295 bighas, one katha and four lessa of char area. Darrang district has 7,528 bighas, three kathas and 12 lessa of char area. Dhemaji district has 6,604 bighas, three kathas and 10 lessa of char area. Goalpara district has 532 bighas, one katha and 17 lessa of char area, and Kamrup district has 804 bighas, four kathas and 15 lessa of char area."

So also, there is a long stretch of waterways from Sadiya to Fakirganj in Assam used for transportation. Infiltrators and criminals also use the waterways. But river policing is still not given much importance. Most of the river police stations do not have boats, facilities and are functioning with inadequate manpower. Rampant cattle smuggling from India to Bangladesh is much discussed issue. Unfortunately, things have hardly changed despite the much-articulation for saving the cows getting slaughtered in the political arena and the media during the last couple of years. As far as, strategic implications of India-Bangladesh borders are concerned, the most important part of this is to understand the reality that borders with Bangladesh have same strategic



River police keeping a vigil at troubled water of Indo-Bangla border

importance as with Pakistan. Similarly, China is tactically utilising airports, ports and even military establishment of Bangladesh to occupy larger strategic ground across India's eastern frontier in return of huge Chinese investment in Bangladesh. These activities demand India to make certain course-correction. This can happen with a change in the age-old perception in India regarding Bangladesh. India must see things beyond rhetoric. Given situation proves that India cannot afford to ignore forming a proper strategic roadmap against Bangladesh. After all, India cannot afford facing situation like Kashmir at another front. But things are gradually evolving in the same manner. India amid the hostile neighborhood cannot afford to see things casually considering two basic points; China's strategic march and consolidation designed by Islamabad in the form of atrocities and subversive activities targeting India. Significantly,

both these factors are prevalent in India-Bangladesh border may be with lesser magnitude. So, the rhetoric of bilateral relationship, cultural engagement and people to people contact must not blur India's vision. Rather this should be replaced with a strategic vision. If India-Bangladesh strategic partnership grows, this will make bilateral relationship more effective. Let us see how Prime Minister Narendra Modi during his second term makes policy initiations covering all these; strategic agenda, logistics, vigilance, security in the Brahmaputra river and its tributaries, connecting char areas across Brahmaputra with mainland India and law and order situation in this region. ■

– The writer is an strategic affairs expert and author of 'India's Fragile Foreign Policy towards Neighbouring Nations' & 'Modi's Rule and India's Unbound Opportunities: Narrative of the Substantives and Beyond'

HOW BANGLADESH EVOLVED AS A RADICAL NATION VIOLATING THE INDIRA-MUJIB PACT DELINEATES A DIFFERENT PICTURE AND INDICATES CALLOUS APPROACH OF INDIAN LEADERSHIP REGARDING LARGER IMPLICATIONS OF SUCH DEVELOPMENTS IN THE NEIGHBOUR NEXT-DOOR

TRANSFORMATION OF CURRENT INDIAN FIGHTERS INTO FIGHTERS OF THE FUTURE: A PLAUSIBLE NARRATIVE

The advent of Artificial Intelligence (AI), Machine Learning, Machine to Machine (M2M), Internet of Things (IoT) and Super Highways have offered an opportunity to each and every one to transform into super Humans

By **MAJ GEN LAV BIKRAM CHAND (RETD)**



ineteenth leading into the 20th century was the age of Industrial Revolution. The 21st century is the Era of Information Technology Revolution. In comparison with the pace of IT revolution, Industrial Revolution would appear to be an evolution. The Millennial and Gen Z have a very high technology quotient (TQ) of Technology Awareness and its Exploitation. There is a paradigm shift in business of doing things.

The processes have become more efficient and the speed of transactions has become supersonic. The advent of Artificial Intelligence (AI), Machine Learning, Machine to Machine (M2M), Internet of Things (IoT) and Super Highways have offered an opportunity to each and every one to transform into super Humans.

This same technology can now be exploited, with deliberate trials and testing to transform the soldier of yesteryears into David that would defeat the Goliathan Armies. Size of the army no longer determines its strength;

it is the capability and ability of the Army to fight in the Modern Battle Field that is the primary determinant of its strength.

A Digital Fighting Force (DFF): Man, Machine and Information Technology in which the commanders; surveillance and intelligence sensors, weapons are fully integrated and yet have space to act independently to achieve a common overall GOAL is already a reality. Fielding of a Digital Fighting Force (Soldier/ Weapon Platform, Sub Unit, Unit, Headquarters) can no longer be postponed by any country that aspires to be a regional power.

India is Calling for a DFF.

This Article spells out one of the Paths that, in the mind of the Author is most pragmatic, doable and would be least Disruptive Migration to the Modern Soldier.

CURRENT PREVAILING ENVIRONMENT AND ECOSYSTEM

The 30 years of experience of the Author in Information Communication Technology; Electronic Warfare and Exploitation of the same in various Integrated Theatre level exercises further strengthens his resolve to further pave the way towards a Digital Force. With this backdrop that the felt need is irrefutable let the readers take a plunge into the World of Digital Force.

Indian Armed Forces have a very large inventory of legacy equipment that don't have the appropriate interfaces to even be interconnected, leave aside integrated in a digitised battle field. Replacement of this vast inventory would be an economic drain on the exchequer. There is therefore no option but to carry out a prioritised replacement.

In terms of Information Communication Infrastructure (ICT) being Resilient, Reliable, Robust, Available and Adequate to support the Digital Force the Physical Domain will be ready once Network for Spectrum (NFS) and Various Service Specific Strategic networks are in place (ASCON Phase 4, Indian Navy Communication Network and AFNet of IAF – Already Operational).

However, the cognitive domain in terms of Business Intelligence and Analytics and AI still has certain voids. In the Tactical Battle Area (TBA), specially for the Army there is a long-standing void. DFF cannot become a war fighting concept till the void in TBA is fully addressed. Since Strategic ICT Infrastructure is already being adequately addressed the focus is therefore at the Tactical Level.

Government Policies:

The Make in India policy of Government of India (GoI) offers immense opportunities to Indian Manufacturers and Business Houses as well as MSMEs to provide collaborative solutions of Foreign OEMs. Equipment and products are readily available in the market to support a digital soldier. However, the Operations of War, Standard Operating Procedures and Battle Drills of the Indian Armed Forces have evolved through "Trial By Fire". The Foreign Commercially Off The Shelf (COTS) are available in plenty but they all need extensive customisation to fit into the Indian war fighting methodology. It can be deduced that even though Indigenous core technology is currently not available; the Foreign core technology around which the integrated system and the ecosystem would be built would

mandatorily need customisation to Indian Operations of War, SOPs and Battle drills (of Defence, Security Forces, Government agencies etc).

Accordingly, Government Notifications, Procurement Procedures of Defence and other agencies have been appropriately fine tuned to suite Foreign OEMs.

MOST PROBABLE DIGITAL BATTLE FIELD SCENARIO & EXPLOITATION

India would continue to be subjected to Asymmetric War (Bleed by Thousand Cuts) and covert support to the Naxals and Insurgency by the Adversaries. A stable and economically strong India is not favourable to these adversaries in the regional Geopolitical and the Geostrategic scenario. Indian security forces therefore have to be fully prepared for No War No Peace as well as an all-out war.

AI and ICTisation can significantly reduce troop deployment for Homeland Security against Asymmetric War. The payoffs like reduction of

IN TERMS OF INFORMATION COMMUNICATION INFRASTRUCTURE (ICT) BEING RESILIENT, RELIABLE, ROBUST, AVAILABLE AND ADEQUATE TO SUPPORT THE DIGITAL FORCE THE PHYSICAL DOMAIN WILL BE READY ONCE NETWORK FOR SPECTRUM (NFS) AND VARIOUS SERVICE SPECIFIC STRATEGIC NETWORKS ARE IN PLACE (ASCON PHASE 4, INDIAN NAVY COMMUNICATION NETWORK AND AFNET OF IAF – ALREADY OPERATIONAL)

direct visibility as well as exposure of troops to Civilian Population, prolonged deployment Fatigue, loss to life and equipment, reduction in negative publicity etc far out weigh the cost of deploying the technology. An added advantage is that this same technology can be effectively and efficiently deployed in conventional wars with minor changes in the methods of its usage.

The picture is clear: the soldier is fully aware of the latest situation on ground, there is total battle field transparency and the soldier is not unduly exposed to unnecessary dangers of physical bodily harm as well as adverse propaganda and the fabricated negative narrative. The winning impact of Digital Troop in Counter

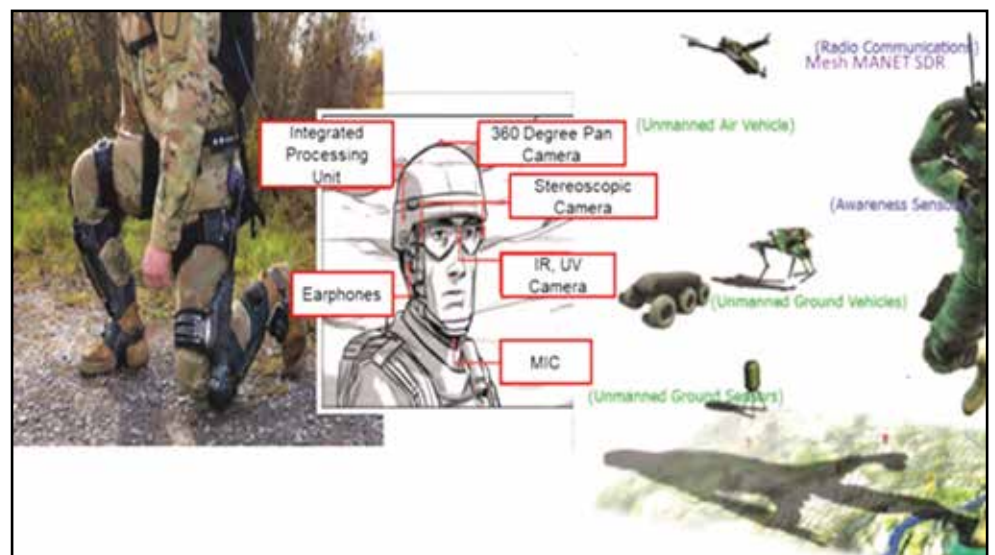


Figure 1: Digital Fighting Force. The wearable SDR Mesh MANET, Helmet Mounted Cameras, UAV Remote Control System and Video Control Systems

TACTICAL COMMUNICATION

THE MAKE IN INDIA POLICY OF GOI OFFERS IMMENSE OPPORTUNITIES TO INDIAN MANUFACTURERS AND BUSINESS HOUSES AS WELL AS MSMES TO PROVIDE COLLABORATIVE SOLUTIONS OF FOREIGN OEMS. EQUIPMENT AND PRODUCTS ARE READILY AVAILABLE IN THE MARKET TO SUPPORT A DIGITAL SOLDIER. HOWEVER, THE OPERATIONS OF WAR, STANDARD OPERATING PROCEDURES AND BATTLE DRILLS OF THE INDIAN ARMED FORCES HAVE EVOLVED THROUGH "TRIAL BY FIRE"

Terror/ Counter Insurgency (CI/CT) is further elucidated with an operational scenario in this paper.

DIGITAL FIGHTING FORCES IN CI/CT OPERATIONS

For better assimilations and to cover the various steps of transformation the time-tested wargaming method of narrative, situation, requirements/ tasking is being adopted.

Narrative: A digital battalion group is deployed in CI/CT Grid guarding a small town and its suburban areas. The Area of Responsibility and the Area of Interest; ingress and egress routes are kept under constant surveillance (manned and unmanned) through Digital Static Cameras, Tactical Cameras mounted on vehicle, Drones and helmets of troops deployed in strategic locations on protection duties. This digital fighting force/ soldier and his support vehicles are diagrammatically represented in Figure 1. Balance of the force in their Company Operating Bases (COBs) is keeping the Battalion Grid under remote yet close effective surveillance and observation through the strategically deployed sensors (both electronic and human). The Quick Reaction Teams (QRTs) and fighting echelons are in the appropriate state of

readiness to respond at short notice. Effective integrated and constant surveillance of AOR gives adequate time for QRTs to deploy.

The Company has been deployed in a COB and routinely it keeps the entire area under surveillance, both manned and through Unmanned Ground Sensors (UGS). All these devices are interconnected with Mesh MANET SDR and Nuggets. The Complete Situational Awareness Picture is available in the COB. Figure 2 represents the same diagrammatically.

Situation: The UGS deployed tactically reported the movement of some suspicious elements into a built-up area. The same was confirmed by the troops deployed in the town. After continuous surveillance by surveillance team on foot the likelihood of these being a terrorist group was confirmed.

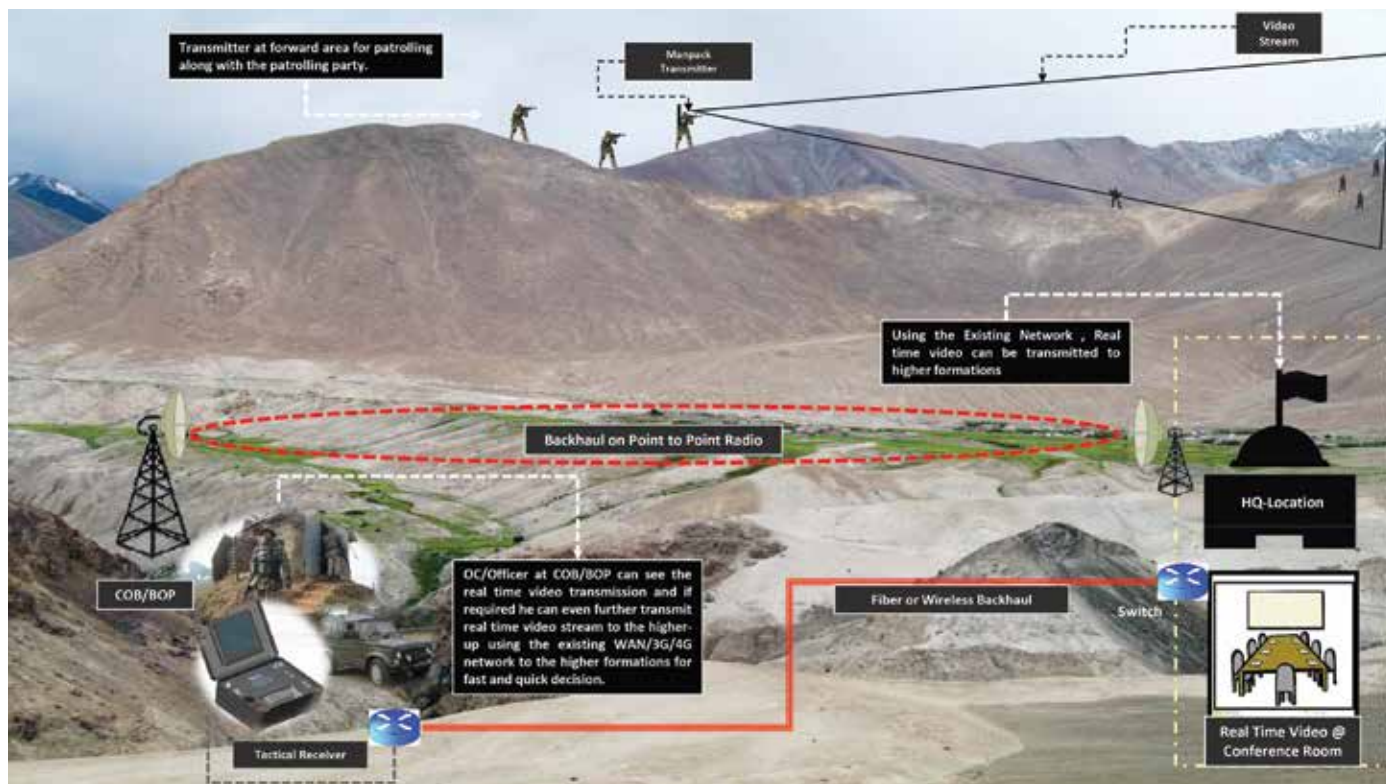


Figure 2: Surveillance Grid



Figure 3: Cordon and Search and Neutralisation Action (Digital, Fully Integrated C2, Surveillances and Action Force/ Neutralisation Group Grid)

This situational picture, as seen by the surveillance team was also available in the COB HQs. Similar inputs from other such surveillance grids was also available at the COB. Decision to launch QRT and relevant fighting echelons was taken. The area was cordoned off, snipers deployed at appropriate locations, Drone with day-night camera was also launched to look into the dead grounds and visibly screened houses and areas. The entire common picture was available to the Commander in his vehicle as well as the teams on ground through the PDAs. Visible reach/ range of cordon and search teams was enhanced by the Cameras (vehicle, body, Drone mounted). Effective neutralisation, based upon real time inputs from various teams deployed was carried out with no loss to own troops or civilians (Figure 3).

CONCLUSION

Various entities, networked over Mesh MANET SDR will be able to firstly detect the infiltration into their AOR, put them under continuous surveillance, determine with very high degree of certainty whether they are terrorists/ insurgents and then launch operations. The unnecessary exposure of security forces is prevented, direct contact with the terrorists is minimised to barest necessary, innocent civilians caught in the middle of operations are identified and localised to a great extent. Success of operations with no or minimum casualties will generally be the end result.

Ready Reckoner for Technology:

- Domo Tactical Communications SOL8SR Series Mesh MANET.

INDIA WOULD CONTINUE TO BE SUBJECTED TO ASYMMETRIC WAR (BLEED BY THOUSAND CUTS) AND COVERT SUPPORT TO THE NAXALS AND INSURGENCY BY THE ADVERSARIES. A STABLE AND ECONOMICALLY STRONG INDIA IS NOT FAVOURABLE TO THESE ADVERSARIES IN THE REGIONAL GEOPOLITICAL AND THE GEOSTRATEGIC SCENARIO. INDIAN SECURITY FORCES THEREFORE HAVE TO BE FULLY PREPARED FOR NO WAR NO PEACE AS WELL AS AN ALL-OUT WAR

- DTC Nugget Radio and Sensors
- DCE Unmanned Surface Vehicles
- Brij Systems Network in a Box (NIB) {LTE, Radio, Routing, VOIP, Ethernet and triple play services} – effectively enhances the capacity and reach of the Army Network.

–The author is a retired Indian Army officer from Signals. He has vast experience in design and rollout of ICT Communication Infrastructure both Strategic and Tactical

POLITICS INVADING THE ARMED FORCES

The cases of supersession of senior officers of the rank of Army Commanders and their counterparts in the other two services – Indian Air Force (IAF) and Indian Navy (IN) - have been on the rise, particularly over last three years. In the most recent case, the Fleet Commander of the Eastern Naval Command had to knock at the doors of AFT, Delhi against his supersession by the Government citing considerations other than professional

By **LT GEN NS BAWA (RETD)**

In a recent judgement, Delhi bench of the Armed Forces Tribunal (AFT) has stayed the promotion and appointment of Lieutenant Generals (Lt Gen) till further orders and levied heavy penal charges on the Military Secretary's (MS) Branch for violation of its orders in relation to the promotion of three Major Generals (Maj Gen). Cases of this kind have been occurring regularly in recent past where the courts had to intervene to set right injustices being heaped by an all mighty MS Branch playing with the career prospects of officers. Frequent changes are brought about in the promotion policies to benefit those close to the hierarchy and/or with political clout and postings to plum positions or preferred locations are ensured to help the smart alecks.

The Defence Services have one of the steepest pyramids of promotions among all the Government services. Denial of promotion due to limited number of vacancies, and not on account of demerit, gives rise to dissatisfaction and frustration. This is further exacerbated with frequent changes in policy and favouritism to benefit the blue eyed boys. Promoting a person lower in the order of merit and denying the same to a more competent or qualified person, obviously, adversely affects the organisation and lowers the morale of those who are left out.

The cases of supersession of senior officers of the rank of Army Commanders and their counterparts in the other two services – Indian Air Force (IAF) and Indian Navy (IN) -

have been on the rise, particularly over last three years. In the most recent case, the Fleet Commander of the Eastern Naval Command had to knock at the doors of AFT, Delhi against his supersession by the Government citing considerations other than professional. Unfortunately for him, Vice Admiral Karambir Singh, an officer junior to him, has been promoted to the rank of Admiral. While the Government reserves the right to deny promotion to any person, such actions need to have transparency and fair play, particularly in an organisation in which favouritism to promote undeserving officers can have serious ramifications. The consequences of such moves leading to India's debacle in 1962 India-China War have not been lost in the



Former Defence Minister
Nirmala Sitharaman

memories of military commanders and historians.

Another dangerous trend, which is fast setting in, relates to the politicisation of the Armed Forces, thanks to the penetration of the social media in people's lives and the politicians who use the Armed Forces to meet their political objectives. Two issues that were considered to be taboos in the Defence Services till a few years ago related to politics and women. Both these issues can quickly turn the best of friends into sworn enemies which can be highly detrimental in an organisation where homogeneity is the most important virtue to defeat the adversary.

The Defence Services took great

pride in remaining apolitical, but now the most discussed issue in the forces from the highest to the lowest level is politics. It was an unwritten dictum that the operations conducted by the Armed Forces in pursuance of the national objectives were not to be disclosed and debated in the media. Surprise and deception have been the hallmark of most successful military operations since time immemorial. The aspect of deniability of conducting operations in the enemy territory increases the potential of future operations and is, therefore, never revealed. It is nobody's case whether the cross border operations or the surgical strikes were conducted by the military

along the international border or the Line of Control (LC) earlier also or not. However, certain statements given by the senior officers as well as the Army Headquarters in recent past clearly point towards violation of this dictum and appear to have been given out for political reasons.

Two major strikes that were launched by Indian armed forces in Pakistan following terrorist attacks on security personnel – Uri (2016) and Pulwama (2019) – were used to the hilt during the recent elections, to arouse nationalistic fervour. While the reaction of the Government to retaliate amounted to a strategic shift in our response mechanism

SOCIAL MEDIA, WHICH HAS PENETRATED INTO PEOPLE'S LIVES, IS DOING SERIOUS DAMAGE TOWARDS POLITICIZATION OF THE ARMED FORCES. THE SOCIAL MEDIA PLATFORMS ARE BEING USED TO SUBVERT THE POPULATION (INCLUDING SECURITY FORCES) WITH A CLEAR AIM TO GAIN THEIR LOYALTIES



GUEST OPINION

IT IS TIME THE COAS/CAS/CNS RISE TO THE CHALLENGES OF POLITICISATION OF THE FORCES AS WELL AS THE SPREAD OF SOCIAL MEDIA AND THE MALAISE IT IS CAUSING, SO THAT A MECHANISM CAN BE PUT IN PLACE TO STOP THIS CANCER WHICH HAS THE POTENTIAL TO DESTROY THE PROFESSIONAL NATURE OF THE ARMED FORCES

and is laudable, publicising it in the manner in which it was done would be detrimental to the overall professionalism of the Armed Forces in the long run. A true professional is the one who does not mince words and calls a spade a spade. However, if the leadership realises that it has something to gain in towing the line of the political masters, it would render advice which would please the master, but may actually cause serious irreversible damage to the national security in the long run.

Who is responsible for this rot? The politician, the media, the retired defence personnel and to a certain extent the military hierarchy (both in the MoD and the senior serving leadership of the forces) have to share the blame in varying degrees. The current breed of politicians do not seem to realise the importance of national security in relation to national power, more so when we have enemies on our western and northern borders who would like to see the rise of India truncated. For the politicians, acquiring or retaining power is all that matters; the means to acquire that power

be damned. Sadly, we do not have any statesman who understands the relevance of leaving the defence forces to enhance their professional capabilities and prepare themselves for winning the war when it comes.

The Government is required to provide the wherewithal to the Armed Forces to gain supremacy over the enemy in the battlefield. However, in our case, exactly opposite of both these aspects is being practiced. In our country, the supremacy of the political authority has never been violated by the military. Where is, therefore, the need to interfere in the internal functioning of the forces which should clearly be left to the three Chiefs? The promotion of the Service Chiefs is routinely being influenced by the Government by superseding the seniors and promoting a junior who is bound to silently accept the tinkering of service ethos and privileges by the bureaucracy, with the tacit approval of politicians.

When an officer is promoted by the Government superseding his superiors, who by no means may be incompetent people, the person who has been favoured

becomes loyal to the person or establishment which has promoted him, rather than being loyal to the nation. In this context, does it mean that a person who has risen to the rank of an Army Commander (or his equivalent in the IAF or IN) is less competent than the one who is being favoured? This principle has seldom, if at all, been followed in the case of judiciary or certain other Government services. In such organisations people have remained at the helm for a few days or a few months before superannuating, but the principle of minimum residual service or lack of adequate experience has never been applied to debar them from holding the top post.

There is a dangerous trend which has already crept into the defence services where people use their political links to arrange their postings, promotions, awards, placements etc. When such people get promoted in place of more competent ones, the damage they are likely to cause on the day of reckoning is nightmarish. If one organisation where only merit should remain supreme, it is the defence forces because the nation's security is dependent on their competence. It is for this reason that the job reservation for the SC/ST/OBCs was never enforced in the armed forces though a move to that effect was mooted in early 1970s by some politicians.

Social media, which has penetrated into people's lives, is doing serious damage towards politicization of the Armed Forces. Media cells of various political parties are flooding the internet with messages to either promote their ideology or condemn that of their rivals. These have caused a potentially dangerous divide among people and have turned the friends into foes. The social media platforms are being used to



An Indian Army soldier keeping a vigil

subvert the population (including security forces) with a clear aim to gain their loyalties. Forming of groups of any kind was always ruthlessly discouraged within a unit and homogeneity was promoted to train and fight as single entity. Use of social media for political purposes is (both consciously and unconsciously) rupturing the social harmony within the forces to the detriment of their professionalism.

The MS Branch (and its counterparts in IAF and IN) is like the Human Resource Department of any big establishment. This branch is required to practice fair play and ensure that only the best progress in the hierarchy. Unfortunately, the environment feels that parochial interests, sycophancy and favouritism have conceded place to professional competence. The loyalties of one's arm or service/regiment, lanyard, old boys' network, political affiliations and so on override all other considerations for promotions, postings, nomination for career courses and rewards.

It may surprise the reader that Regiment of Artillery, which at one time had up to three serving army commanders and the COAS, has produced only two army commanders in last nine years. Doesn't it smack of parochialism? Have the Gunners become so incompetent that they no longer produce officers who could rise to that level. The promotion policies which are changed with every Chief who occupies the chair (which period seldom exceeds two and half years) have wreaked havoc with the rank and file and given rise to sycophancy. A sycophant can never make a competent contributor to any organisation. If the assessing officers start grading the subordinates based on the alignment of their political ideology with the boss, and not



Former Navy Chief Admiral Sunil Lanba transferring the Naval service baton to newly-appointed Navy Chief Admiral Karambir Singh

their professional competence, the damage it would cause to the organisation would be unimaginable.

It is time the COAS/CAS/CNS rise to the challenges of politicisation of the forces as well as the spread of social media and the malaise it is causing, so that a mechanism can be put in place to stop this cancer which has the potential to destroy the professional nature of the Armed Forces. Enough cases have reached the doorstep of the courts where foul play in matters of promotions and other human resource issues have come to light. The accountability in such cases needs to be fixed and violators taken to task to ensure that the system is fair to all. The Ministry of Defence (MoD) should consider the Armed Forces as its own and ensure that no disaffection is caused to a force which is the ultimate bastion of the nation.

A growing feeling in some sections of the public is that our neighbours have penetrated the MoD and are at work to lower the morale of the forces by causing pinpricks (pursuance of frivolous

legal cases against the disabled soldiers, withdrawal of entitled rations of officers posted in the peace stations, tinkering with other service privileges already granted, denial of Non-Functional Upgrade (NFU) to defence services personnel and so on) need to be dispelled. It can only be done if the people at the helm are themselves fair in their dealings, are vigilant and take strictest of actions against defaulters rather than condoning their omissions by merely issuing warnings or posting them elsewhere. The junior officers remain bewildered at the recent changes being made in their privileges, authorisations and promotions. In their perception, the Army hierarchy is blameworthy for being a party or silent observer to all such changes and is accepting the same in exchange for their out of turn promotions. There appears to be no light at the end of the tunnel which may give hope of reversing the existing trend. ■

—The author is an Army Veteran having wide experience in counter insurgency operations and a regular contributor to various journals

THE JUNIOR OFFICERS REMAIN BEWILDERED AT THE RECENT CHANGES BEING MADE IN THEIR PRIVILEGES, AUTHORISATIONS AND PROMOTIONS. IN THEIR PERCEPTION, THE ARMY HIERARCHY IS BLAMEWORTHY FOR BEING A PARTY OR SILENT OBSERVER TO ALL SUCH CHANGES AND IS ACCEPTING THE SAME IN EXCHANGE FOR THEIR OUT OF TURN PROMOTIONS

MAPPING MAKE IN INDIA IN DEFENCE

India's defence exports have gone up by five times in last five years validating successful Make in India programme of the Government. In 2014-15, India's defence exports were of the order of Rs 1,940 crore which increased more than five-fold to Rs 10,745 in 2018-19

By **PRABHAT K GHOSH**

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ew Delhi. As the Government is continuously striving with its Make in India programme in general and Make in India in defence in particular, the latter has progressed over the years more particularly in the later part of the first regime of Narendra Modi government. India's defence exports have gone up by five times in last five years validating successful Make in India programme of the Government. In 2014-15, India's defence exports were of the order of Rs 1,940 crore which increased more than five-fold to Rs 10,745 in 2018-19, Electronic Industries Association of India (ELCINA), which is the oldest and largest Association for Electronics Hardware Manufacturing sector, stated in its micro-blogging site Twitter.

According to a report published in national daily 'The Hindu', The Tamil Nadu Government is taking steps to set up a defence and aero park in Sullur on 500 acres of land. The Minister for Municipal Administration and Rural Development SP Velumani announced this speaking at a session on "Ease of Doing Business in Tamil Nadu" in Coimbatore on June 22. Once operational, this would give a major fillip to the Government's mission of Make in India in defence.

Outlining the Government's thrust on Make in India in defence; President Ram Nath Kovind has recently said that a special emphasis is being accorded by the Government to manufacture of modern armaments under Make in India. The policy of indigenously manufacturing weapons such as modern rifles and cannons, tanks and combat aircraft is being carried forward successfully.

Defence corridors coming up in Uttar Pradesh and Tamil

Nadu will further strengthen this mission. While fulfilling our security requirements, export of defence equipment is also being encouraged, President Kovind observed.

All the three services of the Indian Armed Forces have inculcated the habit of buying various product of their choice from the Government e-Market (GeM) portal, which give yet another boost to Government's Make in India programme. The

programme has received the two way boost as the services place requirement to defence PSUs and other affiliating agencies, on the other end the industry is contributing to Make in India mission by fulfilling the services requirements.

In yet another initiative to make it easy for defence industry to test their weapons & ammunition, several 'PROOF RANGES' have now been opened, a Department of Defence Production tweet said recently on June 15. The initiative would boost domestic arms & ammunition industry and Make in India in defence.

Defence Investor Cell (DIC) is a friend in need for defence firms. Here it makes an arms exporter's clarification process regarding requirement of approval from Archeological Survey of India (ASI) for exports of restricted



Make in India Jewels: Indigenously-built Indian Army Artillery Gun Dhanush



Make in India Jewels: Indian Navy Guided Missile Destroyer Imphal; Then Navy Chief Admiral Sunil Lanba at the launch of Imphal

items faster. "We appreciate the steps being taken by Defence Investor Cell (DIC), Ministry of Defence under Make in India initiative," Rahul Jain of Narendra Explosives Limited, Dehradun said.

Department of Defence Production in another latest declaration has said that India is moving towards self-reliance in Intellectual Property Rights in defence sector, DPSUs & OFs achieve massive success in IPR Filing. 730 IPRs filed in 2018-19 alone, some DPSUs even surpassed the set target in IPR filing. This clearly states the story of though at snail pace but progress and growth of Make in India in defence.

Ordnance Factory Board (OFB) is very soon to commence delivery period for supply of stores by vendors after raw material clearance, which is a programme under Make in India in defence. This was a Department of Defence Production initiative towards Ease of Doing Business in defence.

Various groundbreaking initiatives were also taken by then Defence Minister Nirjala Sitharaman which includes Make in India in defence by setting up Defence Investor Cell, Mission Raksha Gyan Shakti, Tamil Nadu Defence Corridor, UP Defence



Corridor and iDex.

On May 20, Department of Defence Production introduced Self Certification Scheme (SCS) for Defence PSUs and private vendors to bring self-reliance and achieve the country's vision of Make in India (in Defence). It also provided a massive boost to Ease of Doing Business in defence manufacturing.

In another push to Make in India and indigenisation, Garden Reach Shipbuilders and Engineers Ltd (GRSE) on April 29 secured a competitive bid for design, construction and supply of eight Anti-Submarine Warfare Shallow Water Crafts (ASWSWCs) for Indian Navy.

Under Make in India in defence, Yard 12706 (Imphal) was launched by then Chief of Naval Staff (CNS) Admiral Sunil Lanba and Mrs Reena Lanba, President Navy Wives Welfare Association (NWWA), at a glittering ceremony held at M/s Mazagon Dock Ltd, Mumbai.

A state-of-the-art Virtual

Reality Centre, a major technology booster for indigenous ships design inaugurated by Admiral Sunil Lanba, CNS at Department of Naval Design (Surface Ship Group), New Delhi on April 12, which is a significant example of Make in India programme.

It was indeed a proud moment for defence production in India and Make in India in defence when indigenous Dhanush was handed over to Indian Army on April 8-9 this year. Equipped with inertial navigation-based sighting system, the Artillery Gun is a major milestone in India's self reliance in defence.

Make in India more particularly Make in India in Defence started gaining momentum in 2014 after the Prime Minister's announcement to facilitate the industry to produce or make products/ parts indigenously.

And last but not the least, the best part of the concept of Make in India is that now apart from the three services, all other internal security agencies have begun to rely on Indian MSMEs and OEMs for their requirements, if not fully, partially. Earlier the Services and para-military forces were or had to be dependent on foreign suppliers for fulfilling their requirements.



"Special emphasis is being accorded by the Government to manufacture of modern armaments under Make in India. The policy of indigenously manufacturing weapons such as modern rifles and cannons, tanks and combat aircraft is being carried forward successfully"

Ramnath Kovind
President of India



NAVAL GROUP MARKS PRESENCE AT IMDEX 2019



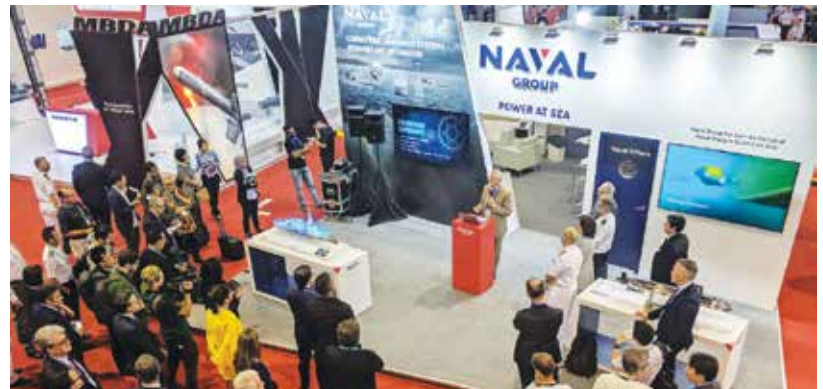
Singapore. Naval Group participated in the 12th edition of IMDEX in Singapore from May 12-14 and showcased its latest innovations on booth #K05. Naval Group is a naval systems provider and integrator, one of the few companies in the world with the ability to deliver complete warships with their combat systems and all the critical equipment necessary to engage naval power in a theatre of operations. It is involved at every stage in the product life cycle, from design to in-service support.

The Mistral-class LHD is a multipurpose Power and Force Projection asset designed to command and achieve high intensity amphibious and special joint operations, as well as no-combatant assistance operations with the highest

As a long-term partner of Singapore, Naval Group is willing to strengthen its cooperation with the local industry in order to enhance the city-state's sovereignty at sea and contribute to the protection of its strategic interests by delivering the best technologies, driven by innovation and R&D investments.

PRESENTING DISTINCTIVE SOLUTIONS FOR NAVAL DEFENSE

This new edition of IMDEX was an opportunity for Naval Group to meet key-players on the Asia-Pacific market and showcased its unique expertise and its leading products. Belharra® is Naval Group's answer to navies looking for a compact frigate to perform a large range of missions, stand-alone or within a task force, for high sea duration missions or for shallow water operation in congested and contested operational environment.



Belharra® benefits from Naval Group centuries of experience ensuring unmatched stealth and outstanding detection capabilities. It features a robust platform, resilient systems and recoverability features that will enable it to retain operational capability following damage. This new frigate features high level capabilities in anti-air, anti-surface, anti-submarine, and asymmetric warfare domains as well as the access to deep strike capability.

level of efficiency. Thanks to its customizable configuration and smart architecture, arrangement, and accommodation designed to optimize the flow management of capabilities, the Mistral-class LHD can provide large and comfortable arrangement for the accommodation of a high NATO standard medical capability.

Naval Group also provides proven solution for the integration of helicopters and unmanned aerial vehicles (UAV) on-board naval platforms.

ROSOBORONEXPORT PRESENTS LATEST ANTI-DRONE SYSTEMS IN UFA

Rosoboronexport (part of the Rostec State Corporation) took part in the 10th International Meeting of High Representatives for Security Issues (June 18 – 20, 2019, UFA), organized by the Security Council of the Russian Federation. The forum was attended by delegations from more than 120 countries. Many delegations were headed by secretaries of national security councils, heads of law enforcement agencies, and national security advisers.



Rosoboronexport's representatives participated in meetings with them as part of Russian delegations headed by Russian Security Council Secretary Nikolai Patrushev and his deputies, as well as in a bilateral format.

"Rosoboronexport offers foreign customers also a wide range of means of providing security at various levels – from equipping separate anti-terrorist units to building a Safe and Smart City infrastructure, protecting critical facilities and state borders. We are actively cooperating with various law enforcement agencies of partner countries in the supply of military and service weapons,



close combat weapons, including those with a range of non-lethal ammunition, explosive detection equipment, facial recognition systems and fingerprint identifiers. In Ufa, we will be showing anti-drone systems – new additions to our catalog," said Director General of Rosoboronexport Alexander Mikheev.

At the forum, Rosoboronexport arranged an exhibit display where about 20 Russian enterprises showcased their products. Scale models of the recognized bestselling products for law enforcement agencies such as the Ka-226 day/night light utility helicopter, as well as Tiger and Typhoon special motor vehicles for rapid transportation of troops, including special forces and anti-terrorist units, were displayed at the company's stand.

Among exhibits provided by enterprises, the Stupor portable anti-drone jammer and the Yenot radar system for detection and tracking of ground, surface and air targets, the Kerber-T detector for explosives and dangerous chemical agents, Kalashnikov assault rifles of the latest AK203, AK-12 and AK-15 series, as well as the full-scale Storm special water cannon vehicle were expected to be of particular interest to foreign customers.

The Government of Moscow showcased on its stand integrated IT solutions for Safe City and Smart City technologies, being promoted by Rosoboronexport abroad. In particular, foreign delegations were able to get acquainted with traffic control, facial recognition, video surveillance and video analysis systems. These systems proved reliable and effective during the 2018 FIFA World Cup in Russia, where security was highly appreciated by the leadership of international sports organizations and guests of the World Cup. ■



GREECE ANNOUNCES THE LAUNCH OF DEFENCE EXHIBITION ATHENS (DEFEA) IN JUNE 2020

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reece returns to regularity, leaves behind the bailouts and invests in the revitalization of its defense industry. It is a common secret on the global market that “Crisis Greece” becomes “Opportunity Greece” in the near future. After of more than 10 years absence from the international defence exhibitions, Greece returns by the organization of Defence Exhibition Athens, an exhibition deserved of its reach history and the importance of its geopolitical position.

Defence Exhibition Athens (DEFEA) will take place in Athens from June 22 to 24, 2020 at Metropolitan Expo and is under the auspices of the Ministry of National Defence/General Directorate for Defense Investments and Armaments (GDDIA). It is organised by ROTA Exhibitions with the support of the Union of Greek Manufacturers of Defence Material (SEKPY).

The Minister of National Defence, Evangelos Apostolakis, who attended the press conference stated: “I would like to congratulate you for the initiative of organizing this Exhibition. Something like this has been missing in Greece for years, and

will offset and demonstrate the country’s true potential, both from an organizational point of view and from the perspective of the defence industry. It is certain that only positive outcomes can come from such collaborations. You are aware of our efforts to cooperate, exchange know-how and disseminate information regarding the latest technological developments in the defence industry.

The exhibition, which aims to become a point of reference for South-eastern Europe and the Eastern Mediterranean, will present land, sea, air defence systems and homeland security systems to a specialized

audience from Greece and the international defence community.

DEFEA – Defence Exhibition Athens is addressed exclusively to professionals from the Armed Forces and Security Services who will have the chance to learn about all the recent developments in the region.

During DEFEA a number of events, such as the Conference, Open Space Seminars, and the Reception Gala will be organized to give exhibitors and visitors the opportunity to network, evaluate possible offers and lead the way to new collaborations.

DEFEA – Defence Exhibition Athens will take place at the Metropolitan Expo exhibition centre, at Athens International Airport “Eleftherios Venizelos”. This is the largest and most modern exhibition centre in South-eastern Europe, with a total exhibition space of 50,000 square metres.

ROSOBORONEXPORT SIGNS CONTRACTS TO SUPPLY RUSSIAN SMALL ARMS, CLOSE COMBAT WEAPONS ABROAD

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oscow. During the Army 2019 International Military and Technical Forum was held in Kubinka near Moscow, JSC Rosoboronexport has signed a number of contracts with foreign customers for the supply of Russian small arms and close combat weapons.

carbines, many other designs and their ammunition are under consideration by potential foreign buyers. There is also interest among foreign customers in the Vepr carbines and civilian versions of the Tigr sniper rifles. It's because of the high demand that a new

"The Russian industry produces the entire range of close combat weapons, which have proved indispensable in real combat situations, earning excellent reputation and respect around the world. The new contracts not only demonstrate consistently high demand for small arms and grenade launchers and their ammunition being developed by Russian arms makers, but also indicate a global trend towards a growing demand for effective means to counter terrorism and crime. Rosoboronexport is ready to meet this demand fully," said Alexander Mikheev, Director General of Rosoboronexport.

In addition, Rosoboronexport has been conducting active marketing



efforts to export Russian-made civilian and service weapons: dozens of commercial proposals related to the ORSIS T-5000 rifles, Saiga-9, Saiga-12

section on Russian-made civilian and service weapons has started to be set up by Rosoboronexport on its website (www.roe.ru).

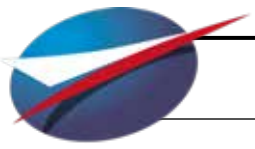
ROSOBORONEXPORT INVITES OVER 100 FOREIGN DELEGATIONS TO ARMY 2019

Moscow. Rosoboronexport has invited delegations from more than 100 countries to the Forum and would hold meetings with 70 of them on the sidelines of the ARMY 2019 International Military and Technical Forum. Over 30 delegations were headed by defense ministers, their deputies and chiefs of general staff. ARMY 2019 was held at Patriot Congress and Exhibition Center of the Russian Armed Forces in Kubinka near Moscow from June 25 to 30.

SAMI, PARAMOUNT GROUP SIGN HIGH-LEVEL AGREEMENT ON DEFENCE AND SECURITY

Riyadh. Saudi Arabian Military Industries (SAMI) and Paramount Group, the global aerospace and technology company, announced the signing of a high-level defence collaboration agreement, in step with Saudi Arabia's vision for the creation of an integrated defence industrial ecosystem. The multiple collaboration agreement between SAMI and Paramount Group will see the development of technologies and capabilities across the land, sea and air domains, as well as system integration, in support of Vision 2030, Saudi Arabia's economic development plan, which sets an ambitious objective to increase the domestic share of military equipment expenditure to 50% by 2030. CEO of SAMI, Dr. Andreas Schwer, said: "The collaboration between SAMI and Paramount Group will play a large part in helping to achieve the objectives of Saudi Vision 2030.





BOEING FORECASTS \$8.7 TRILLION AEROSPACE AND DEFENSE MARKET THROUGH 2028



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e Bourget, France. A strong commercial aviation industry, stable defense spending and the need to service all platforms throughout their lifecycle are driving a growing aerospace and defense market, according to the Boeing Market Outlook (BMO). Released at the Paris Air Show on June 18, the outlook values the aerospace and defense market at \$8.7 trillion over the next decade, up from \$8.1 trillion a year ago.

The BMO also projects \$2.5 trillion of defense and space opportunities during the next decade as governments modernize military platforms and systems, pursue new technologies and capabilities and accelerate exploration from sea to space. The projected spending – spanning military aircraft, autonomous systems, satellites, spacecraft and other products – continues to be global in nature with 40 per cent of expenditures expected to originate outside of the United States.

Supporting the defense,

space and commercial platforms with lifecycle solutions will fuel a services market valued at \$3.1 trillion through 2028.

“Aerospace and defense continues to be a healthy and growing industry over the long term, boosted by strong fundamentals across the commercial, defense and services sectors and demand that is geographically-diverse and more balanced between replacement and growth than ever before,” said Boeing Chief Financial Officer and Executive Vice President of Enterprise Performance & Strategy Greg Smith. ■



AIRBUS LAUNCHES INNOVATION INITIATIVE AROUND FCAS

Paris. Airbus has announced plans to closely cooperate with innovative technology players like start-ups, SMEs and research institutes especially in the software domain. By teaming up with innovative players, Airbus continues to unlock new ideas, technologies and research for FCAS, the largest and most ambitious development in European military aviation. Over the course of Paris Air Show 2019, Airbus will host special pitching sessions for selected European startups, which will be organized by Starburst.

Bruno Fichet, Head of FCAS at Airbus, said: “Artificial Intelligence, Data Analytics and Cyber Security have become an integral part of Defence and will be paramount for FCAS. By cooperating with innovative players like start-ups, research institutes and others, we can make sure that we are at the cutting edge of development and bring fresh ideas and approaches to the table. This is a great example of how much we are pushing the boundaries of what is possible for major industry projects”

Airbus has begun scouting for suitable partners making use of its internal initiatives like Airbus BizLab and Airbus Ventures. This dedicated initiative complements the development model for FCAS and demonstrates Airbus’ position as an innovation leader in defense. ■

SAFRAN TEAMS UP WITH HENSOLDT AND MADES ON ELECTRO-OPTICAL FOR EUROPE'S FUTURE MALE DRONE

Le Bourget, Paris. Safran Electronics & Defense, Hensoldt Optronics and Mades signed collaboration agreements on the Euroflir™ 610, a high-performance multispectral electro-optical targeting and observation system proposed for the European MALE RPAS (Medium Altitude Long Endurance – Remotely Piloted Aircraft System).



Drawing on its long experience as a lead partner in European programs, Safran is coordinating this ambitious project with Hensoldt, from Germany and Mades, from Spain, both European leaders in their respective areas of expertise. The three companies will put together their technological and organizational skills to develop and manufacture an innovative system that is key on the decision-making chain of MALE RPAS, an important factor in ensuring Europe's sovereignty.

The Euroflir™ 610 is being unveiled at the Paris Air Show 2019. It will reflect the state-of-the-art in electro-optical systems worldwide, calling on advanced technologies developed in Europe. Based on Euroflir™ 410

New Generation, but significantly larger, the Euroflir™ 610 will offer performances encompassing the needs of the European MALE RPAS. This new-generation multispectral observation and targeting system will feature very-high-performance line-of-sight stabilization to ensure ultra-long-range capability and high-precision target geolocation.

"The partnership between Safran, Hensoldt and Mades provides the foundations for a solid cooperation between three of the most renowned manufacturers in Europe, allowing to offer to the armed forces a new-generation of IR electro-optical system carrying on the successful Euroflir™ product family, said Martin Sion, Chief Executive Officer of Safran Electronics & Defense. ■



RUSSIAN HELICOPTERS DEMONSTRATES ANSAT WITH A NEW SATELLITE COMMUNICATION SYSTEM

Paris. Russian Helicopters Holding Company (part of Rostec State Corporation) presented the light multi-purpose Ansat helicopter equipped with the new Mku30 satellite communication system at the 53th International Paris Air Show 2019.

"The Holding Company actively develops the introduction of modern satellite communication systems for helicopters. We entered into an agreement with the MOST-satellite systems company on joint promotion of these products. The Ku-band satellite communication system was created for Ansat and integrated into its avionics. It ensures data transmission and reception at the speed up to 2 Mbps regardless helicopter's location. We plan to offer this system as an option for all civil helicopters of the Holding Company," said Andrey Boginsky, Director General of Russian Helicopters. The Mku30 satellite communication system allows single-point and multi-point video conferencing on board, smooth real-time transmission of selected amounts of data and high-quality video content.

The light multi-purpose Ansat helicopter, which has the largest cabin within its class, is actively used by the Russian air medical services. This twin-engine helicopter has compact size and does not require a large landing area. It can also be used for normal passenger and VIP transport, cargo delivery and environmental monitoring. ■



LOCKHEED MARTIN, AIRBUS REAFFIRM TANKER PARTNERSHIP

LE BOURGET, France. With an agreement in place to explore US military tanking opportunities, Airbus and Lockheed Martin senior executive leaders met for some “tanker talk” during the Paris Air Show 2019. The Airbus A330 Multi Role Tanker Transport (A330 MRTT) provided the perfect backdrop for the meeting with (L to R) Alberto Gutierrez, Head of Military Aircraft, Airbus Defence and Space; Michele Evans, Executive Vice President of Lockheed Martin Aeronautics, and Dirk Hoke, CEO of Airbus Defence and Space.



Martin’s proven record serving the US Air Force we truly believe we can offer unbeatable capabilities.”

“Since signing our Memorandum of Agreement with Airbus last December, our teams have been working to expand our business relationship with a focus on providing the US Air Force with the very best capability in aerial refueling,” said Michele Evans, Executive Vice President for Lockheed Martin Aeronautics. “We believe with Airbus’ and Lockheed Martin’s expertise in air refueling and innovative, combat-tested technologies such as low observability and

networking operations, we make a powerful team to address the US Air Force’s tanker needs today and into the future.”

Dirk Hoke, CEO of Airbus Defence and Space, said: “The relationship with Lockheed Martin through this exciting project is growing day by day, and we’re looking forward to presenting our offer to the US military in the near future. Our A330MRTT has been refueling US military aircraft on combat missions since 2014, and together with Lockheed

“We have said it before

AIRBUS LAUNCHES SEVEN NEW SMARTFORCE SERVICES FOR

Le Bourget. Airbus has launched seven new products for military customers under its digital support services offering SmartForce. With these additions, Airbus expands the SmartForce offering by allowing customers to select the services that best fit the specific requirements of their fleets and aircraft mix. This helps improve availability and mission readiness while reducing the maintenance burden.

benefits this brings in terms of smart fleet and maintenance management and improved availability.”

These seven new services include three dedicated services for military aircraft, two for military helicopters, and two additional ones shared by both military aircraft and helicopters.

to leverage big data analytics in support of their operations.

The development of new digital services, through SmartForce, is the Airbus response to the growing requirement of military customers

Stephan Miegel, Head of Airbus Military Aircraft Services, said: “We currently provide service support to more than 1,600 fixed wing military aircraft. Through our SmartForce offering, customers are enabled to benefit from the digitalisation of these services and the increased

SmartForce services for military aircraft and helicopter operators improve troubleshooting, optimise the maintenance effort, predict maintenance actions, and plan smartly for material demand. To satisfy military security requirements, SmartForce incorporates robust security measures such as geographic isolation, the use of accredited personnel, and monitoring by national cyber-security authorities. ■

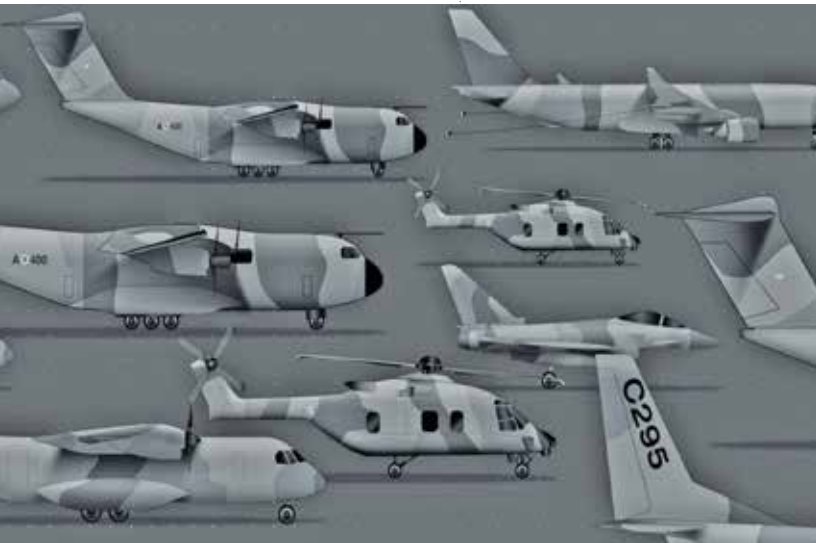
AT PARIS AIR SHOW



and I can only repeat it – the A330MRTT is the most successful and most capable tanker platform in the world. It has proven its versatility

and capability time and again. It is a tremendous asset for any military, including the US,” said Alberto Gutiérrez, Head of Military Aircraft at Airbus. ■

MILITARY CUSTOMERS



ROSOBORONEXPORT: EXPORTS OF COMBAT AIRCRAFT AND HELICOPTERS EXCEEDED \$6 BILLION IN 2018

Le Bourget, Paris. Rosoboronexport JSC (part of Rostec State Corporation) organised a single Russian exposition at the Paris Air Show 2019 International Aviation and Space Salon.

“Aviation and helicopter technology traditionally leads among the products supplied by Rosoboronexport to the world market. In 2018, we exported combat aircraft, helicopters, unmanned aerial vehicles, engines and equipment for the Air Force worth over \$ 6 billion, “- said General Director of Rosoboronexport Alexander Mikheev.

In the aviation segment, the bestsellers are represented — the multi-purpose super-maneuverable Su-35 and Su-30SME fighters, the multipurpose MiG-29M / M2 front-line fighter and the Yak-130 combat training aircraft.

At the Paris Air Show 2019 for the first time, the novelty of the Russian aircraft industry is presented – the Il-112VE light military transport aircraft, as well as other aircraft that recently received an export permit: the Su-32 fighter bomber, the Il-78MK-90A tanker aircraft, the military transport Il-76MD-90A aircraft (E).

Among the Russian helicopters, the Ka-52 combat reconnaissance and attack helicopter, the Mi-28NE combat helicopter, the Mi-35M combat transport helicopter, the Mi-171Sh and Mi17-B5 military transport helicopter, the Ka-226T light-duty multi-purpose helicopter and heavy transport helicopter Mi-26T2. ■

APPOINTMENTS

ADMIRAL KARAMBIR SINGH TAKES CHARGE AS COUNTRY'S

New Delhi. Admiral Karambir Singh assumed command of the Indian Navy on May 31 as the 24th Chief of the Naval Staff (CNS).

Admiral Karambir Singh is an alumnus of the National Defence Academy (NDA), Khadakwasla. Commissioned into the Indian Navy in July 1980, he earned his wings as a helicopter pilot in 1981 and has flown extensively on the Chetak (Alouette) and Kamov helicopters. He is a graduate of the Defence Services Staff College (DSSC), Wellington; College of Naval Warfare, Mumbai and has

served as Directing Staff in both these institutions.

In his career spanning over 39 years, he has commanded Indian Coast Guard Ship Chandbibi, Missile Corvette INS Vijaydurg, as well as two Guided Missile Destroyers, INS Rana and INS Delhi. He has also served as the Fleet Operations Officer of the Western Fleet. Ashore, he has served at Naval Headquarters as the Joint Director Naval Air Staff, and as Captain Air and Officer-in-Charge of the Naval Air Station at Mumbai.



AIR MARSHAL SK GHOTIA TAKES OVER AS AOC-IN-C TRAINING COMMAND



New Delhi. Air Marshal SK Ghotia VSM took over as Air Officer Commanding-in-Chief (AOC-in-C) of Training Command on May 1.

Air Marshal is an alumnus of the National Defence Academy, and was commissioned in the fighter stream of IAF in Dec 1981. He is a Qualified Flying Instructor with more than 1000 hrs of instructional experience. The officer has undergone the Air Staff Course, Higher Air Command Course and holds two Masters Degrees. He has served as a Directing

Staff at the prestigious Defence Services Staff College Wellington. Air Marshal has held a number of important appointments, which includes, Commanding Officer of a fighter squadron, Chief Operations Officer and Station Commander of a Forward Air Base in South Western Air Command. He has also served in a number of Staff appointments, which include Director Intelligence at Air HQs, Ops 1 A of Western Air Command, Principal Director Training (Flying) at Air HQs, Air Attache at Embassy of India, Paris, Air Officer Commanding COBRA Group and Assistant Chief of the Air Staff (Intelligence). Prior to assuming the present appointment, he was the Senior Air Staff Officer of Training Command. During his illustrious career, Air Marshal was commended by the Air Officer Commanding-In-Chief, WAC in 1994 and Vishist Seva Medal (VSM) in 2007.

AIR MARSHAL RAKESH

New Delhi. Air Marshal Rakesh Kumar Singh Bhadauria took over as Vice Chief of the Air Staff (VCAS) on May 1.

The Air Marshal is an alumnus of the National Defence Academy. He was commissioned in the fighter stream of IAF on June 15, 1980 and won the coveted 'Sword of Honour' for standing first in the overall order of merit.

He has over 4250 hours of experience on 26 types of fighters and transport aircraft with the unique distinction of being an Experimental Test Pilot, aCat 'A' Qualified Flying Instructor and a Pilot Attack Instructor, and completed his Masters in Defence Studies from Command and Staff College, Bangladesh.

The Air Marshal has held a number of important appointments, which include, Command of a Jaguar

NEW NAVY CHIEF

Admiral Singh has also served as member of the Aircrew Instrument Rating and Categorisation Board (AIRCATS).

On promotion to flag rank, the Admiral was appointed as the Chief of Staff, Eastern Naval Command. His other important flag appointments include Chief of Staff of the Tri-Services Unified Command at Andaman and Nicobar Islands and Flag Officer Commanding Maharashtra and Gujarat Naval Area (FOMAG).

In the rank of Vice Admiral, he has been Director General

Project Seabird, in-charge of infrastructure development of the Navy's expansive and modern base at Karwar. At the Integrated Headquarters Ministry of Defence (Navy), the Admiral has been the Deputy Chief of Naval Staff (DCNS) and, subsequently, the Vice Chief of Naval Staff (VCNS). He was the Flag Officer Commanding-in-Chief, Eastern Naval Command at Visakhapatnam prior to taking over helm as the Chief of the Naval Staff on May 31. The Admiral enjoys cycling, running, swimming and golf. ■

KUMAR SINGH BHADAURIA TAKES OVER AS VCAS



Squadron and a premier Air Force Station, Commanding Officer of Flight Test Squadron at Aircraft & System Testing Establishment, Chief Test Pilot and Project Director of National Flight Test Centre on Light Combat Aircraft (LCA) project.

He was extensively involved in the initial prototype flight tests on the LCA. Air Marshal Bhaduria was also the Air Attache, at Eol Moscow, Assistant Chief of the Air Staff (Projects), Commandant of the National Defence Academy, Senior Air Staff Officer at HQ CAC, Deputy Chief of the Air Staff at Air HQ and Air Officer Commanding-in-Chief of Southern Air Command.

Prior to assuming the present appointment, he was the Air Officer Commanding-in-Chief of Training Command.

During his illustrious career, he was commended by the Chief of Air Staff and has been awarded Param Vishist Seva Medal (PVSM), Ati Vishist Seva Medal (AVSM) and Vayu Sena Medal (VM). ■

VICE ADMIRAL DINESH TRIPATHI ASSUMES CHARGE AS COMMANDANT, INDIAN NAVAL ACADEMY

New Delhi. Vice Admiral RB Pandit, AVSM handed over charge as the Commandant, Indian Naval Academy (INA) to Vice Admiral Dinesh K Tripathi, AVSM, NM after a successful tenure of over 15 months on June 12.



Vice Admiral Dinesh K Tripathi, who has taken over as the Commandant of Indian Naval Academy on promotion to the rank of Vice Admiral is an alumnus of the National Defence Academy, Khadakvasala, Defence Services Staff College Wellington and US Naval War College, Newport, Rhode Island.

The Flag Officer is a specialist in Communication and Electronic Warfare and has commanded IN Ships Vinash, Kirch and Trishul. His important Staff appointments include Director Naval Operations, Principal Director Network Centric Operation, Principal Director Naval Plans and Assistant Chief of Naval Staff (Policy and Plans).

Vice Admiral Dinesh K Tripathi has also commanded the Eastern Fleet from January 15, 2018 to March 30, 2019. He was Additional Director General, Project Seabird, prior to being appointed as the seventh Commandant of the Indian Naval Academy.

Vice Admiral RB Pandit took over as the Commandant of Indian Naval Academy on February 19 last year. During his tenure, the Academy saw marked transformation in infrastructure and training facilities at INA. Under the Flag Officer's leadership, INA won many laurels, including Bakhshi Cup 2019, held between all six major military Academies. Vice Admiral RB Pandit was accorded a warm send off, with the traditional 'Pulling Out' ceremony. ■

APPOINTMENTS

TOM ARSENEAULT APPOINTED PRESIDENT & COO

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ew Delhi. BAE Systems, Inc named Tom Arseneault president and chief operating officer effective on May 17. BAE Systems, Inc announced that Tom Arseneault has been named president and chief operating officer of BAE Systems, Inc. and appointed to the BAE Systems, Inc Board of Directors. Jerry DeMuro will continue to serve as CEO for the US-headquartered organisation.

For several years, Arseneault has served as COO, responsible for operational performance and delivering key business objectives across the enterprise, to include leading the Inc Strategy and



ERIC BERANGER BECOMES MBDA CHIEF EXECUTIVE OFFICER

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ew Delhi. Eric Beranger has been appointed as new Chief Executive Officer of MBDA with effect from June 1, 2019 replacing Antoine Bouvier. Over the past 20 years Eric has worked in a number of senior positions in Airbus Defence and Space. He led Global Communications Company OneWeb lately.

Speaking on the occasion, Eric Beranger said: "Having delivered growth, innovation and transformation in high technology businesses, it is an honour for me to be joining MBDA, a truly world-leading European missile systems company. As a champion of European industrial integration, I am looking forward to bringing all my knowledge, experience and energy to MBDA – the benchmark of successful European integration within the



defence sector."

MBDA Chairman Chris Boardman said: "Eric joins MBDA with an excellent track-record and we wish him a very warm welcome. Antoine has led MBDA through more than a decade of business growth and his personal

commitment and contribution has ensured the continued development of MBDA as a global player and European champion in the field of missiles and missile systems. On behalf of the MBDA Board and the Executive and Management Committees I would like to thank Antoine for all his achievements and wish him every success in his new role."

Antoine Bouvier said: "This is an emotional departure for me and I want to thank all the teams in each of our domestic countries who have, through their work and commitment, enabled us to turn this group into a model of European cooperation and integration. I am confident that Eric, together with the MBDA Board and the Executive team, will continue to pursue this successful strategy." ■

FOR BAE SYSTEMS, INC

Corporate Development team.

As president & COO, his responsibilities will expand to include functional leadership of the BAE Systems, Inc organisation.

“Tom has a proven track record leading complex organisations focused on fulfilling critical and technologically challenging missions,” said Jerry DeMuro, CEO, BAE Systems, Inc.

“Based on his extensive experience across our international portfolio, this is a natural next step in our efforts to maintain a strong leadership team, and this new reporting

structure will streamline Tom’s direct oversight of our business segments and functions for the benefit of our customers, talented workforce, and external stakeholders.”

Arseneault previously held senior leadership roles at BAE Systems, including president of the company’s Electronic Systems sector and executive vice president of BAE Systems’ Product Sectors. Earlier in his career, he held positions of increasing responsibility in management and engineering with Lockheed Martin, General Electric and TASC. ■

SHIVAKUMARAN K M ASSUMES AS NEW DIRECTOR HR AT BEL

Bangalore. Shivakumaran KM took charge as Director (HR) at Navratna Defence PSU Bharat Electronics Limited (BEL) on June 11. He was serving as GM (HR) at BEL’s Bangalore Complex before his elevation.

Shivakumaran started his journey as an HR professional at Sujatha Textile Mills, Nanjangudu, Karnataka, in 1986 after completing his Master’s in Social Work, specialising in Personnel Management, Industrial Relations & Labour Welfare from

Manasagangothri, University of Mysore, in 1984. He then moved to Mandya National Paper Mills, a PSU at Belagula near Mysore in 1988 and worked in the capacity of Personnel Officer. He joined BEL in the year 1989 as Assistant Personnel Manager at Corporate Office and later worked at the Company’s Bangalore and Hyderabad Units.

During his 30-year-old stint at BEL, Shivakumaran has contributed to bringing about a paradigm shift in HR at BEL, transforming it into a strategic business partner of the Company. He has been responsible for the formulation and implementation of various HR interventions directed towards improving the organisational effectiveness and advancing the Company’s vision and growth. ■



SHRIKANT WALGAD TAKES OVER AS NEW CVO AT BEL

Bangalore. Shrikant Walgad, an IAS officer of Haryana Cadre, has taken charge as the Chief Vigilance Officer (CVO) of Navratna Defence PSU Bharat Electronics Limited (BEL).

Walgad completed his BE in Electronics & Communications from the Karnataka Regional Engineering College (now NITK Surathkal), Mangalore University, in 1986. He also holds a Post Graduate Degree in Public Policy and Management (PGPPM) from IIM-Bangalore.

On completion of his IAS training (1991 batch), Walgad was posted as Sub Divisional Magistrate of Ellenabad/Bhiwani, Haryana. He subsequently worked in various capacities, acquiring rich experience in district administration, law and order, rural and urban development and land revenue management while serving as Additional District Collector of Sirsa/Sonepat and Jhajjar, Haryana; and District Collector of Jhajjar and Bhiwani, Haryana, and Kodagu, Karnataka.

As Registrar Magistrate of Maharshi Dayanand University, Rohtak, Haryana, he gained first-hand experience in the areas of higher education and human resource development. During his tenure as Joint Secretary, Haryana Sector, he handled general administration and personal management. Walgad also served in different areas of Haryana Urban Development administration, like Urban Development, Rural Development, Election management, Housing and Environment. ■

VICE PRESIDENT M VENKAIAH NAIDU CALLS FOR STRENGTHENING INDIA-VIETNAM TIES

India has strong interest in Indo-Pacific region. India's approach and vision to Indo-Pacific is SAGAR – Security and Growth for All in the Region



anoi. On the penultimate day of his four-day official visit to Vietnam, Vice President M Venkaiah Naidu continued his high-level engagement by holding talks with Vietnam's Prime Minister Mr Nguyen Xuan Phuc on a wide range of issues and underscored the importance of strengthening the Comprehensive Strategic Partnership between the two nations to ensure peace and security in the region.

The Vice President, who was scheduled to deliver the keynote address at the 16th UN Day of Vesak Celebrations on May 12, reiterated during his talks with the Vietnamese Prime Minister that cordial and friendly relations between India and Vietnam have been strengthened by bonds of Buddhism and Hinduism.

Referring to the growing cooperation between two nations in different fields, Naidu informed the host Prime Minister that India was ready to partner with Vietnam in satellite construction, both for civilian and non-civilian uses. He

also assured him that India remains committed to extend cooperation in training and capacity building of Vietnam's defence forces as that country's requirement.

On bilateral trade, the Vice President expressed confidence of achieving the target of USD 15 billion by 2020.

Observing that Indian companies were increasingly looking to invest in emerging sectors like renewable energy and energy conservation, infrastructure, agriculture, agro-products, textiles, pharma and oil and gas, Naidu informed him of India's commitment to address various issues relating to market access and trade barriers.

Seeking Vietnam Prime Minister's personal intervention in facilitating the entry of Indian pharmaceutical products into their country, the Vice President assured him that the Indian companies can provide high tech health systems and medicines for public health in Vietnam at an affordable cost. This will make health services more affordable and reduce the insurance burden on the Government of Vietnam, he added.

Regarding oil and gas exploration in Vietnam, Naidu sought an extension of up to 10 years for OVL

(ONGC Videsh Limited) contract, which is due to expire in 2023. He said that OVL has invested more than USD 530.00 million in exploration and exploitation of oil and gas in Vietnam and was exploring possibility of another gas discovery that may entail additional investment of around USD 136.00 million. He also wanted extension of Production Sharing Contract by Petro Vietnam by two years.

The Vice President also reiterated India's support to Vietnam for the non-permanent membership of the UNSC for 2020-21 and thanked Vietnam for its support to India to be a permanent member of an expanded UNSC.

Naidu said that India has strong interest in Indo-Pacific region. India's approach and vision to Indo-Pacific is SAGAR – Security and Growth for All in the Region.

Earlier, inaugurating a 'Jaipur Foot Artificial Limb Fitment Camp' held at the Indian Embassy under 'India for Humanity' programme to mark the 150th Birth Anniversary of Mahatma Gandhi, the Vice President said the core philosophy of India from time immemorial has been to share and care and emphasized the need to pay attention to the deprived sections.

Stating that the iconic Jaipur Foot provided mobility, a sense of dignity and an ability to live life fully to the differently abled, Vice President Naidu lauded Bhagwan Mahaveer Viklang Sahayata Samiti, for providing the services free of charge.

The Vice President also visited Ho Chi Minh Mausoleum and paid homage to the Vietnamese Revolutionary Leader, Ho Chi Minh. He attended a Gala Dinner Reception hosted by the Chairperson of the National Assembly of Vietnam Ms Nguyen Thi Kim Ngan at the National Convention Centre.



L3 TECHNOLOGIES, HARRIS CORPORATION MERGER PAVES WAY FOR ITS BIG LEAGUE PLAY

L3 Technologies and Harris Corporation merger, scheduled to be completed later this year, will lead to the creation of the sixth largest defence contractor in the world. The combined entity to be named as L3 Harris Technologies will be headed by Christopher E Kubasik as Chief Executive

Presently L3 has been making big strides and has transformed itself into a unified, agile innovator. It has won two competitive contracts – first, to build the next increment of the Navy’s premier airborne jamming system and second, to modernise the electronics architecture on the widely-used C-130H tactical airlifter. It will potentially open up opportunities in dozens of other countries operating the plane.

Considering L3’s extensive competencies in surveillance, simulation, networking and other high-end applications of military electronics, the arrival of L3 Harris Technologies as a new force and formidable competitor in the emerging military technology market will heat up the competition and pose a real challenge to the established players in the defence business.

L3 Technologies was founded in 1997 as a spun off from Loral Corporation and is an electronics enterprise, building sensors, networks and other hardware for all five domains of warfare—sea, air, land, space and the electromagnetic spectrum.

Harris Corporation: It is an technology company, defence contractor and information technology services provider that produces wireless equipment, tactical radios, electronic systems, night vision equipment and both terrestrial and space borne antennas for use in the government, defence and commercial sectors. ■



Under Christopher Kubasik, L3 Technologies is rapidly transforming itself as an integrated and innovative enterprise. As a result, revenues are rising, margins are improving and international sales too have witnessed steady increase. The

joint enterprise may witness some portfolio shaping to assure leadership position in each of its addressed markets. Now, the company’s focus is on technology and reorganisation of the business to facilitate functional synergies as a growth strategy.





DIRECTORATE OF INDIAN DEFENCE UNIVERSITY ORGANISES 2-DAY CYBER EXERCISE ON SCENARIO BUILDING & RESPONSE

This exercise to be annually under Indian Defence University will also involve Indian agencies and agencies from Friendly Foreign Countries to jointly build the capability against cyber threats

Jodhpur. After the successful conduct of workshop on Cyber Warfare & Technology, wherein plethora of lessons emerged, Directorate of Indian Defence University organised a two-day Cyber Exercise on Scenario Building & Response at Purple Bay, Jodhpur Officers' Hostel, New Delhi on April 29-30. The Exercise is represented by Services, NSCS, NTRO, CERT-in, DRDO, NIC, CSRC, Academia and Industry.

This exercise would incorporate all best practices which were recommended during the cyber workshop held earlier with a view to exercise options at different levels to seek synergised response based on the assessment of situation

and own capability.

The scope of the exercise would encompass the threat landscape and its impact, incident reporting & response framework, procedures for information exchange, attribution, evidence gathering

and malicious service takedown, enhancement of capabilities required to protect information, and information systems, enhance cyber awareness, readiness and coordination, integrated international responses & inter-governmental / inter-agency partnerships.

Lt Gen PS Rajeshwar, AVSM, VSM, Chief of Integrated Defence Staff delivered the keynote address for the two-day cyber exercise. It was followed by painting of Scenarios to seek responses from the stakeholders.

This exercise is planned to be conducted on an annual basis under the aegis of Indian Defence University, which will also involve Indian agencies and subsequently participation from agencies from Friendly Foreign Countries to jointly build the capability against cyber threats. ■

ASSAM RIFLES, ICG SIGN AFFILIATION CHARTER TO ENHANCE INTER ARMED FORCES COOPERATION

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hillong. In an effort to enhance inter Armed Forces Cooperation and utilise each other's assets for training and sports, the Director Generals of Assam Rifles and Indian Coast Guard (ICG) in an impressive ceremony held at Laitkor, Shillong, on May 22 signed an Affiliation Charter between 3rd (Naga Hills) Battalion of Assam Rifles and Indian Coast Guard Ship 'Shaurya'.



Assam Rifles is the oldest Para Military Force of India with a rich history of valour, courage and tradition. Assam Rifles have 46 Battalions manning the Indo-Myanmar border and countering the insurgency in the north east states. On contrary the ICG, with 142 ships & 62 aircraft is one of the youngest Armed Force under Ministry of Defence. 3rd (Naga Hills) Battalion of Assam Rifles is the oldest battalion of the force raised in 1835 as 'The Cachar Levy' comprising of 750 personnel of all ranks for guarding the Eastern Frontier of Assam from Brahmaputra river to the Cachar Hills. Presently, the battalion is developed at Kohima, Nagaland where it had earlier bravely fought the Japanese in World War-II and stopped their advance into India.

ICG Ship 'Shaurya', indigenously built at Goa Shipyard Limited, based in Chennai is a modern state-of-the-art 105 metres long

Offshore Patrol Vessel (OPV) commissioned on August 12, 2017. 'Shaurya' meaning courage is a projection of ICG's commitment 'To Serve & Protect' the maritime interest of the nation. The ship is extensively developed for EEZ surveillance and other duties as enshrined in the Coast Guard charter to safeguard the maritime interest of India.

The objective of the affiliation is to promote bilateral cooperation between Assam Rifles and the ICG in the field of exchange of information/personnel, build-up camaraderie for training, sports/adventure and sustainable development. This affiliation will facilitate the 'Sentinels of the North East' to interact with the 'Sentinels of the Seas' on professional and social platforms and share rich experiences and best practices. The two Armed Forces will be greatly benefited by motivating one another towards common goals.

ADDING ANOTHER TEETH IAF FORMALLY INDUCTS FIRST APACHE HELICOPTER

Arizona, US. Adding another teeth to its kitty, Indian Air Force (IAF) formally inducted First AH-64E (I) – Apache Guardian helicopter in a ceremony held at Boeing production facility in Mesa, Arizona, US on May 10. Air Marshal AS Butola represented the Indian Air Force (IAF) and accepted the first Apache in a ceremony held at Boeing facility. Representatives from US Government were also present on this occasion.

It may be noted here that IAF had signed a contract with US Government and M/s Boeing Ltd in September 2015 for 22 Apache helicopters. The first batch of these helicopters is scheduled to be shipped to India by July this year. Selected aircrew and ground crew have undergone training at the training facilities at US Army base Fort Rucker, Alabama. These personnel will lead the operationalisation of the Apache fleet in the IAF.

The addition of AH-64 E (I) helicopter is a significant step towards modernisation of Indian Air Force's helicopter fleet. The helicopter has been customised to suit IAF's future requirements and would have significant capability in mountainous terrain. The helicopter has the capability to carry out precision attacks at standoff ranges and operate in hostile airspace with threats from ground. The ability of these helicopters, to transmit and receive the battlefield picture, to and from the weapon systems through data networking makes it a lethal acquisition. These attack helicopters will provide significant edge in any future joint operations in support of land forces.



PASSING OUT PARADE – SPRING TERM 2019 HELD AT INDIAN NAVAL ACADEMY, EZHIMALA

The parade also saw 15 female cadets marching shoulder to shoulder with their male counterparts to join the ranks of the Indian Navy

Ezhimala. In a spectacular Passing out Parade (POP) held at Indian Naval Academy (INA), Ezhimala, on May 25, 264 trainees comprising Midshipmen and cadets of Indian Navy, Indian Coast Guard, and ten international cadets passed out with flying colours, marking the culmination of their ab-initio training.



The passing out Midshipmen and cadets belong to four different courses of Spring Term 2019, viz., 96th Indian Naval Academy Course (B.Tech), 96th Indian Naval Academy Course (M.Sc), 27th Naval Orientation Course (Extended), 28th Naval Orientation Course (Regular) and 28th Naval Orientation Course (Coast Guard).

The parade also saw 15 female cadets marching shoulder to shoulder with their male counterparts to join the ranks of the Indian Navy. The ten trainees from various friendly foreign countries include two trainees each from Maldives, Myanmar and Seychelles, one trainee from

Tanzania and three trainees from Sri Lanka. The passing out batch of Sri Lanka trainees have the distinction to be the first batch of foreign trainees to complete the four years B.Tech curriculum from INA, ever since its institution.

The parade was reviewed by General Bipin Rawat, PVSM, UYSM, AVSM, YSM, SM, VSM, ADC, Chief of the Army Staff, who awarded medals to eight meritorious Midshipmen and cadets after the ceremonial review. Vice Admiral RB Pandit, AVSM, Commandant, INA, Dr Anurag Kumar, Director, Indian Institute of Science, Bangalore, senior officers of the station and other outstation

dignitaries witnessed the momentous occasion.

The Passing out Parade was also witnessed by the proud parents and guardians of all Midshipmen and cadets. The 'President's Gold Medal' for the Indian Naval Academy B.Tech course was awarded to Midshipman Killamsetty Vikash. The 'Chief of the Naval Staff Gold Medal' for the Naval Orientation Course (Extended) was awarded to Cadet Siddharth Sankar. The 'Chief of the Naval Staff Gold Medal' for the Naval Orientation (Regular) Course and the 'Zamorin Trophy' for the best women cadet (instituted for the first time) was awarded to Cadet Kreeshma R.

The other medal winners are as follows:-

(a) CNS Silver medal for INAC B.Tech Course (Second in merit) – Midshipman Samartha Ravindra Limaye. (b) FOC-in-C South Silver Medal for NOC (Extended) (Second in Merit) - Cadet Gourav Sangwan. (c) FOC-in-C South Bronze Medal for INAC B.Tech Course (Third in Merit) – Midshipman Kripa Sindhu Patel. (d) Commandant INA Silver Medal for NOC (Regular) (Second in Merit) - Cadet Yugal Gautam. (e) Commandant INA Bronze Medal for NOC (Extended) (Third in Merit) - Cadet Shreyash S Hanchinal.

The glittering ceremony culminated with the successful trainees forming up in two columns and marching with their gleaming swords and rifles held in salute, past the Academy's Saluting Dias, the Quarterdeck, in Slow March, to the traditional notes of 'Auld Lang Syne', the poignant farewell tune played by Armed Forces around the world when bidding adieu to colleagues and comrades.

Passing out courses were bid farewell by a batch of three MiG 29-K fighter aircraft in Vic formation led by Cdr Vikash Narwal, NM from Indian Naval Air Squadron 303 who carried out a low fly past over the quarterdeck welcoming the new officers to the Navy and joined the celebrations with a bomb burst manoeuvre.

On completion of the parade, the proud parents and guardians of the Passing Out courses shipped the Naval and Coast Guard epaulettes, known as 'Stripes', on the shoulders of their wards, thus symbolising their transformation from 'cadets' into full-fledged Navy and Coast Guard Officers.

The Reviewing Officer and other dignitaries shipped the stripes of the medal winners and congratulated all the trainees for their successful completion of the rigorous training. ■

INDIAN NAVY LAUNCHES VELA, THE FOURTH IN THE SERIES SCORPENE CLASS SUBMARINE

New Delhi. Indian Navy launched the fourth in the series Scorpene class submarine, Vela, in a grand ceremony at Mazagon Dock Shipbuilders Limited (MDL) in Mumbai on May 6. Constructed by MDL, Vela was launched on May 6 by Mrs Veena Ajay Kumar, wife of Dr Ajay Kumar, IAS, Secretary Defence Production, who was the Chief Guest on the occasion. Vice Admiral AK Saxena, CWP&A was also present during the launching ceremony.



This event reaffirms the steps taken by Mazagon Dock Shipbuilders Ltd (MDL) in the ongoing 'Make In India' programme, which is being actively implemented by the Department of Defence Production under the Ministry of Defence (MoD), Government of India. The submarine was towed to Mumbai Port Trust, for separation from the pontoon, after which she will undergo rigorous trials and tests, both in harbour and at sea before delivery to the Indian Navy. The contract for the construction and Transfer-of-Technology for six Scorpene class submarines in series, has M/s Naval Group (formerly DCNS) of France as 'Collaborator' and are being built by MDL.

Speaking on the occasion, MDL CMD Cmde Rakesh Anand said with the launching of the P15 B Destroyer 'Imphal' on April 20 and the, launching of Vela on May 6, were indeed some of the major events for MDL so far this year.

Presently eight warships and five submarines are under construction at MDL. MDL is one of the India's leading shipyards with a capacity to meet requirements of the Indian Navy. The Scorpene class of submarines can undertake multifarious tasks typically undertaken by any modern submarine which include anti-surface as well as anti-submarine warfare.

The transfer of technology involves appropriate technical support by Naval Group to MDL in the field of construction, integration and tests of the submarines in India which is achieved through transfer of technical data package to MDL through information system as well as on job training to MDL's personnel on critical technologies.

Leveraging the experience and the transfer-of-technology of the Scorpene project, with enhanced and upgraded infrastructure, MDL, is ready for undertaking construction of the future submarines.



INDIGENOUS SHIPBUILDING GETS BOOST AS RFP WORTH RS 15,000 CRORE ISSUED

In keeping with the government's aim of indigenizing defence sector and boost "Make in India" initiative, four shipbuilding Requests for Proposal (RFP) worth Rs 15,000 crore have been issued for the acquisition of various ships and craft for the Indian Navy and the Coast Guard. The RFP for six Next Generation Missile Vessels (NGMVs) has been issued to seven shipyards including Reliance Naval and Engineering Ltd; Cochin Shipyard Ltd; L&T Shipyard; Defence Public Sector Undertakings (DPSUs): Garden Reach Shipbuilders and Engineers Ltd (GRSE), Goa Shipyard Ltd (GSL), Hindustan Shipyard Ltd (HSL) and Mazagon Dock Shipbuilders Ltd (MDL).

The Defence Ministry has also issued RFPs for eight Fast Patrol Vessels (FPVs) and 12 Air Cushion Vehicles (ACVs) and eight Missile-cum-Ammunition Barges to shortlisted Indian shipyards. The RFP for ACVs also includes the initial requirement of six ACVs for the Indian Army. In order to make more objective the process of qualifying the shipyards for the issue of RFPs for shipbuilding projects, Defence Ministry alongwith Navy and Coast Guard had undertaken an exercise. Steps were also taken to encourage participation by a larger number of Indian shipyards. This exercise at rationalization of guidelines for capacity assessment of shipyards promulgated recently enabled the issue of RFPs for a large number of pending shipbuilding projects. In a move to encourage participation of smaller shipyards in defence projects, those with the anticipated annual outflow of less than Rs 75 crore has been restricted to smaller shipyards having an average annual turnover less than Rs 500 crore.

GRSE CELEBRATES 60TH RAISING DAY

GRSE delivered its 100th warship to the Indian Navy on March 30, 2019 – an achievement that makes GRSE the first Indian shipyard to build and deliver 100 warships

K

olkata. Garden Reach Shipbuilders and Engineers Ltd., (GRSE), a Miniratna Category 1 Defence PSU and a leading warship building company of India, operating under administrative control of the Ministry of Defence, celebrated its 60th Raising Day of becoming a Defence PSU on April 19. GRSE celebrated the occasion with much fanfare on April 19 and 20.



The event on April 19 was an in-house affair which saw wholehearted and enthusiastic participation from all sections of GRSE employees including Rear Admiral V K Saxena, IN (Retd) Chairman and Managing Director. Employees were awarded in recognition of their contribution and retired workers who had served the Company for 40 years were felicitated. The event culminated in a colourful cultural programme.

April 20, 2019 was an evening of grandeur as West Bengal Governor Keshari Nath Tripathi graced the occasion as the Chief Guest. The Governor inaugurated the event

by cutting a ceremonial cake and marking a formal beginning of the celebrations. He also unveiled a book titled, "Voyage to the Centennial Warship" – a memorabilia celebrating and chronicling GRSE's commendable journey spanning from its delivery of the first indigenous warship of Independent India to Indian Navy in 1961 till the recent landmark of delivering the 100th warship, Landing Craft Utility, IN LCU – L-56 to Indian Navy. The Governor also released a copy of 'GRSE Varta 2019', an Annual In-House Journal during this event.

Demonstrating a very moving gesture, Rear Admiral V K Saxena, IN (Retd), the Chairman & Managing Director, GRSE felicitated and applauded all the former Chairman and Managing Directors of GRSE in presence of West Bengal Governor Tripathi; Director (Finance) SS Dogra; Director (Personnel) AK Nanda; Director (Shipbuilding) Cmde S Nayyar; Chief Vigilance Officer D Mahto (on the dais) and senior officials of GRSE and distinguished guests. Interestingly, GRSE delivered its 100th warship to the Indian Navy on March 30, 2019 – an achievement that makes GRSE the first Indian shipyard to build and deliver 100 warships to the Indian Navy, Indian Coast Guard and Mauritius Coast Guard.

SIX DECADES OF GRSE

The genesis of Garden Reach Shipbuilders & Engineers Ltd dates back to 1884 when it started its journey as a small workshop to repair vessels of River Steam Navigation Company. The company was taken over by the Government of India in 1960 after which there was no looking back. The first warship of Independent India, INS Ajay was delivered to the Indian Navy in 1961 – which is within one year of being taken over by the Ministry of Defence.

Over last 59 years, GRSE has built around 780 Platforms which include 100 warships to Indian Navy, Indian Coast Guard & Government of Mauritius – the highest number of warships built and delivered by any shipyard of the country. From building five tonne boats to 24600 Ton Fleet Tanker, GRSE has done it all and has proved its mettle as a pioneer warship builder of the nation. The company was conferred the status of a Mini Ratna Category 1 Company in the year 2006 and the shipyard has proudly received ISO 9001, 14001, 18001 and 50001

certification. The first warship for export by the country, was also delivered by GRSE to Mauritius in 2014 – our Offshore Patrol Vessel, named, CGS Barracuda.

Primary Role of GRSE has been to build warships and other vessels for the Indian Navy and the Indian Coast Guard. Over the years, GRSE has established ace capabilities in the field of in-house ship design & shipbuilding and has made significant contribution to the success of indigenous warship construction programme in the country.

GRSE has also emerged as a leading shipyard of India, building a wide array of vessels, from world class Frigates to Fast Attack Crafts. The shipyard completed its infrastructure modernization and has successfully built an Integrated Shipbuilding Facility in 2013 in order to build quality ships in lesser timeframe with Modular Construction Technology.

GRSE currently boasts of its capacity to build 20 warships (eight large and 12 small) simultaneously. Apart from shipbuilding and ship repairing, the company has also diversified into engineering business with a product profile of Pre-fabricated Portable Steel Bridges, various Deck Machinery items and Assembly/ Testing/ Overhauling of MTU Diesel Engines.

FIRST TO CREDIT

First Shipyard of Independent India to build a Seaward Defence Boat (SDB): INS Ajay was delivered to the Indian Navy in 1961. This ship was later gifted to Bangladesh and was reamed as BNS Surma.

First Ever Patrol Vessel built for Indian Coast Guard: December 23, 1980 would remain a red letter day in the history of both GRSE & Indian Coast Guard when the first ever Patrol Vessel built for Indian Coast Guard CGS Rajhans was



commissioned.

First Ever Indigenous Survey Vessel: The first Survey Vessel for Indian Navy was also designed and built by GRSE. This ship, INS Sandhayak, was commissioned on February, 1981.

The Landing Ship Tanks built by GRSE were termed as Landing Ship Tanks (Large) in order to differentiate from the medium sized LSTs, then in service with Indian Navy. The First of Class LST (L) designed in-house & built by GRSE, INS Magar was commissioned in 1987.

Only Indian Shipyard to have built a Fleet Replenishment Tanker: INS Aditya, the largest built Fleet Replenishment Tanker was delivered to the Indian Navy in March, 2000. First Indian Shipyard to have built Hovercrafts: GRSE has built a total of six Hovercrafts for the Indian Coast Guard. The First Hovercraft, H-181, was commissioned on Sept 18, 2000.

First Ever Warship Built in Indian for Export: CGS Barracuda was commissioned at Port Louis, Mauritius on March 12, 2015, in the august presence of Prime Minister Narendra Modi and his Mauritius counterpart Sir Anerood Jagnauth. This was a historic occasion for India, and GRSE in particular. The in-house design and construction of this first ever export warship of the country has been yet another



feather in the cap of GRSE.

First Indian Shipyard to integrate carbon composite superstructure with steel hull on board 3rd ASW Corvette, INS Kiltan delivered to Indian Navy on October 14, 2017.

First Defence Public Sector Undertaking shipyard to get listed in Stock Exchange on October 10, 2018. First Defence PSU to go live on TReDS Platform on August 9, 2018.

RECENT FEATS

Record delivery of eight warships in 22 months (Jun 2017 – March 2019). 13 Warships delivered in last Four Years (FY 2014-15 to FY 2018-19). Kamorta Class Anti-Submarine Warfare Corvettes & Landing Craft Utility Ships have the distinction of achieving over 90 per cent indigenous equipment fit.

The design R & D Unit of GRSE has been recognized by Department of Scientific & Industrial Research (DSIR), Ministry of Science & Technology. ■

NEWS ROUND UP

BOEING INDIA PARTNERS WITH IITS, IISC, OTHERS TO PRODUCE

Boeing has strategically invested in developing talent for the Indian aerospace sector and made a

New Delhi. Boeing India has partnered with Indian Institutes of Technology (IITs), Indian Institute of Science (IISc) Bangalore and a few other Institutions to produce young aerospace entrepreneurs. Boeing on May 20 announced the launch of the Boeing University Innovation Leadership Development (BUILD) program for university students, faculty and early stage start-ups. The BUILD program will help innovators convert their ideas into viable business offerings that have the potential to shape the future of Indian aerospace and defence.



Applicants can submit their ideas in the fields of aerospace, autonomous vehicles, advanced manufacturing, augmented and virtual reality, analytics (artificial intelligence and machine learning), materials, robotics and the Internet of Things.

“Boeing is committed to nurturing innovation and skill development in India. We believe that a close partnership with India’s academia and growing entrepreneurial ecosystem has the

potential to reimagine the future of aerospace for the world,” said Salil Gupte, president, Boeing India.

“With BUILD, we are creating a platform for students and entrepreneurs to not only benefit from our vast experience and partner networks, but also develop their ideas into path-breaking innovations.”

Boeing has partnered with seven incubators: IIT Delhi, IIT Gandhinagar, IIT Bombay, IIT Madras, IISc Bangalore,

T-Hub Hyderabad and KIIT Bhubaneswar to select finalists for the BUILD boot camps. The shortlisted teams will compete at a regional level and the finalists will then pitch their ideas to a selection panel of subject-matter experts on Boeing Innovation Day, to be held in September 2019. The winners will stand a chance to win cash prizes.

AFSAC PROJECT: TECH MAHINDRA SIGNS ₹300 CRORE CONTRACT WITH INDIAN NAVY

The new AFSAC Card will replace the existing paper based Identity Card for all Navy personnel including dependents and ex-servicemen

New Delhi. Tech Mahindra, a leading provider of digital transformation, consulting and business re-engineering services and solutions, on May 21 announced its biggest defence order worth INR 300 crores to enable digital transformation for the Indian Navy. As part of the ‘Armed Forces Secure Access Card’ (AFSAC) Project, Tech Mahindra will implement microprocessor based Access Control System across all naval bases and ships.

The new AFSAC Card will replace the existing paper based Identity Card for all Navy personnel including dependents and ex-servicemen.

Using the CMMI (Capability Maturity Model Integration) level 5 processes, Tech Mahindra will develop a secure application to manage the access

control devices, network devices and the AFSAC through a Data Center. Scheduled to be implemented over the next two years, the project will ensure smooth issuance, handling, administration, management and life cycle support of AFSAC Cards on turnkey basis. Sujit Baksi, President, India Business & Corporate Affairs, Tech Mahindra, said, “It is an incredible feat for us to work with

AEROSPACE ENTREPRENEURS

significant impact in creating a skilled frontline workforce



All through the program, Boeing mentors and industry experts will interact with the finalists to refine ideas and develop their entrepreneurial skills.

Over the years, Boeing has strategically invested in developing talent for the Indian aerospace sector. Boeing, through its programs such as the HorizonX India Innovation Challenge and the

Accelerated Aircraft Maintenance Engineers Apprenticeship, has made a significant impact in creating a skilled frontline workforce and empowered entrepreneurs in India.

Interested students and entrepreneurs can apply to the BUILD program by visiting www.boeing.co.in/build. Deadline for submissions is June 10, 2019. ■

the Indian Navy on this project to enhance our national defence security systems. Tech Mahindra has shown renewed focus in the India market with key wins in the recent past like – Coal India, India Ports Association, Kanpur Smart City, to name a few.

This order further cements our role as one of the leading system integrators globally. With our proven expertise in tech enablement and digital transformation, we look forward to collaborating with the Indian Navy in ramping up the national security infrastructure.”

Commodore Atul Kumar, Project Director, Indian Navy, remarked, “The security of Indian Naval establishments

against unauthorized access, is a thrust area and the AFSAC Project will be an important step towards achieving this aim; with a combination of cutting edge technology and professional execution. We look forward to collaborating with Tech Mahindra in this path-breaking endeavour.” As part of the TechMNxt charter, Tech Mahindra is focused on leveraging next generation technologies to cater to the customer’s evolving and dynamic needs. As a leading digital transformation company, Tech Mahindra continues to deliver tangible business value and experiences to solve real business problems of its customers globally. ■



BAE SYSTEMS JOINS BOEING'S MQ-25 INDUSTRY TEAM

BAE Systems has been awarded contracts by The Boeing Company to supply the Vehicle Management Control System and Identification Friend or Foe (IFF) System for the MQ-25.

“BAE Systems leads the industry in high-integrity fly-by-wire and mission-critical IFF technologies” said Corin Beck, director of Military Aircraft Systems at BAE Systems. “Our relationship with Boeing started more than four decades ago and has resulted in aircraft that have some of the most advanced avionics and reduced size transponders in the world.”

The Vehicle Management Control System will control all flight surfaces and perform overall vehicle management duties for the MQ-25 unmanned aerial vehicle. The IFF product ensures operation in contested environments by reliably identifying both coalition and enemy vehicles. The MQ-25 is the US Navy’s first operational carrier-based unmanned aircraft and is designed to provide a much-needed refueling capability. The contract supports Boeing’s engineering and manufacturing development program to provide four MQ-25 aircraft to the US Navy for Initial Operational Capability by 2024.

“The MQ-25 program is vital because it will help the US Navy extend the range of the carrier air wing, and Boeing and our industry team is all-in on delivering this capability,” said Dave Bujold, Boeing’s MQ-25 program director. “The work we’re doing is also foundational for the future of Boeing – where we’re building autonomous systems from seabed to space.” BAE Systems is an industry leader in the design, development, production, and support of highly reliable flight control systems for commercial and military aircraft. It was the first to introduce fly-by-wire in both military and civil applications. ■

SINGAPORE INDIA MARITIME BILATERAL EXERCISE SIMBEX-2019 CONCLUDES

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ew Delhi. On successful completion of IMDEX 19, Indian Navy ships Kolkata and Shakti continued their stay at Singapore to participate in the annual Singapore India Maritime Bilateral Exercise SIMBEX-2019 which concluded on May 22. SIMBEX-2019 conducted from May 16 to 22. Since its inception in 1993, SIMBEX has grown in tactical and operational complexity.

exercises such as firing on aerial/ surface targets, advanced aerial tracking, coordinated targeting exercises and tactical exercises on surface/ air scenarios.

In addition to IN Ships Kolkata and Shakti, long range maritime patrol aircraft Poseidon-8I (P-8I) is also participating in Simbex-19. The Singapore side is represented by RSN ships Steadfast and Valiant, maritime patrol aircraft Fokker-50 (F-50) and F-16 fighter aircraft.

SIMBEX 19 would also conclude the two month long deployment of IN ships Kolkata and Shakti to South and East China Seas, which is aimed at extending the bridges of friendship through enhanced cultural, economic and maritime interactions with countries of east and south-east asia.

IN ships' participation in International Fleet Review (IFR) at Qingdao, China as part of PLA (Navy) 70th anniversary



The annual bilateral exercise saw its progression from traditional anti-submarine exercises to more complex maritime exercises such as advanced air defence operations, anti air/ surface practice firings, tactical exercises, etc.

Over the years SIMBEX has stood the test of time in demonstrating the nation's commitment to enhance maritime cooperation between the two navies and bolster bonds of friendship between the two countries. For SIMBEX 19, Indian Navy has deployed its finest assets with an aim to strengthen mutual trust, enhance interoperability, and build greater synergy to

address common maritime concerns among both the navies.

The harbour phase of SIMBEX-19 conducted from May 16 to 18 included various planning conferences, simulator based warfare training/ wargaming, courtesy calls to dignitaries of RSN navy, sporting events and deck reception onboard INS Kolkata.

The sea phase of simbex 19 scheduled to be conducted in the South China Sea from May 19 to 22 includes various maritime combat



celebrations and ADMM-plus MS FTX also reflects the Government of India's 'Act East' policy and the Indian Navy's efforts to "unite nations through the oceans". ■

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NAVY AND COAST GUARD TO GET AMPHIBIOUS POWER

US-2i to be on top agenda during India Japan annual bilateral summit

New Delhi. In a move aimed at making defence deals transparent, the government is keen to pursue the acquisition of amphibious aircraft for the Navy and Coast Guard through government-to-government (G2G) route and this would be topping the agenda when Japanese Prime Minister Shinzo Abe visits later this year for annual bilateral summit.



officials said.

Ahead of the summit, the foreign and defence ministers of both countries will meet for the first ever 2+2 Ministerial Meeting, a format that was agreed to in 2018 and is expected to discuss the US-2i amphibious aircraft and other issues relating to Defence, Foreign Policy and

Security.

The deal was pushed back due to various reasons including high costs but is now back on track with both sides having resolved all issues related to the purchase of ShinMaywa Industries' US-2i amphibious aircraft.

With the Navy's limited requirement for the search and rescue, Japan has offered to manufacture the aircraft in India with the transfer of technology (ToT). Tokyo has offered the possibility of exports to third countries and suggested setting up of MRO and manufacturing spare parts too in India.

The Navy had sought information about amphibian aircraft back in 2010 from Japanese ShinMaywa, Canada's Bombardier for its CL-415 platform, Russia's Beriev Be-200 and US/German Company Dornier for its Seastar CD2. ■

The purchase of amphibious aircraft was back on track following a bilateral meeting on the sidelines of the G-20 Summit in Osaka, Japan between Prime Minister Narendra Modi and his Japanese counterpart Abe.

Both the Navy and the Coast Guard are looking to purchase 12-18 of these amphibious Search and Rescue aircraft (SAR) which will enhance their reach and capability.

It will provide a huge boost to Navy's operational logistics in far-flung areas. It is strategically critical to Andaman and Nicobar Islands.

The plane can also land spares and equipment in close proximity to warships on the high seas.

"The \$1.65 billion deal is going to be topping the agenda when the Japanese leader Shinzo Abe comes to India later this year for the annual bilateral summit,"

GEN NEXT ROBOTS CAN PERFORM WIDE RANGE OF MOTIONS



New Delhi. Gen Next Robots would perform a wide range of motions and no longer be metallic objects, but made of 'soft materials' which would work cordially with the human environment. These robots would be muscle mimicking, self-healing and with hydraulically amplified actuators, said Tessy Thomas, DRDO's Aeronautical Systems (Aero) Director General and known as "Missile Woman."

"The next generation of robots won't be metallic machines, but instead made of soft materials with a wide range of motions that react to applied electricity," she said at a four-day conference on 'advances in robotics' at IIT-Madras.

Robotics have become solutions to various challenges, right from disaster management to military safety, she said, adding that the involvement of number of start ups in the country with industry was the need of the hour.

"With advancements in robotics, AI, computer aided manufacturing, 3D printing and Internet Of Things (IoT), the industry is estimated have Rs two lakh crore business by 2025," Thomas said.

The Centre for Artificial Intelligence and Robotics (CAIR) located in Bengaluru is involved in the Research and Development of high quality Secure Communication, Command and Control and Intelligent System.

CAIR was established in October 1986 with its initial focus being in the areas of Artificial Intelligence (AI), Robotics and Control systems. In November 2000, R&D groups working in the areas of Command, Control, Communications and Intelligence (C3I) systems, Communication and Networking, and communication secrecy in Electronics and Radar Development Establishment were merged with CAIR. ■



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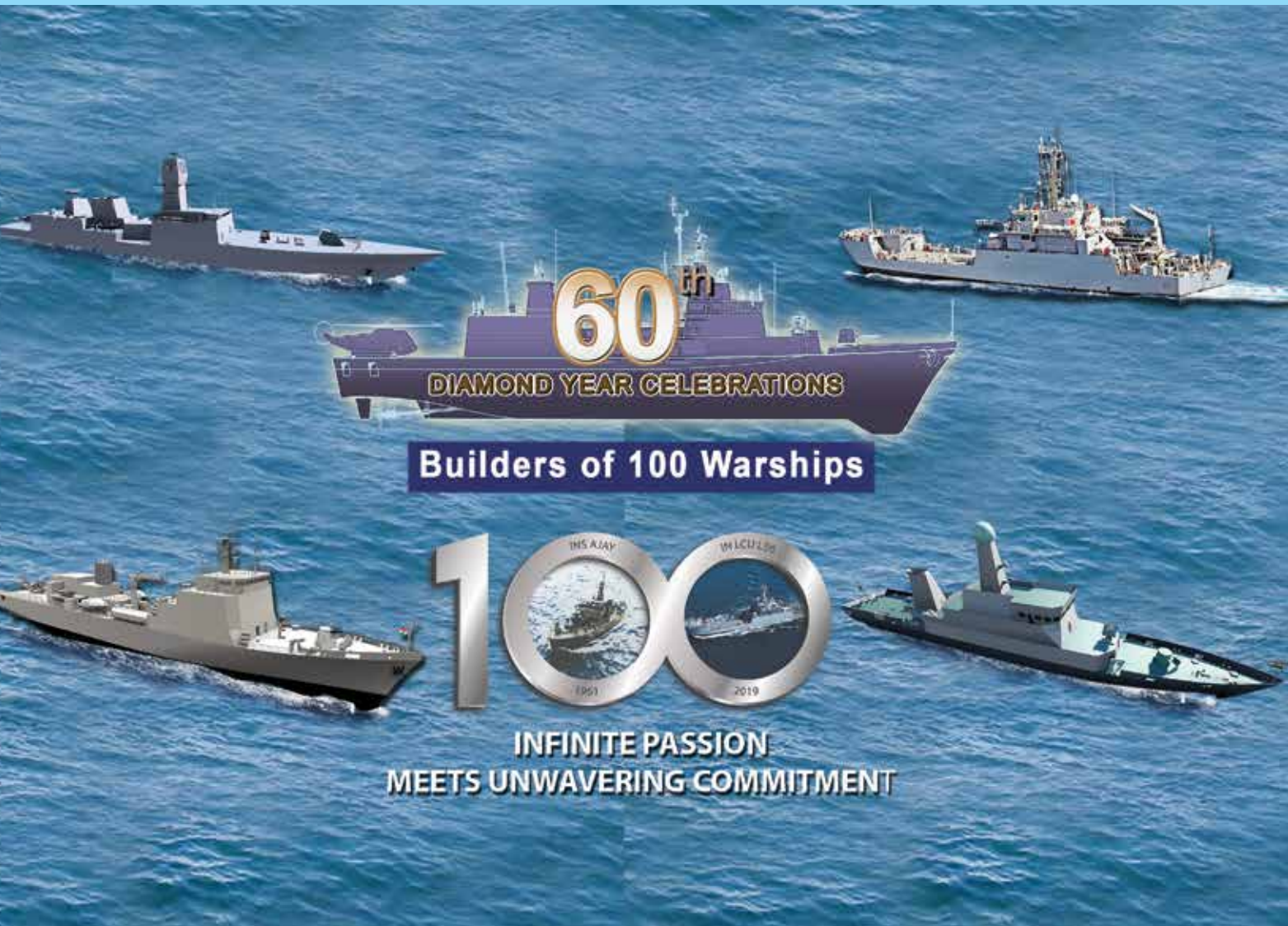
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