

राक्षस

ANIRVEDA

PURSUING SELF RELIANCE IN DEFENCE



CAN PVT ENTITIES HIT TARGET IN SMALL ARMS DEVELOPMENT?

The government's go ahead to private entities entry in small arms development has intensified the competition. Will they hit the target?

China's Belligerence: The Big Picture

India needs to discern China's intent and larger strategic signals emanating from Beijing

FM's Reform Package for Atmanirbharta

Success of reform package to depend on how effectively systems and procedures are implemented

Interview: Ariel Karo, EVP, Mkt & BD, RADS

Rafael fully committed to Indian Armed Forces technological edge and operational readiness



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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

DESTINATION MAKE IN INDIA: IT'S A CONTINUOUS PROCESS



Half way through 2020, the signs of change has started showing up. The message is already there. Rise from the slumber, declare, work and be the change, bond together instead of drifting away. Old

ways won't open new doors and normal is an illusion. What seems normal to many is chaos to others. The real change doesn't come merely through ideas, it needs the power of conviction from heart to take a real form.

India's strength has always been unity in diversity. Somewhere, this strength has started weakening up as embracing and celebrating the differences is no longer welcomed. Has Indian leadership trapped itself being overconfident with stupidity? If so, it's a very dangerous combination. Leadership and learning are indispensable to each other. Is it the wide vacuum that exists between leadership and learning that has failed India? The trend needs to be reversed now as it will make India stronger on all fronts.

Over decades, India's desire and aspiration to be a world leader hasn't changed. And the motivation to achieve and enjoy that feat needs change of pace now. Indian government, policy makers, military planners and businesses needs to reset their views. To create new opportunities and bring in the real transformation, unlearning and challenging the status quo is a must. And the ongoing face off with China is a classic example to realise upfront the urgency.

There is a vast difference in ideological and cultural perception between India and China. It's hard for China to accept India as a competitive power and equal partner. Despite the wide gap and multiple asymmetries between the two, be it

economic or military, China's attempt to bully India with its coercive strategy and misplaced adventurism to realise its dream of great rejuvenation as a super power has been on a slippery ground. As a result of India's multipronged push back, China is now finding itself not only globally isolated but also on the verge of losing its economic dominance.

To achieve self-reliance in defence manufacturing with reimagined Make in India, the focal point should be more holistic one, looking at the desired outcomes in a new way, because Make in India's destination should never be a place but a continuous process.

One wonders whether the failures to bring in the desired change through policy and procedural reforms, can be attributed to lack of intent in implementation or the entire exercise till date has fallen victim to the hidden and deep rooted sinister designs at play over the decades. After all, in hindsight we know what we want? We know that we have the right talent to innovate and find solutions, we know what needs to done to get the end results. But one can't decide in hindsight and therefore right actions need to be taken now to ensure that they thrive in the new normal.

In defence parlance, perfection is desirable and precision is a must. Simultaneously, productivity shouldn't become a victim to interference by perfectionists. Now is the time to act. Lead with plans and strategies, follow the process and procedures in true spirit and weed out the barriers, bottlenecks to make way for a smooth sprint run forward. I think, aspirational India is well prepared and will definitely go for it. Hope you will find *Raksha Anirveda's* July - September edition interesting and enjoy reading it.

Jai Hind!!

Ajit Kumar Thakur
Editor & Business Director

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Myanmar can be a bridge between India and ASEAN. At a time when India has initiated the ambitious programmes like Act East Policy, relations with Myanmar attain substantive height

Chinese forces are not only demonstrating an unprecedented aggressiveness along the LAC, but also imposing its dominance in South China Sea, Taiwan and a few other nations, and India needs to discern China's intent and the larger strategic signals emanating from Beijing in the geopolitical domain



Indian Army versus PLA build-up at Galwan Valley in the backdrop of India-China faceoff

CHINA'S ARROGANCE AND AGGRESSIVENESS: THE BIG PICTURE

By **LT GEN VINOD BHATIA (RETD)**



he Incursions and Galwan: The unprecedented pre-meditated violence at Galwan on June 15 by Chinese troops shattered a 45 year-long 'Peace and Tranquility' along the India China Border, thus changing the very dynamics of not only managing the Line of Actual Control (LAC) but the growing trust and relations between the two Asian giants. The situation continues to remain sensitive as both countries build up their military power along the border, again a first after 1962, defending their respective positions and narratives.

The incursions unlike the previous ones at Depsang in 2013, Chumar in 2014, and Doklam in 2017 were more in scope, depth, and intensity, indicating that China was there to stay. At Nakula and Pangang Tso the Indian army stood their ground leading to pushing, shoving, and stone-pelting, though not common, but does happen when the two sides stand firm defending their positions. The positives were that the talks both at the military and diplomatic levels were candid and cordial, resulting in an agreed-upon disengagement starting at Galwan between the two top commanders on June 6. The preplanned violent incident on June 15 at Galwan resulted in the death of 20 Indian soldiers including Colonel Babu the commanding officer. It has also been reported that the PLA suffered 43 fatalities, though it is not a balance sheet but goes on to show the sheer ferocity of the violence where not a single shot was fired. The incident

and the ongoing build-up have been detailed in many reports. As war clouds gather over the high Himalayas, it is important to decode the cause of the incursions, Chinese intent, and strategy as also India's options and way forward.

CHINA'S AGGRESSION - CAUSES

China is practicing its tried and tested military coercion to impose its will on most of the 27 neighbours. India is now a primary target. Chinese forces are not only demonstrating an unprecedented aggressiveness along the India-China LAC, but also in the South China Sea, Taiwan, Korea, East Sea, Vietnam, Philippines, Indonesia and Malaysia. India will need to discern China's intent and the larger strategic signals emanating from Beijing, in the geopolitical domain. As is a common belief China's aggressiveness is definitely not on account of India operationalising the Darbuk - Shyok - DBO road and thus posing a threat to Karakoram pass. China would not have waited all these years for the road to be completed, it would have done so earlier. The One Belt One Road / Belt and Road Initiative (BRI) is a China dream, India is the only major country, which has not supported the BRI, but openly opposed it. China has invested heavily in BRI and hence is trying to coerce India into accepting the BRI or at best not opposing it. The China Pakistan Economic Corridor (CPEC), is central to the China dream of One Belt One Road. China has invested nearly US\$62 billion in the project. At the strategic level the CPEC gives China access to Gwadar Port which has been leased to China for forty years, and mitigates its 'Malacca Dilemma'. The CPEC passes through the Indian territories occupied by Pakistan. India demonstrating a political will abrogated the provisions of

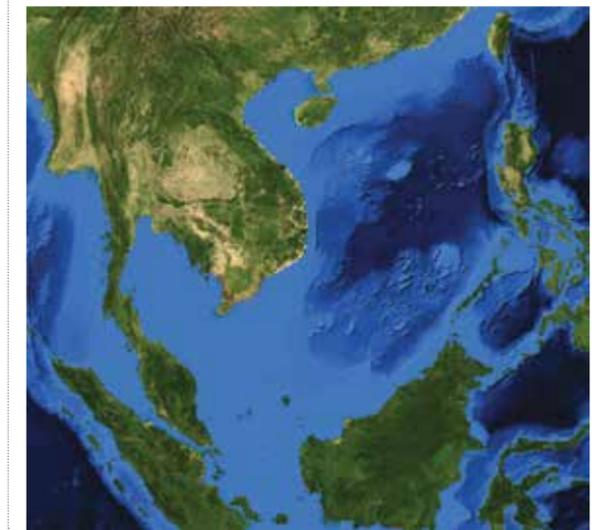
Article 370 as applicable to J&K on August 5, 2019, carving out two Union territories of J&K and Ladakh from the erstwhile state, rightly seeking full control of its territories occupied by Pakistan. This perceived threat to the CPEC is not acceptable to China, and hence the direct pressure on the LAC. The call to also liberate 38000 sq Km of Aksai Chin, the Chinese occupied territory of Ladakh is another factor for China's aggressive behaviour.

Another major factor is the made in China Corona Virus. COVID-19 has directly impacted the emerging world order, which is likely to witness a shift of power from the West to the East. The global architecture will witness major shifts as US now openly rebalances and redeploys the forces to counter future threats emanating from China. China loses its leverages as it is believed to have caused the pandemic, it will like to keep India away from the US and the West. India will be a global leader and a balancing power in the post-COVID-19 emerging world order. China will need Indian support to fight the world community for the havoc it has unleashed, what surer way than to indulge in military

coercion to pressurise India not to align with the US.

A number of industries and companies are moving out of China and India is a preferred destination, however, in case of a security threat, these companies are not likely to invest and relocate to India. China has hence created a security situation to discourage the Companies to move out.

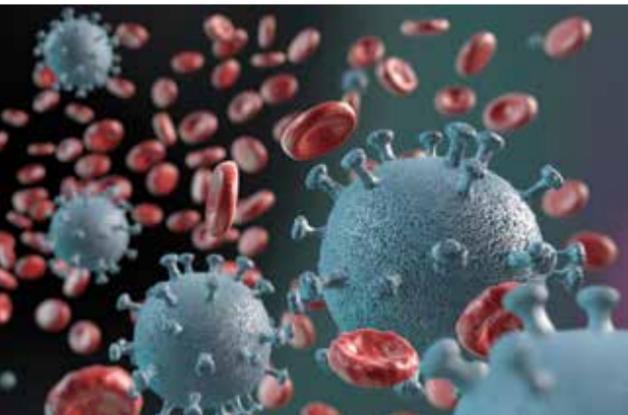
China's PLA practices the "Three Warfare Strategy" of public opinion warfare, psychological warfare, and legal warfare. In addition, China is also practicing a three-pronged strategy at the Geopolitical level,



INDIA CHINA: FACE OFF



Indian Armed Forces Garud Commandos keeping a tight vigil (File photo)



this being 'Debt Trap', 'Wolf Diplomacy' and seeking a bipolar world order. It is essential for the militaries, sinologists, and strategists to understand China's "Three Warfare" strategy and the Geopolitical end game to be able to discern Beijing's intentions and objectives.

INDIA'S OPTIONS & WAY AHEAD

China respects strength and India needs to openly demonstrate its strength, especially military prowess and intent to use as a last resort. India should also look at diplomacy, creating a dilemma for China, "Bind To Balance" with like-minded nations, without

impinging on our strategic autonomy. Quad is one good option. The impact of economic leverages though limited in the near term is an effective tool in the long term. China has only succeeded in alienating over 600 mn Indian youth who will remember China's treachery at Galwan for the rest of the century. This is unfortunate as the 1962 generation was fading and there was developing a new relationship and trust among the two people.

Militarily, India will have to seek 'Peace through Preparedness' and keep its powder dry. For far too long China has always been considered a long term threat, this has now changed as China knocks at our doorstep. India will need to invest in military capabilities to deter China's aggressiveness. There is a need to revisit the Mountain Strike corps sanctioned in July 2017, but not supported with financial allocations. In addition, Armed forces need to look inwards and carry out strategic rebalancing from West to East. The defence budget will always be inadequate on account of competing priorities at the

national level. India will also do well, to invest in the strategically important Andaman & Nicobar Islands, as they provide a viable counter pressure point as a threat in being. India should also seriously look at the way forward in ensuring self-reliance in defence manufacturing. A major nation like India cannot be seen running around the world with emergent demands every time there is a crisis. India and the military need to enhance the Intelligence, Surveillance and Reconnaissance (ISR) capabilities replicating the Chinese three R model (Roads, Radars, and Reserves) for effective LAC management. The LAC is managed jointly both by the Army and ITBP, leading to two channels of reporting and issues of accountability. This dual command and control structure leads to conflicting directions and guidelines emanating from the two controlling ministries i.e. MHA and MOD and intermediary headquarters. This needs immediate correction with ITBP placed under the operational control of Army as per the Group of Ministers recommendation of "One Border One Force."

China would have been surprised by the resolute and resilient response of the Indian army all along the LAC as the military ensured an equal and proportional build up matching the PLA. The response at Galwan by the gallant soldiers would have necessitated a rethink in the PLA tactics, as also India openly declaring a review of the rules of engagement empowering the army. The Indian build-up now matches the PLA demonstrating a resolve to safeguard its territorial integrity at all costs. China will do well to understand the resilience of a risen, responsible, resurgent, and resolute India.

- The author is former DGMO and Director, CENJOWS.

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ECONOMIC OFFSETS OF PANDEMIC: NEED TO SHIFT GEARS TO ATTRACT FOREIGN INVESTMENT

With one nation, one objective, one view, one direction, one policy and never say die spirit, India needs to change its gears to attract investment from the companies opting to shift out of China in the aftermath of pandemic Covid-19 outbreak

By **LT GEN RAMESHWAR YADAV (RETD)**

India is talked about in a positive light when it comes to probability and possibility of shifting manufacturing bases by the developed nations from China to India. China with her apparent complicity with the current pandemic across the world has surely fallen from grace as the preferred destination as the buzz goes. The China is gradually seen as playing spoilsport in their overt penchant for political intrusion through their economic buoyancy impacting on supremacy of the western world. The post pandemic scenario is appreciated to be the turning point in the global geo-political balance shifting in favour of China. It obviously is not a happy sign for the developed world, hence their sensitivity and seriousness to shift the centre of gravity of their business linkages with the middle kingdom.

The China has played its cards very well by offering most lucrative conditions for setting up the manufacturing units by the western world four decades ago. China provided best of infrastructure, low cost skilled manpower and logistics synergies resulting in high profits to the owners. A win-win situation prevailed for all the stakeholders in this mutually beneficial

arrangement. The companies removed barriers of technology transfers without realising that they are creating a business rival in their single minded pursuit of higher profitability. Everything seems to be going well till the time China started nurturing ambitions of global leadership.

China started their economic expansion with its focus on price sensitive third world. Chinese

products became popular as these were sold at much lower costs and that too at their door steps. This changed the entire dynamics of the international trade equations pinching on the pockets of the developed nations. While Chinese economy saw double figure growth consistently, the advanced countries started to see their economic growth graphs turning south. The market share of the Chinese products started rising exponentially catapulting their national stature as an emerging world economic power on the cusp of turn of the century.

As on date, China with her more than US\$3 trillion forex reserves is in a position to dictate their terms in the world economic platforms challenging

US predominance of more than eight decades. An ambitious Belt and Road Initiative (BRI), a US\$160 billion project, was launched in 2013 to revive old silk routes to increase Chinese economic footprints across the globe. It is the biggest political initiative by china in the recent times having more than 70 countries on BRI band wagon as of now. 138 countries and 30 international organisations are believed to have signed co-operational documents with China in its development plans. China already had 120 companies as against 126 US companies as of July 2018 in the league of fortune 500 multinational companies.

Off late, China is also known to be quite aggressive in increasing

its stocks in the western economies exploiting the low market sentiments due to Corona pandemic. It has prompted few countries to lay restrictions on stock purchased by foreign buyers without government clearances. There are also reports of Yuan being talked of as the currency of exchange alongside the US dollars in the IMF circles. It has increased the ante in the economic domain which is reflective of emerging protective psyche of developed economies.

The change in sentiments among the reckonable economic powers as regards to Chinese rise is not a new phenomenon as perceived to be. It has been taking shape since long and now the pandemic has acted as a catalyst for the much awaited

MATURE ECONOMY, GOOD INFRASTRUCTURE, TECH SAVVY WORK FORCE AND LOW LOGISTICS COSTS ARE FEW OF POSITIVES IN FAVOUR OF INDIA. ADD TO ABOVE, INDIA IS A DEMOCRATIC SYSTEM WITH POLITICAL STABILITY AND TRANSPARENCY ALONGSIDE ENGLISH SPEAKING POPULATION WITH DEMOGRAPHIC ADVANTAGES

shift in the business environment. The fear of losing out their share in a free market has motivated the developed nations to correct the conceptual mistakes of putting all their eggs in Chinese basket. The market compulsions continue to suggest that the products need to have niche quality content yet sold at the competitive prices.

It is this business sensitivity that is prompting nations to look at alternate destinations for their companies outside China to retain their competitiveness. Japan is known to have allocated US\$90 billion as stimulus to shift out their companies from China. US have already shifted out close to 50 companies in last one year. More companies are likely to be moved out as per the speculations going around in the business world. India, Vietnam, Malaysia, Philippines, and Indonesia etc. are being talked about as suitable nations in this regards.

Mature economy, good infrastructure, tech savvy work force and low logistics costs are few of positives in favour of India. Add to above, is the democratic system with political stability and transparency alongside English speaking population with demographic advantages which scores above all other competitors. Therefore, it is a time for some hard diplomatic manoeuvres and political





THE EXISTING FRAMEWORK OF 'EASE OF DOING BUSINESS' HAS TO BE MADE FAR MORE ATTRACTIVE THAN THE POTENTIAL COMPETITORS TO WREST THE INITIATIVE AND EXPLOIT THE NEW OPPORTUNITIES IN THE OFFING. WE HAVE TO MAKE SURE THAT THE INVESTORS ARE MADE TO FEEL WANTED AND WELCOMED WHEREIN OUR INTERACTION HAS TO GO BEYOND PURELY BUSINESS EQUATIONS TO TOUCH THEIR EMOTIONAL CHORD

convincing to motivate the advanced nations to shift their manufacturing bases in India.

The opportunity would bear fruits only if there are perceived positive synergies to do business on Indian soil. The challenge is more as shifting of the foreign industries would be a rebound of bad experience in China and not their first natural choice. Accordingly, the companies are bound to be cautious in their approach and weigh their 'return on investment' in more deliberate manner. They may also restrict establishing their facilities of

strategic import to take advantage of exclusivity of high tech niche products and concomitant high profits and political leverages.

Shifting out the fully functional industries has economic and environmental costs with long gestation period before they are back at same level of profitability. There would always be apprehensions of non viability of businesses in the new country due to varied functional and political contingencies. Hence, an air of uncertainty and fear of failure would always be there in taking such a strategic decision.

The business world works more on the cost benefit principles and not on political prudence unless there are strategic compulsions, or restrictions lay down by their governments.

The fear of losing out on economic leverages and employment of their teeming masses would be a big political setback for China, if big companies move out. Accordingly, China in its own interests is likely to be amenable to amend policies in order to retain these companies. Such a move, if happens, may suit the foreign companies as there

will be no turbulence in their well established supply chain and conduct of business. Apropos, foreign companies would have options to continue to operate from China on better terms, or may opt to move to suitable alternate new destinations.

China accordingly is not likely to be abandoned totally by the foreign manufacturers and quite a few companies are expected to continue to operate from existing facilities. Yes, the format may change wherein they may commence establishing new facilities elsewhere to diversify their footprints as an exercise to create redundancies. Once these new plants start functioning in satisfactory manner with reasonably smooth business synergies, the China based facilities may then be closed, if so warranted due to compulsions of politico-economic factors.

Looking at the impact of pandemic on business sentiments, there seem to be plenty of opportunities for India, albeit with a small time window to beat the competition. In order to get the best deal with minimal risks, the foreign investors are likely to insist on certain business terms

prior to shifting their facilities to Indian soil. Few of such conditions may even be exploitative in their construct impacting on our economic matrix. It obviously prompts us to be cautious and at the same time be more flexible in our approach to accommodate the reasonable demands of the potential investors.

The existing framework of 'Ease of Doing Business' has to be made far more attractive than the potential competitors to wrest the initiative and exploit the new opportunities in the offing. One thing that comes to mind straight is to review the concept of 'One Window Clearance' by minimising environmental glitches and cutting down the maze of restrictive red tape regime. We have to make sure that the investors are made to feel wanted and welcomed wherein our interaction has to go beyond purely business equations to touch their emotional chord. The centre and state both have to be on the same page cutting across political differential in the national interests.

The political prudence suggests that this mission has to be dealt on war footings with principles of war as the guiding centrality of the campaign. Maintenance of aim, aggressive intent, flexibility, concentration of the force, unity of command and simplicity are equally applicable in economic domain to achieve the national objective. Let all the national institutes, organizations and individuals come together to take advantage of the opportunities coming our way as one entity. It has to be one nation, one objective, one view, one direction, one policy and never say die spirit to make our national mission a success story.

The author is former Director General Infantry, Indian Army. Views are personal.





HENSOLDT's "Kalætron" Electronics Spectrum Gazing!



HENSOLDT Spectrum Dominance Airborne Product Portfolio includes three major EW domains (i.e. Electronic Support / SIGINT, Electronic Attack & Self-Protection) under the HENSOLDT Kalætron Brand.

HENSOLDT's Spectrum Dominance division offers solutions not only for conventional and advanced electronic warfare but also for signal intelligence and cyber operations. Hardware development and artificial intelligence inside HENSOLDT electronics (æ) are core parts of HENSOLDT's future-oriented technologies at Spectrum Dominance.

Andleeb Shadman, Managing Director, HENSOLDT Pvt Ltd, Head of Marketing & Business Development, in an interesting conversation with Mr. Sergio Rizzi, Head of Product Sales & Marketing Spectrum Dominance at HENSOLDT, about **Kalætron** and its significance for Indian Market.



SERGIO RIZZI

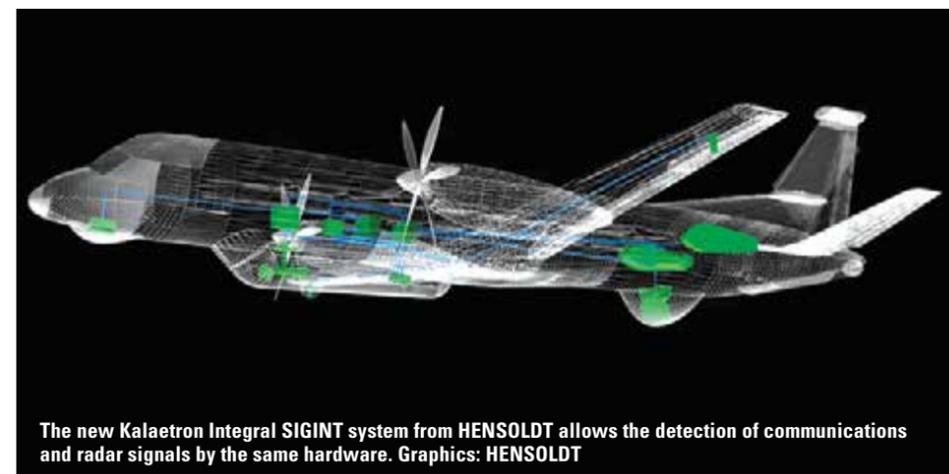
First of all, let me congratulate you for introducing Kalætron to the world in 2019 at Stockholm AOC EW Europe & Paris Le Bourget. May I request you to please explain to our reader about Kalætron?

Let me first tell you where does the name Kalætron (HENSOLDT Registered



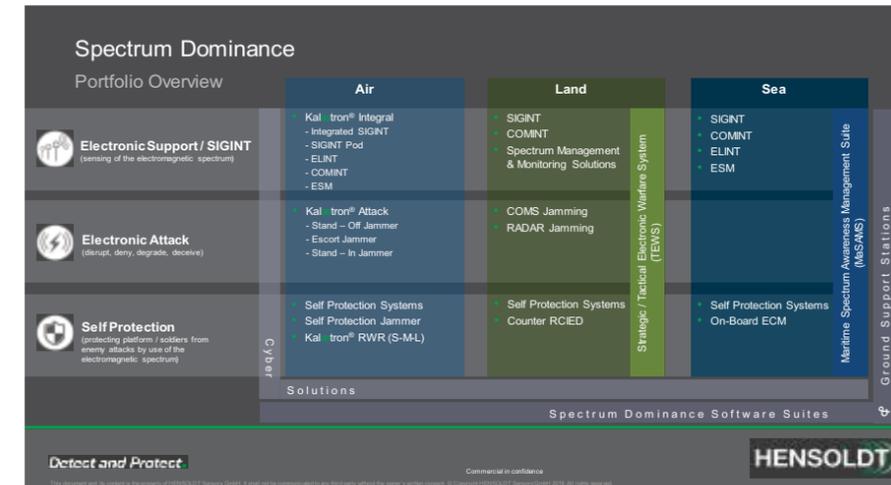
SHADMAN ANDLEEB

"Kalætron Attack now adds an active electronic jamming component, which either dazzles or deceives threatening systems using accurately replicated jamming signals. In this way, Kalætron Attack with its Escort Jamming application expands the operational options of fighter aircraft, which can now also operate in anti-access/area denial (A2/AD) zones"



The new Kalætron Integral SIGINT system from HENSOLDT allows the detection of communications and radar signals by the same hardware. Graphics: HENSOLDT

"We see ample opportunities in India and we are in dialogue with key stakeholders to position different Kalætron products especially RWR and ESM to begin with, for respective platform needs as per "Make in India" directive of Indian government"



Jamming and Stand-In Jamming configurations. Kalætron Attack offers fully digitized technology for the entire chain of effects, from wide-ranging reconnaissance to distance-capable electronic combat, thus optimally fulfilling the requirements of an Electronic Combat role of any fighter aircraft.

How mature is Kalætron now?

Kalætron RWR as on date has successfully completed a severe phase of tests. The achieved results leave no room for doubts and confirm the absolute superiority of the cutting-edge solution made by HENSOLDT. We will report further in depth in due time with a dedicated press release.

Kalætron products were already introduced into the respective markets in 2019 with a dedicated premiere i.e. Kalætron RWR during Stockholm AOC EW and Kalætron Integral during Paris Le Bourget.

How do you see the Indian Market and what are your plan for it ?

We believe that Indian armed forces have been undergoing rapid technological transformation to meet the ever expanding need of air superiority and **Kalætron** products would be real differentiator in terms of technological superiority and operational effectiveness either for retrofits / mid-life upgrade or for new platforms.

We see ample opportunities in India and we are in dialogue with key stakeholders to position different **Kalætron** products for respective platform needs as per "Make in India" directive of Indian government.

Trade Mark worldwide) come from - The ligature æ stands for "Artificial Intelligence inside HENSOLDT electronics", which not only categorises major functions of the system, but also serves as an important branding element.

The Kalætron is the product family offering tailored solution for Radar Warning Receiver (RWR), Electronics Support Measures (ESM), Electronics Intelligence (ELINT), Communication Intelligence (COMINT) either stand-alone or as a fully integrated systems depending on customer needs.

The architecture of Kalætron is highly modular and scalable having building block elements like innovative Digital Front End Receiver, Central Processor and different types of Antennas.

The Radar Warning Receiver is the first application, if you want, the "Zero Hour" for the Kalætron product family, which was extended by ESM and SIGINT applications under the "Kalætron integral" product family line and not long ago also

complemented with Kalætron Attack, including the ECM core elements (AESA EW+ECM processor).

What is an edge of Kalætron system over competitor products?

I would highlight 3 important and unique propositions that **Kalætron** offers.

- i.** Modular, scalable and platform independent architecture.
- ii.** Superior performance - Identification and classification of latest air defence threats having extremely wide bandwidth and/or hopping between particular frequencies in fractions of a second. Incredibly quick detection & identification of threats with a very low false alarm rate over an extremely wide frequency range.
- iii.** Collaborative Electronic warfare capabilities for future combined air operations. Kalætron Attack is a new addition to the Kalætron electronic warfare product family, which will include Escort Jamming, Stand-Off

INGESTING TECHNOLOGY IN THE ARMED FORCES

To ingest technology in the Indian Armed Forces, the policy makers in the government need to collaborate with industry and academia to come up with indigenous and innovative technological solutions to face emerging threats and challenges

By **LT GEN P R SHANKAR (RETD)**

It is my deep belief that “technology owned is cheap and technology bought is costly”. India has paid dearly due to not owning it since Independence in 1947. To be a power of reckoning, India needs to invest in requisite defence technologies and own them. Surprisingly, many of these are resident in India lying unharnessed. To harness the available technologies, we need wisdom and good leadership to unearth and ingest them into the Armed Forces. It needs determination and vision to do so.

As we have militarily locked horns with China when the Chinese Virus is raging, there are many moving parts in our Military Ecosystem. Military

leadership must juggle with the changing realities of emerging threats from old adversaries, disruptive technologies, economic recession due to the

pandemic, efforts at enhancing jointness and the thrust for self-sufficiency. The challenges are clearly daunting. The opportunities, however, are also aplenty.

The Revolution in Military Affairs is now being impacted by numerous technologies and is turning into Disruption in Military Affairs. These technologies plus the pandemic effect will take us to horizons of conflict and warfare yet to be foreseen or imagined. Multi Domain Operations and Unrestricted Wars/ Conflicts will be driven by disruptive technologies. In my opinion the new domains in addition to the existing Air, Land and Sea would include Space, Cyber Space, Nuclear, Information Environment and Electromagnetic Spectrum. Operations could be conventional and/or non-conventional, executed using hard and/or soft power, by state or non-state actors, by day and night in a condition or war and/or peace. Exploitation of asymmetry and gray zones will be the norm.

In this context it must be understood that the military

teeth of a nation consist of the traditional weapon systems of the Air Force, Navy, and the Army represented by its traditional Arms - the Infantry, Mechanised Forces, Artillery, Engineers, Signals, Air Defence and Aviation. Each of these traditional teeth has a plethora of weapons systems. At the base level, many of these systems individually need constant technological input, upgradation, invention, and innovation. At an advanced level, each individual weapon system is being impacted by a bevy of disruptive technologies. This impactation could be by one disruptive technology individually or by a cluster of interactive technologies to make it a complex phenomenon.

For example, future communications would be network based, cyber proofed and AI driven and be talking to manned/ unmanned systems simultaneously. The next generation rocket will be enhanced with latest propulsion technologies, navigation systems and high-grade sensors and interlinked to an AI driven ISR system and it should have land, air, and naval versions. So the combinations are limitless and can stretch with imagination. Also the impactation will be complex. In such a scenario, we cannot afford to have all technologies. In any case there is a level of technology tolerance and absorption on the battlefield. Beyond that technology will be counterproductive. We must be discrete in our choices in technology adoption as per our environment, ability, and affordability.

We also need to be cognizant of the fact the Indian Armed Forces are going to be heavily



DRDO's Rustom-II UAV

constrained by dwindling budgets. The traditional allocation of about 1.5 per cent of the GDP was not enough for conventional purposes. This must now encompass technology ingestion also. That too in a period of recession where the GDP itself is shrinking. So one must cut cloth accordingly. This reinforces the fact that we need to be selective and choosy in what we do, how we do and why we do. In this context it will be interesting to see the models adopted by other countries.

Iran has been under heavy sanctions since long and has not been able to import defence equipment. Its import bill is only 4-8 million dollars annually. Its Air Force consists of old Iraqi aircraft shifted to Iran during the Gulf War and never returned. They have somehow kept them flying through indigenous innovation. However with indigenous technology they have built a strong rocket and missile force of surface to surface missiles, surface to air missiles and armed UAVs, cruise missiles.

Low cost disposable UAVs

INDIA NEEDS TO EVOLVE ITS OWN MODEL. THAT IS THE FIRST STEP. WE NEED TO THINK OF WHAT WE HAVE, WHAT WE NEED AND WHAT WE CAN AFFORD. WE NEED TO HAVE A BALANCED AND JOINT APPROACH CONSISTENT WITH OUR REALITIES

were used in the attack on Aramco oilfields, which were executed over 1000 km. They have extensively used Explosively Formed Projectiles (EFPs), which fire a molten copper slug able to penetrate armour with great effect on US forces in Iraq, something like an anti-armour claymore mine. They have used Limpet mines in the Gulf to sink oil tankers. They have a Quds force which the US considers to be a combination of CIA and Special Forces. They have held their own in war. Their model has been one of innovation and maximising what they have with a clear strategy as to how to prosecute operations.

Most of us know that US has been leveraging Academia and Defence Industry extensively to equip itself with latest technologies. For example, the first Nuclear Submarine



Indian Army's K-9 Vajra in action



Indian Army Aviation Helicopter and Artillery Gun in a joint display

project is being executed from Carnegie Mellon University, mainly through the Academia. With huge budgets and deep pockets, the US has invested in Civil Military Fusion since long, and acquired a decisive technological edge on the battlefield.

The Chinese have been outright copycats. Their forte has been IPR theft, forced ToT absorption; reverse engineering, upgradation of old equipment and gaining knowledge from the West/ Russia one way or the other. They have combined this approach with investment in pursuit of intellectual dominance. The number of Chinese PhDs graduating from

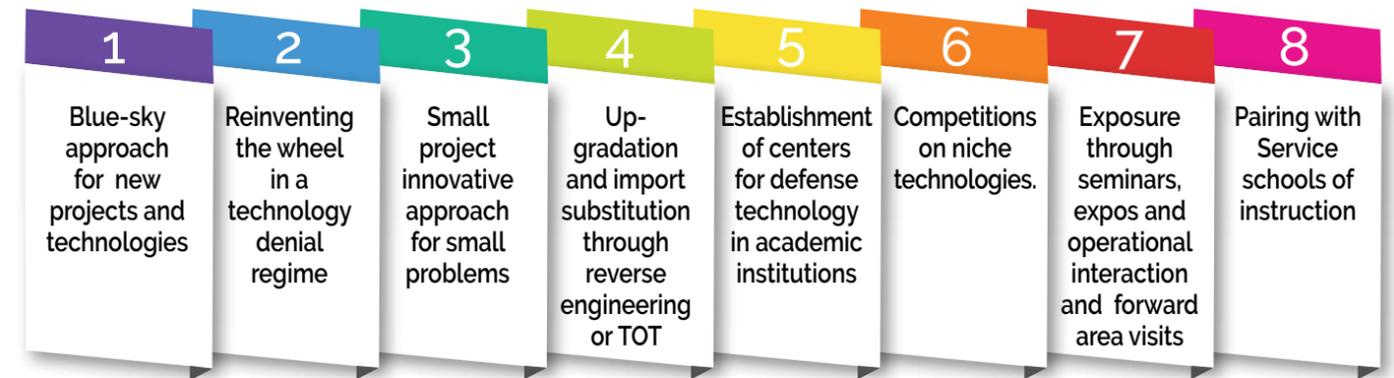
Programme was conceptualised at the Naval Post Graduate School, Monterrey. It was from this programme that modern management concepts like PERT and CPM were rolled out.

Way back in 2008, the US Training and Doctrine Command conducted a competition in India for universities on an international scale on Mini and Micro UAVs. It was their investment in future to tap innovation and research in universities. Their futuristic outlook has been traditionally very deep. Currently, Artificial Intelligence (AI) is one of the six priority areas for modernisation of the US Army. The entire

WE NEED TO EVOLVE OUR MODEL BASED ON OUR CONDITIONS, GO BEYOND DEFENCE RESEARCH AND DEVELOPMENT ORGANISATION (DRDO) TO INDIAN INSTITUTES OF TECHNOLOGY (IITS) AND OTHER ACADEMIC INSTITUTIONS OF REPUTE AND LINK THEM WITH INDUSTRY. MOST IMPORTANTLY WE NEED TO TAKE CONTROL OF OUR DESTINY AND CRAFT A WAY FORWARD TO ATTAIN SELF-SUFFICIENCY



APPROACHES



US universities is mind boggling. They are surely and steadily graduating to a different level through a convergence of knowledge and practice.

Israel has been a major player in the electromagnetic spectrum and information domains. They are foraging into cyberspace aggressively. Their ISR and EW systems are being used worldwide. Their success is attributed to a large network of startups based on applied military technology. Many young veterans have acquired technical expertise through researched study and military experience. They now form the backbone of their military startup ecosystem. Their research is largely funded through exports of these systems which can also be used on space platforms, a highly innovative revenue earning model.

India needs to evolve its own model. That is the first step. We need to think of what we have, what we need and what we can afford. We need to have a balanced and joint approach consistent with our realities. The technologies which work in Ladakh will fail in the deserts and vice versa. It is not only a matter of reducing imports through indigenisation but also

exporting technology driven systems to fund us through the slump. Hence technology ingestion is a matter of many more issues than just having technology.

The approaches to move forward are many. Some of these are indicated in the box below.

However, the Armed Forces need to move out of their citadel and hit the ground running. We need to evolve our model based on our conditions, go beyond Defence Research and Development Organisation (DRDO) to Indian Institutes of Technology (IITs) and other academic institutions of repute and link them with industry. Most importantly we need to Take control of our destiny and craft a way forward to attain self-sufficiency. Fundamentally it comes down to good leadership. In addition I feel that the tour of duty idea can be leveraged in the startup scenario as highlighted in the above infographic.

Let me reiterate. Our IITs, IIMs and higher-class technical institutes have their strengths and capabilities waiting to be exploited. They are eager but do not know how. The challenge is unearthing the potential and converting it into a kinetic. Many multinationals have done

LEVERAGING TOUR OF DUTY / OR TECHNOLOGY INGESTION

- The Tour of Duty concept has been discussed and criticized extensively.
- In the last Army Design Bureau Seminar the overwhelming consensus among more than 1000 serving officers was that startups were the only route to ingest all disruptive technologies into the Armed Forces.
- There is a strong case for convergence. Take in high quality technical graduates (B Tech/ M Tech) on a two-year tour of duty after a short stint of training for three months. Let them serve in the Arms and in operational areas. They will get hands on experience and firsthand knowledge of requirement and problems of Services at grass root level. At the end of the Tour of Duty enable them to set up startups by provision of funding and ecosystem to develop their ideas. We will get huge response and benefit. It has the potential to kickstart a virtuous cycle of inducting high-end technology into the Armed Forces. It is a win-win case.
- I am prepared to develop this concept to fruition and anchor it from /IT Madras.

it successfully over the years. Why not the Armed Forces? I think it is time do so. ■

-The author is a retired Director General of Artillery, Indian Army and Professor of Aerospace Department, IIT Madras.

EMERGING WORLD ORDER POST CORONA

India can catapult itself to the centre stage of Emerging New World post Corona, if it leverages Corona threat to its advantages. 21st century belongs to India. Just wait and watch!!

By **MAJ GEN CP SINGH (RETD)**



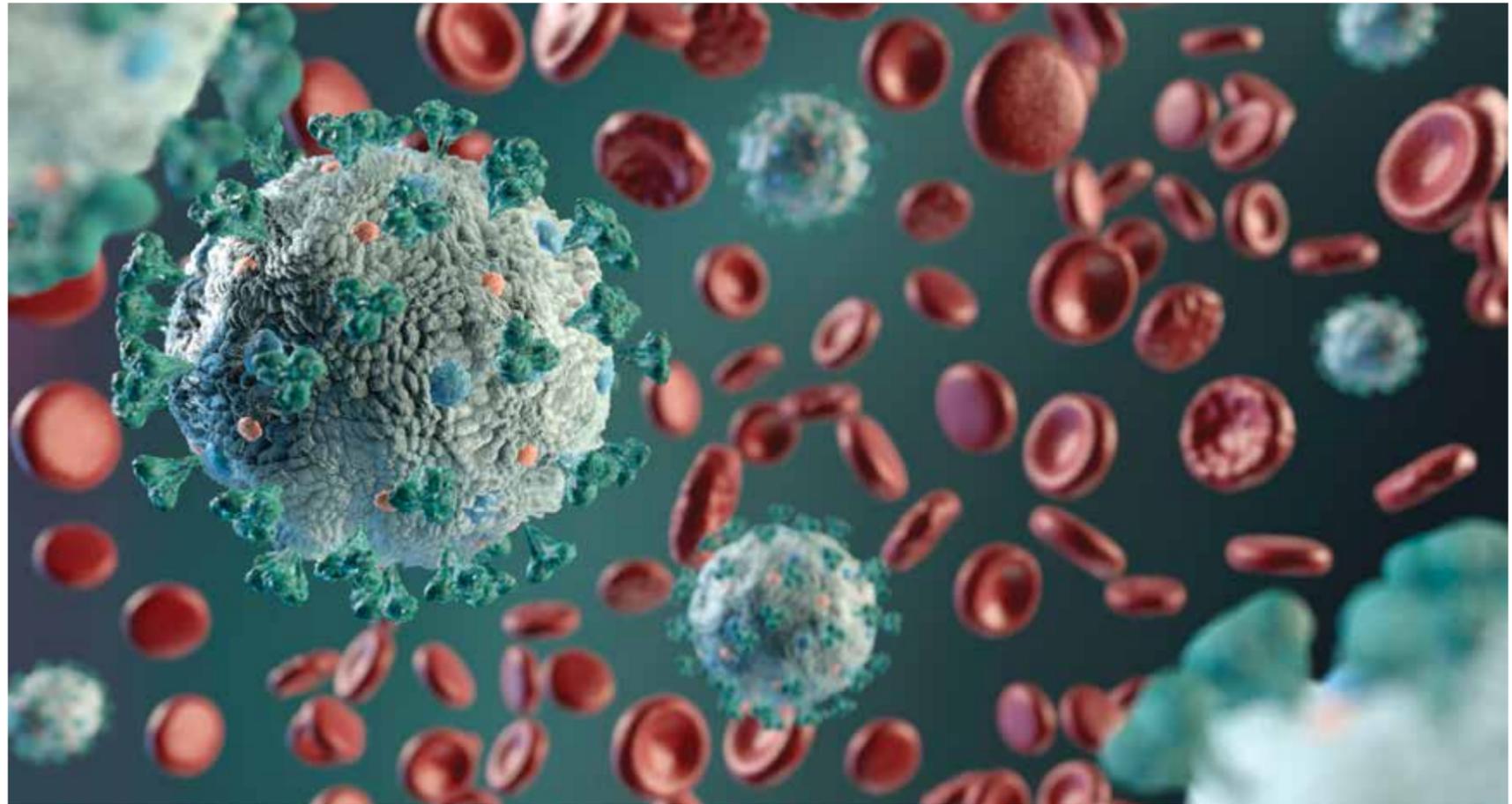
Corona pandemic has cast a pall of gloom over the human race, threatening its very existence. The all mighty humans, armed with latest technologies, weapon systems, super computers having artificial intelligence, diagnostic tools, advance medication and abundance of resources have never felt so helpless in front of a tiny virus called COVID-19. All scientists, doctors, statistical analysts, philosophers, astrologers, religious teachers and soothsayers are putting their heads down to predict, when the Corona onslaught will end.

However, I am eternally positive and I feel this shall also pass. Human race. Human race has existed for millions of years and survived many such catastrophes. I just am flagging only two such pandemics here. The Bubonic plague (Black Death) in the 14th century AD reduced the world's population by over 100 million from 475 million at that time. It brought the Mongol empire to its knees and it cut China off from Europe for centuries. Similarly, Spanish flu shook the world, a century ago. Almost 50 million people perished in the world and almost 10 million (one crore) in India itself from a population of

only 25 crores. The pandemic lasted two years with three waves hitting the world between 1918 and 1920. After every such catastrophe, human race has come out stronger and more resilient to live for another day. However, the world will never be the same again.

PRESENT WORLD ORDER IN DISARRAY

Turbulent times like present one invariably change the existing geo-strategic trends and lead to unexpected results, sometime turning earlier expectations on their head. The ongoing COVID-19



pandemic has unleashed similar fury of nature. A world struggling with decline in economic growth has effectively been pushed into a recession of unmatched precedence. While populations are struggling to keep body and spirit together, the nation states are mostly fighting this tiny enemy within its own frontiers. Social media is making its own contribution by giving overdose of negativity and thus converting fear into panic. The world will sooner or later get over this Pandemic. The geo political realignment that it will cause will have much larger ramifications and will result into a new world order that will emerge post Corona times.

The key indicators of the present world order, in disarray, are as follows-

- **UN** - The United Nations is faced with the most challenging crisis since its inception after World War II. Corona virus does not recognise man made barriers and hence the need for international solidarity and synergised global action. However, UN Secretary General António Guterres has only pleaded for a unified global response though it has gone disregarded.

The UN Security Council's inaction reflects a bitter standoff between two of its five veto-wielding permanent members, over the origin of the pandemic. WHO Chief has also been criticised openly for shielding China. The UN being the largest international forum could have played the key role in containing the pandemic through its

extensive humanitarian aid network but unfortunately it was found wanting.

- **US no longer the only superpower** - Corona crisis seriously diminishes America's credibility globally and that of the President Trump administration within America. The image of a hapless superpower with the world's greatest economy and military might has been caught with its pants down and then brought to its knees. The decline of US as superpower has indeed started. Who knew that it will happen by a tiny creature called Corona. The loss of America's superpower status will accentuate the transition to a multi-polar world.

- **China's image takes a beating** - All the linkages of

COVID-19 spread to a covert war by China have been negated by the scientists. The scientists have declared that SARS-CoV-2 is not a laboratory construct or a purposefully manipulated virus. Yet, there has been a chain of suspicious activities which indicate too many coincidences. China is being portrayed as villain due to its alleged lack of transparency. The positive image building of China which was the prime focus of Xi Jinping government has certainly taken a beating. China will be seen with suspicion for quite some time. Japan has already shown the way by pulling out its manufacturing units from China. US will soon follow. The world is social distancing itself from China.

- **Europe, no longer in relevance** - In a cruel twist of fate, the Europe

THE WORLD WILL SOONER OR LATER GET OVER THIS PANDEMIC. THE GEO POLITICAL REALIGNMENT THAT IT WILL CAUSE WILL HAVE MUCH LARGER RAMIFICATIONS AND WILL RESULT INTO A NEW WORLD ORDER THAT WILL EMERGE POST CORONA TIMES



UN Secretary General Antonio Guterres

is the hardest hit by Coronavirus. The world has witnessed all countries of Europe struggling to fight against Corona. At a human level, Spain, UK and Italy have been badly hit by the pandemic. But it's also true that countries whose economies are dependent on tourism will see much bigger economic losses in the long run. Therefore, the edifice of high and mighty European continent has crumbled with one stroke of Corona. The failure to mobilise a pan-European response to the pandemic and the tendency of member states to look after their own citizens has dealt a blow to the EU.

● **Globalisation redefined** - At a general level, more and more people are blaming globalisation - a decades old system that, by and large, created the China

behemoth and made most of the advanced economies dependent on her for everything from pharmacological inputs to surgical masks. In Corona times, the concept of globalisation has taken a back seat. The countries are busy fighting the Corona within own resources. In future also, Corona will teach the world a lesson to be more self-reliant. If the countries are locked down for prolonged periods, it's the internal strength that will stand up to the need of the hour. Hence, globalisation will be redefined in the new post Corona era.

● **Non reliance on regional alliances** - Prime Minister Narendra Modi showed the way by reviving the SAARC to fight the global crisis together. G-20 followed suit. However, all the bonhomie of jointness soon got

on backburner and each country is fighting its own battle. NATO failed to recognise fight against COVID-19 as a war which needs to be fought sans borders. Today, NATO is almost nonexistent with all members unable to rise above their individual requirements. The regional alliances are by and large defunct or cosmetic in joint battles against Corona.

THE NEW WORLD ORDER

But one thing is certainly predictable that the history of COVID-19 and new geopolitics will be scripted by the victors on the global level and they will lead the world in the emerging new world order. It will again depend upon the longevity of the pandemic and the victors will be the one who manages its country the best.

In order to maintain global primacy, countries in the post Corona world will have to engage in a zero-sum geopolitical contest, politically and economically. Though it's very difficult to crystal gaze the post Corona world, however, certain pointers are as follows:-

The concept of superpowers will be over for some time and a multi-polar diffused world order will emerge. The balance of power may shift from West to East with Europe fading into oblivion.

● The globalisation in the present form with seamless trade will be a thing of the past and a new template of globalisation based on fairness, equality and humanity will emerge.

● The world is preparing to find a new type of pragmatic and protective internationalism. COVID-19 will undermine the basic tenets of global manufacturing. Companies will now rethink and shrink the multistep, multi-country

supply chains that dominate production today.

● International travel for tourism, business, cultural exchanges, pilgrimages, education, knowledge sharing and geopolitics will take a major beating.

● The pandemic will strengthen the state and reinforce nationalism. The nations will become more and more self-reliant, looking inwards for production and consumption.

● Large scale migrations across national frontiers and intra state will also reduce considerably, with local son of the soil concept gaining prominence.

● These trends may trigger realignments where blocks of interdependency are defined by proximity, natural resources, markets access and security interests. Therefore, need based mutually interdependent regional alliance may come up.

● Working norms for the industry may change. Work from home and digital linking will be predominant. Resultantly, work force may move to suburbs for cheaper and better living. This will reduce pressure on metro towns reducing traffic congestion and easing out of pressure on civil resources in towns.

● Social distancing will be the new norm with events and ceremonies confined to near and dears. Even modes of work place and offices will have to be modified to new ways. Eating out will have to redefine itself with open air restaurants, home delivery systems and sanitised places of leisure.

● Health and hygiene will be the primary focus of nation states and considerable expenditure will be incurred to strengthen the same.

● Economic recession with

increased unemployment and lower budgetary availability with governments will be a stark reality. Governments will have hard choice in subsidising the employment creating industries for long term benefits.

SEIZING OPPORTUNITY IN THREAT

You never let a serious crisis go waste. The global financial crisis of 2008 had its roots in an over-leveraged US economy. Yet, the US with bold measures turned it into the biggest opportunity, driving income and wealth of Americans to a new high through uninterrupted 11-year bull run in the US stock markets.

India has been proactive in fight against Corona and present leadership has been courageous to go to extremes. India has successfully controlled the transmission of COVID-19 till date. India will certainly tide over this threat and thereafter,

ONE THING IS CERTAINLY PREDICTABLE THAT THE HISTORY OF COVID-19 AND NEW GEOPOLITICS WILL BE SCRIPTED BY THE VICTORS ON THE GLOBAL LEVEL AND THEY WILL LEAD THE WORLD IN THE EMERGING NEW WORLD ORDER

use this opportunity to play a pivotal role in new world order. Every threat should be converted into an opportunity and our PM Narendra Modi masters this art, very well. India is looking to position itself as an alternative manufacturing destination for global companies after the Coronavirus outbreak. The threat of Corona has also presented a never before opportunity as the deadly virus has spread to other manufacturing hubs such as South Korea, Singapore and Taiwan.

ADVANTAGE INDIA POST CORONA

The cause for spread of COVID-19 from China is yet to be fully ascertained. However, certain



WHO chief speaking on the investigation process of Covid-19

CHINA WILL BE SEEN WITH SUSPICION FOR QUITE SOME TIME. JAPAN HAS ALREADY SHOWN THE WAY BY PULLING OUT ITS MANUFACTURING UNITS FROM CHINA. US WILL SOON FOLLOW. THE WORLD IS SOCIAL DISTANCING ITSELF FROM CHINA

ANALYSIS

pointers indicate to a certain extent, the anger with which the world perceives China today and holds it responsible for this global tragedy of immeasurable proportions. Post COVID-19, 'Brand China' will definitely lose its sheen. After the virus spread across the globe, the Chinese now face 'social distancing' by the international community.

From a geopolitical perspective, this crisis has given India an opportunity to position itself as a strategic part of global supply chains. As the world looks to de-risk

supply chains originating from China, India can state its competencies and advantages much more emphatically. India with huge manpower, existing availability manufacturing units, strong national leadership in PM Narendra Modi and his team which has already improved ease of doing business rankings, provides a reasonable opportunity to such companies. However, the concern is that unless India moves faster, others may have already seized the opportunity.

The shock waves set off by

the covid-19 pandemic could lead to a cumulative loss of US\$9 trillion in global gross domestic product (GDP) over 2020-21. The International Monetary Fund expects India's GDP to grow at 1.9 per cent in 2020-21, making it the fastest growing major economy in a recession-hit world. Today, we are in a position to negotiate as equal partners with the US, EU or Japan. India will play a pivotal role in the Emerging World Order with strong leadership and mature democratic credentials highlighted during Corona crisis, when high and mighty struggled.

CONCLUSION

Turbulent times more often than not cause upheavals in the Global Order. However, such crisis also provides an opportunity to both nations and organisations, which if availed, can help them elevate to a higher pedestal in world order. India's efforts in fighting the COVID-19 pandemic have been praiseworthy so far. The world is standing up in appreciation of our leadership and willing cooperation of 130 crore population, in unison, to successfully beat Corona evil. Who knows, COVID-19 may be larger design of the almighty to provide India, the divine land (God's Own Country) an opportunity, to restore back it's golden days of magnificence, when India was the glorious ancient civilization. India can catapult itself to the centre stage of Emerging New World post Corona, if it leverages Corona threat to its advantages. 21st century belongs to India. Just wait and watch!!

The author is a scholar soldier and has widely travelled in India and abroad. He is an avid reader, prolific writer, social activist, career consultant and a motivational speaker in demand. The author can be contacted at - www.majgenpsingh.com.



US President Donald Trump's statement on Corona



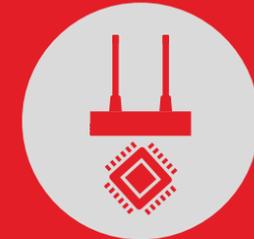
Corona outbreak: Prime Minister Narendra Modi urges Indian citizenry to follow lockdown restrictions



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“FUTURE ROADMAP OF INDIA-KOREA DEFENCE AND STRATEGIC RELATIONS IS VERY BRIGHT AND FULL OF NEW POTENTIALS”

Dr. **Lakhvinder Singh** is Director of Peace Programme at Asia Institute in Seoul, South Korea. He holds Doctorates (Ph.D) in Korean studies from Sungkyunkwan University in Seoul, South Korea, and international politics from Jawaharlal Nehru University (JNU) in New Delhi, India. He worked as a visiting professor at Institute of Far Eastern Studies for eight years. He has more than 300 published papers and articles to his credit during his academic career. In 2014, he published a book entitled South Korea-India Strategic Cooperation.

Dr Singh was also Editor-in-Chief of Asia-Pacific Business and Technology Report published from Seoul for seven years. This journal is an important source of information about contemporary business in Korea. He is a central figure in Korea-India relations, and was recently called the “Father of India-Korea Strategic Partnership” by Vice Defence Minister of Korea Dr. Seung Joo Baek as recognition of his work in promoting India-Korea defence cooperation. For his leading social and academic work, he was honoured with honorary citizenship of Korea in 2018 by the Seoul Government. He is based in Korea with wife and two children for the past 23 years.

In an interview to **Ajit K Thakur**, Editor, **Raksha Anirveda**, Dr Singh said that with the changing geopolitical order and rising China, a strong India-South Korea defence and strategic relations is the need of the hour. The ties can become even much stronger with the inclusion of Japan at trilateral level. **An excerpt:**



What’s your view on the new geo-political construct of South Asia and Southeast Asia with the rising power of China especially in South China Sea?

LS Asia pacific region is going through fundamental power shift as we speak. The US no longer enjoys the dominant position it used to do so a decade ago. Today China is occupying the top position being vacated by the US. More and More regional countries which were used to be close allies of US have begun moving

towards China. It is just a matter of time before we have a new regional order in the region led by China.

Taking note of close India-Japan bilateral and strategic relations, do you see any impact on India-South Korea (ROK) strategic relations which seem to be unfolding since South Korean President’s State visit to India in 2018?

LS Yes. I do. Stronger India Japan relations are having positive impact on the growth of stronger India-Korea Strategic ties. Working together these three countries have the ability to seize the initiative and emerge as new agenda setters for the region. Since South Korean



Seminar on celebrating South Korean President Moon Jae-in visit to India

President’s State visit to India in 2018 relations between the two countries have seen upward trajectory. We should make every possible effort that it stays for long time to come.

ROK Defence Minister has committed regarding investment by Korean defence companies in newly created two defence corridors of Tamil Nadu and Uttar Pradesh. Please elaborate on the investment progress so far?

LS Two new defence corridors created by Tamil Nadu and Uttar Pradesh are being very seriously pursued both by Korean Government and Korean defence industry. More than 10 South Korean defence companies, including Hanwha, LIG Nex1, Korea Aerospace Industries and Hyundai Rotem, exhibited their products at the DefExpo held in Lucknow earlier this year from February 5 to 8. From this level of engagement you can imagine the kind of interest Korean defence companies are showing in fast growing Indian defence sector. Thus we can easily say that in the coming years we can expect



Asia Institute, Seoul, Director Dr Lakhvinder Singh presenting a book on India-Korea strategic cooperation to the then EAM Sushma Swaraj

big growth of cooperation between India and Korea in this sector.

Beginning with Prime Minister Narendra Modi’s visit to South Korea in 2015 and the successive events like ROK President’s visit to India, proposed 2+2 dialogue, Indian Defence Minister’s visit to that country and many others have happened so far? How do you visualise the future roadmap of defence and strategic relations of two countries?

LS Future roadmap of defence and strategic relations of two countries is very bright and full of new potentials. There are

millions of things which we can do together in defence sector from joint production of our weapon systems to joint training of our military personnel and joint crafting of strategic policy in between. Indian Navy and Korean navy joining hands together to maintain the freedom of navigation in Indian Ocean, which can bring fundamental power shift in the Ocean. Free and open Indian Ocean is the common area of interest where both the nations see potential of working together.

Apart from the signing of MoUs at G-to-G level, a few like L&T has signed an

STRONGER INDIA JAPAN RELATIONS ARE HAVING POSITIVE IMPACT ON THE GROWTH OF STRONGER INDIA-KOREA STRATEGIC TIES. WORKING TOGETHER THESE THREE COUNTRIES HAS THE ABILITY TO SEIZE THE INITIATIVE AND EMERGE AS NEW AGENDA SETTERS FOR THE REGION

agreement with Korean HanwaTechwin to make K9 Vajra among others. Also, in September 2019 India, Korea have drawn up forward looking roadmap for defence industry. Your take on private sector participation with some significant figures?

LS My take on private sector participation is very positive. As we all know there exists a strong partnership between Indian and South Korean companies in various defence projects. For example South Korean defence major LIG Nex1 and Reliance Defence are planning to manufacture military hardware for Indian Armed Forces. Leading player in smart heavy weapons in categories of anti-ship missiles

(ASM), anti-tank guided missiles (ATGM), and guided rockets LIG Nex1 is one of Korea's top defence companies.

India has a goal of becoming among the top five global producers of the aerospace and defence manufacturing with annual export target of US\$5 billion by 2025. India domestically produces only 45 to 50 per cent of defence products it uses, and the rest are imported. Here Indian Korean private sector has huge opportunity to work together with Korean defence industry achieve these export goals.

Experts say to keep Indian Ocean Region free and open, South Korea, India and Japan should be on the same page. How significantly India plays a role for trilateral balance of power especially with aggressive expansion of Chinese defence power?

LS Yes. Very true. These three countries depend heavily on Indian Ocean for

their trade and energy. For example more than 90 per cent of Korean and Japanese energy flows through the Indian Ocean. Any hostile takeover of Indian Ocean can hurt these countries very deeply. They have no choice but to work together if they do not want to destabilise their economies and hurt their security interests.

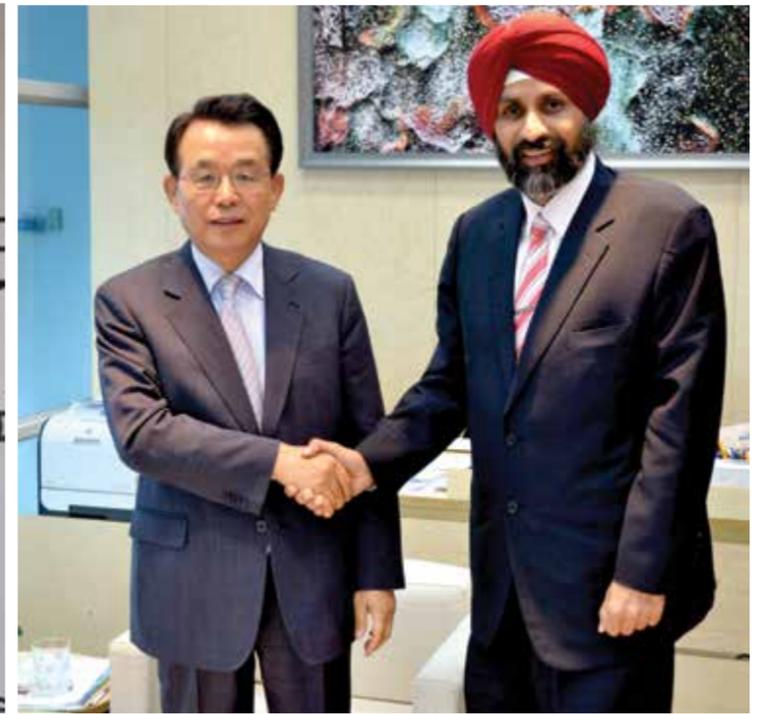
However, unfortunately domestic political and historical issues are coming into the play and hurting bilateral partnership between Korea and Japan. Korea and Japan has to settle these legacies issues as soon as possible before it is too late. Trilateral cooperation among India, Japan and Korea is the urgent need of the hour. Either we stand together or we perish in the deep ocean separately. Choice is ours.

From India's 'Look East' to 'Act East' policy and South Korea's 'New Asia Initiative' to 'New Southern Policy', how far these newly designed policies of both countries been able to present Asian nations interest at the world stage?

LS Honestly speaking it is the same policy with two different names. There is not much difference on the ground between 'Look East' and 'Act East Policy'. We need to do much more to strengthen our ties with Asia Pacific region than changing names of our policies. South Korea's 'New Southern Policy' is grand opportunity for us. We should embrace it completely. For first time since independence South Korea is looking towards India for all round deeper engagement. It is God sent opportunity for us to deepen our engagement with Korean



Lakhvinder Singh receiving Honorary Citizenship (L); Dr Singh meeting with former South Korea prime minister Mr Han Seung-soo in his office (R)



TRILATERAL COOPERATION AMONG INDIA, JAPAN AND KOREA IS THE URGENT NEED OF THE HOUR. EITHER WE STAND TOGETHER OR WE PERISH IN THE DEEP OCEAN SEPARATELY. CHOICE IS OURS



Dr Singh meeting with General Kim Yongwoo, former chief of army staff (L); Dr Singh and Mr Song Young Gil, Chairman of Foreign Affairs Committee in Korean National Assembly (R)

peninsula. We must not miss the chance. Only two years are left before we have a new president and Korea's foreign policy focus is changed.

We should give up denial and accept the ground reality in the region. Given the growing Chinese engagement in the region we are being pushed back like never before.

What could be the possible way forward to expedite India-Korea defence and strategic relations in the current challenging scenario? How can they play complementary to each other to keep Asia-Pacific or Indo-Pacific safe, and taking the tie-up to the next level?

LS Very good question. The possible way forward for two countries is to align our defence policies and priorities with each other as much as possible and understand and support in meeting each other's concerns. For example for Korea

peaceful unification of Korea is number one priority. India should help Korea in achieving that objective as much as possible. Similarly for India keeping the Indian Ocean free from any foreign intrusion is number one security goal. South Korea with one of most powerful and modern navy can help India to meet its security concerns in the Indian Ocean. It is only through helping each on most pressing issues facing both countries we can take this partnership to next level. We simply cannot depend on trade and investment alone to build long term and sustainable partnership in fast changing regional order though increased trade and investment could also play stronger role in strengthening the partnership.

Final comment, if any?

LS India and Korea working together has the potential to change the tide of time and help

build a new regional order which protects our economic and security interests. But unfortunately our policy makers and diplomats do not completely realise the full potential of this partnership. So far they have been only providing lip service to this partnership. Currently there is lot of symbolism in our partnership. It is time we get real and do some real piece of work on the ground. Our trade volume is too small given the potential of our economic partnership. We are still struck with less than US\$ 22 billion trade per year. And given the current low growth rate our trade target of US\$50 billion by 2030 may not be achieved. With the US withdrawing from the region Korea is fast tilling towards China. It will have far reaching security consequences for us. It is high time we give up denial and accept the ground reality of power shift in the region and redraft our engagement policy with Korea. It is now or never.



AMIT COWSHISH

ATMANIRBHARTA IN DEFENCE PRODUCTION: FM'S REFORMS PACKAGE

The effectiveness of the reforms package will depend much on how effectively and quickly the best of systems and procedures are implemented

Defence production is one of the eight sectors for which structural reforms were announced by finance minister Nirmala Sitharaman on May 16 to pave the way for an *Atmanirbhar Bharat*. There is no telling how long it will take to notify the specifics of these reforms. One thing is certain though: none of these reforms can be expected to start showing results soon.

NEGATIVE LIST OF IMPORTABLE ITEMS

Reiterating a decades-old commitment to enhance self-reliance in defence and reduce the 'huge' defence import bill, the finance minister announced that 'Make in India' in defence production will be promoted by notifying a list of weapons/platforms whose imports will be banned, indigenising of imported spares, and providing a separate budget for domestic capital procurement. None of this is new.

The capital procurement procedure followed since 2013 requires the Ministry of

Defence (MoD) to rule out the possibility of procurement from the Indian companies before an item can be allowed to be procured from abroad by way of outright purchase under the 'Buy (Global)' category or for licensed production in India under the 'Buy and Make' category.

These two categories rank lower in preference than three categories - 'Buy (Indian - Indigenously Designed, Developed and Manufactured)', 'Buy (Indian)' and 'Buy and Make (Indian)' - in which only the Indian companies can participate. This filters out unwarranted foreign procurement proposals. By and large, the same principle is followed for revenue procurements.

This is borne out by the fact that as many as 204 procurement proposals, worth Rs 4,04,880 crore approximately were approved between 2014-15 and 2018-19 under the aforesaid three preferred categories, the 'Strategic Partnership Model', and the 'Make' category, all of which entail sourcing of defence equipment from

AS MANY AS 204 PROCUREMENT PROPOSALS, WORTH Rs 4,04,880 CRORE APPROXIMATELY WERE APPROVED BETWEEN 2014-15 AND 2018-19 UNDER THE AFORESAID THREE PREFERRED CATEGORIES, THE 'STRATEGIC PARTNERSHIP MODEL', AND THE 'MAKE CATEGORY'

the Indian companies.

As for indigenisation of the imported spares, Directorates of Indigenisation in all the three Services Headquarters have been at it for several years. Various schemes like Innovation for Defence Excellence (iDEX) and Defence Technology Fund are also being run to promote indigenisation.

With so many measures already in place and there being no evidence that items which can be sourced from or indigenised by the Indian companies are being imported, it is difficult to visualise the advantage of notifying a negative list of importable defence items. On the contrary, it may create another hurdle to be crossed if the MoD is faced with a situation where import of an item that is on the negative list becomes inescapable because of some operational exigency.

SEPARATE BUDGET FOR DOMESTIC PROCUREMENT

It is no secret that the gap between the amount sought by the defence

services and the allocation made in the union budget has been widening. It has increased from approximately Rs 23,000 crore in 2010-11 to more than Rs 1,13,000 crore in 2020-21. Carving out a separate moiety for domestic procurement out of an already stressed capital budget will be of little help.

In fact, it will inhibit the flexibility MoD presently enjoys to spend the funds within the overall capital budget as per the demands of the situation. This flexibility is the key to optimum utilisation of the capital budget, a part of which used to remain unutilised every year till a few years ago.

A separate budget for 'domestic capital procurement' will, therefore, have some meaning only if the allocation for this purpose is made in addition to the normal average yearly increase in the capital budget.

CORPORATISATION OF THE ORDNANCE FACTORY BOARD (OFB)

The network of 41 ordnance factories, managed by the Ordnance Factory Board (OFB) under the administrative control of the Department of Defence Production is to be corporatised to 'improve autonomy, accountability and efficiency' of ordnance supplies. No details of how and when this is proposed to be done were provided.

The proposal has been around for about two decades, but it did not gain any traction for several reasons, including the opposition from the employees.



Prime Minister Narendra Modi's Atmanirbhar Bharat package to boost MSME sector

A SEPARATE BUDGET FOR 'DOMESTIC CAPITAL PROCUREMENT' WILL, THEREFORE, HAVE SOME MEANING ONLY IF THE ALLOCATION FOR THIS PURPOSE IS MADE IN ADDITION TO THE NORMAL AVERAGE YEARLY INCREASE IN THE CAPITAL BUDGET

There is no point in second guessing how all those issues which stymied the move in the past are going to be addressed, but there is no denying that corporatisation is not something that can be completed in a short time.

Considering that questions are asked all the time about productivity and efficiency of the public sector enterprises, the premise that mere corporatisation of the ordnance factories would transform them into highly efficient production centres is also questionable. A lot will depend on the management structure of the new entity/entities, about which nothing can be said as of now.

FOREIGN DIRECT INVESTMENT (FDI)

The limit on the FDI in defence manufacturing through the

automatic route is to be increased from 49 to 74 per cent. This very move was proposed by the then commerce and industry minister in 2013 and stoutly rejected by the MoD on the grounds that it will impede the indigenisation efforts and stymie the growth of the Indian industry.

Nothing has changed since then, except that there seems to be a greater acceptability in the country of any drastic measures that would help in repairing the economy devastated by the Covid-19 pandemic. Perhaps that is why, unlike in the past, opposition to this move from the employees and the private sector has been rather muted.

The foreign companies have welcomed the move but they too have several apprehensions on account of any pre-condition that inhibits their control over the investee company, unpredictability of the tax and regulatory regimes, cumbersome labour laws, bureaucratic stranglehold, and the investee company not being treated at par with other Indian

GUEST COLUMN



Defence Minister Rajnath Singh launching an initiative of his ministry



Finance Minister Nirmala Sitharaman announcing Atmanirbharta reforms package

companies, just to name a few.

The biggest concern they seem to have is about the business prospects of the investee companies. With the perennial budgetary constraints - which may become more acute in the coming years because of the need to provide more funds for health, agriculture, infrastructure and other sectors - this concern cannot be dismissed as being unfounded.

One has to only look at the major arms importing countries other than India - Saudi Arabia, UAE, China, Australia, Algeria, Iraq and Turkey - to realise that the case for investment in India cannot be built primarily on the prospects of export of major equipment, platforms and weapon systems by the investee companies. These countries are unlikely to turn to India for import of major equipment and platforms.

As of March 2020, the defence sector ranks 60th in the list of 63 sectors in which the flow of foreign investment is tracked by the Department for Promotion of Industry and Internal Trade (DPIIT). The investment received since 2001 when the defence sector was opened to foreign investment does not count for even 0.01 per cent of the total foreign investment received by India.

The success of the new FDI policy will inevitably be judged by the quantum of investment received after raising of the limit is formally notified. The foreign investment will have to be substantial for MoD to claim that the gamble has worked. Considering

WHILE THE INTENTIONS ARE GOOD, THE 'REFORMS' ANNOUNCED BY THE FINANCE MINISTER - SOME OF WHICH ARE NOT NEW - WILL PAVE THE WAY FOR AN ATMANIRBHAR BHARAT ONLY IF THESE ARE FLESHED OUT WITH PRAGMATISM, LEAVING NO LOOSE ENDS

that it presently figures at the bottom of the list, the policy makers clearly have their task cut out for them.

MISCELLANEOUS MEASURES

The finance minister also announced that the defence procurement process will be made time-bound, a Project Management Unit (PMU) will be set up to support contract management, General Staff Qualitative Requirements (GSQRs) of weapons/ platforms will be formulated realistically, and trial and testing procedures will be overhauled. None of this is new.

Such procedural changes have been made several times since 2002 when the first version of the Defence Procurement Procedure was promulgated to regulate capital acquisition, but the problems have persisted. In any case, the measures announced by the finance minister are too disjointed and sketchy.

While the intentions are good, the 'reforms' announced by the finance minister - some of which are not new - will pave the way for an Atmanirbhar Bharat only if these are fleshed out with pragmatism, leaving no loose ends. More importantly, the best of system and procedures can be brought to a naught by lackadaisical decision-making. Just how effective the reforms package turns out to be will depend on how effectively these two issues are addressed. ■

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



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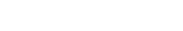
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THIRD AIRCRAFT CARRIER: DEFENCE BUDGET MARITIME IMPERATIVE DEMANDS PRIORITISED REVIVAL

In the backdrop of the latest muscle flexing in the South China Sea and to become a robust net security provider in the Indian Ocean Region, third aircraft carrier needs to be seen as a maritime imperative, when the defence budget permits

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



Admiral Lord Louis Mountbatten

Viceroy of India Admiral Lord Louis Mountbatten, former Supreme Commander of South East Asia Command (SEAC, 1943-46) and Governor General of India (1947-48), always lauded the Indian Armed Forces for its pivotal contribution in World War II and mentioned the small Royal Indian Navy (RIN) under his command as his favourite service.

Governor General Lord Mountbatten, who latter became First Sea Lord (FSL) and CDS of UK, directed Vice Admiral Sir William Perry, C-in-C Royal Indian Navy (1948-50) to draw up a Long Term Naval Plan, and echoed that the raison d'être of India's Navy should be, to be a maritime power in the Indian Ocean for stability as Britain receded, and for India's prosperity.

That comprehensive plan as a template of the Navy of India was approved by the then Government and was called the First Naval

Plan which included three aircraft carriers, one for each coast and one in refit. 13 ships including an aircraft carrier and two inch gun cruisers were acquired from Britain and every subsequent naval plan accepted the Indian Navy's need for minimum three aircraft carriers. However, the Navy's smallest share of the defence budget, waxing and waning from 18 per cent to current 13 per cent, it has not been able to afford three aircraft carriers. India's defence budget is only 2.4 per cent of India's GDP.

The imperative need of three aircraft carriers is still valid, no matter what arguments are tabled by critics and inter services rivalries, that aircraft carriers are easy targets to missiles or submarines or they are 'White Elephants' for costs, or their day is over or Air Force can replace carriers and perform the tasks. The answer is a one liner in defence of aircraft carriers. No Blue Water Warship Battle Group (WBG) can be complete without submarines and the integral air power provided by an aircraft carrier in war or out of area operations. Also, for many other functions that an aircraft carrier performs for the nation in peace in flag showing, Humanitarian Assistance and Disaster Relief (HADR) and in emergency evacuations.

This writer concedes that an aircraft carrier is capital intensive and current defence budget does

not allow funds for more than two carriers, and navy's nuclear submarines are also expensive even if they are not fully funded from the naval budget. The total defence budget of FY2020-21 stands at Rs 4,71,378 crore (US\$70 billion approximately), out of which budget for the armed forces and DRDO is Rs 3,23,053 crore (US\$46 billion). For defence pensions account the budget outlay is Rs 1,33,825 crore (US\$19 billion) and civil expenditure is Rs 14,500 crore (US\$2.1 billion). The Navy's allocation is Rs 61,890 crore (13.2 per cent/US\$ 8.7 billion), and an aircraft carrier could cost US\$3 billion over few years in building.

Indian Navy's first aircraft carrier 16,000 tonne INS Vikrant (HMS Hercules) with Sea Hawk fighters and Breguet Alize ASW/EW planes was received by Prime Minister Pandit Nehru at Ballard Pier Bombay in 1961. INS Vikrant's planes contributed invaluable service in the victorious 1971 Bangladesh war in the east, and hastened the Pakistani surrender. Indian Navy operated two aircraft carriers from 1987 when 21,000 tonne INS Viraat (Ex HMS Hermes)

joined Vikrant with Sea Harrier fighters and Sea King MK2B ASW helicopters. INS Vikrant was decommissioned in 1997.

For the next 16 years, Navy operated the lone INS Viraat when 43,000 tonne refurbished INS Vikramaditya (Ex Gorshkov) joined from Russia with MiG-29Ks and Ka-31 AEW helicopters in 2013. INS Viraat was decommissioned in 2017 and India's first indigenous aircraft carrier 28,500 tonne re-born Vikrant was ordered at Cochin Shipyard Ltd (CSL), and is under construction awaiting its first sea trials with HAL supplied

LM-5000 gas turbines after moving on its own power from CSL yard to a commercial berth. Learning from INS Arihant experience, Navy should have bought a proven design. The platform has seen delays and many changes including accommodation for women crew.

Majority of land locked Indians suffer from 'Sea Blindness' and do not appreciate that historically nations have risen on the planks of maritime power and economy. The world's power and economy has shifted to the East with the rise of China, India, South Korea and Association of Southeast



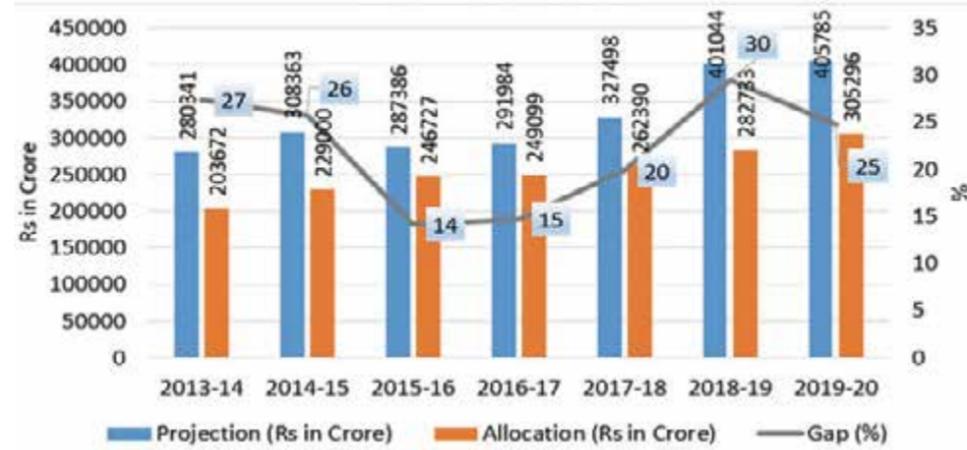
INS Vikrant CSL



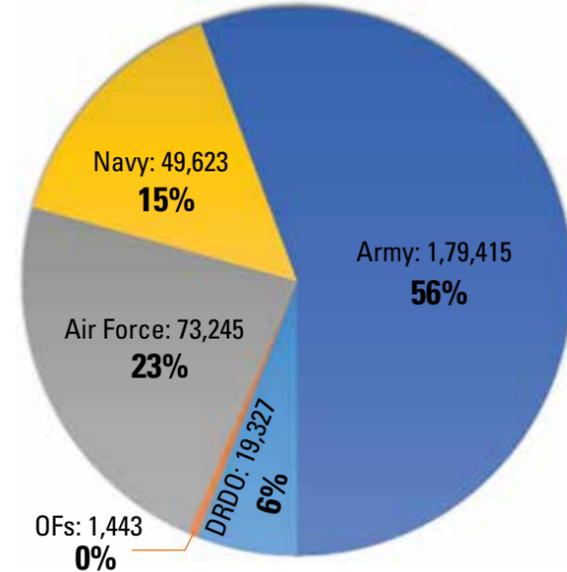
Liaoning at sea

THE IMPERATIVE NEED OF THREE AIRCRAFT CARRIERS IS STILL VALID, NO MATTER WHAT ARGUMENTS ARE TABLED BY CRITICS AND INTER SERVICES RIVALRIES, THAT AIRCRAFT CARRIERS ARE EASY TARGETS TO MISSILES OR SUBMARINES OR THEY ARE 'WHITE ELEPHANTS' FOR COSTS, OR THEIR DAY IS OVER OR AIR FORCE CAN REPLACE CARRIERS AND PERFORM THE TASKS

MoD's Resource Projection and Allocation under Defence Services Estimates



Share of Defence Services in Defence Budget 2020-21



Asian Nations (ASEAN). Japan is already an economic and self defence maritime power. China has given the most fillip and budget to become a 300-ship powerful PLA (Navy) lording over the South China Seas as a maritime bully with two aircraft carriers Liaoning and Shandong. India too has a potent but a small Navy in comparison, and operates as the net security provider in the Indian Ocean Region.

In World War II, the aircraft carrier dramatically changed naval warfare and air power became a significant factor in warfare at

sea. Japanese and US navies fought carrier battles in the Pacific. Today range of carrier aircraft with mid air refuelling, focal weapons and flexibility, the effectiveness of carriers has increased. China has plans for more aircraft carriers, USA operates 11 large nuclear powered carriers, UK has two conventional carriers and France has one nuclear powered carrier. Spain and Italy operate a carrier each and Japan is converting its four helicopter carriers to operate JSF-35s and innovations in designs are on the cards to make cheaper and dual use aircraft carriers. But the need is unlikely to go away for nations that can afford them and have aspirations in the comity of nations.

Indian Navy has progressed plans for a large 65,000-tonne catapult-assisted take-off and arrested recovery (CATOBAR) carrier, an expanded capability over INS Vikramaditya, besides the 34,000-tonne domestically built Vikrant (IAC-I) for larger take off load and endurance. India signed an agreement with USA for help in its third carrier programme. Vice Admiral SPS Cheema, a former Carrier captain, took a delegation to Ingalls Huntington Yard in New Port, USA and visited USS Gerald Ford from August 12-14, 2015. Program Officer for Aircraft Carriers Rear Adm Tom Moore

briefed the Indian team in USA and many discussions took place on the size and propulsion as the start blocks and Navy's architects got involved with the project for the basic IAC-II design named Vishal. Financial sanctions were provided to scale up a design and a full directorate with a Rear Admiral was set up at Naval Headquarters.

The Indian Navy also sent Letters of Request (LoR) to UK-based firm BAE Systems, Naval Group (DCNS) in France, US' Lockheed Martin and Russia's Rosoboronexport for information on carrier design as well as for RFI of 59 fighters. India also explored the offer of General Atomics' Electro Magnetic Aircraft Launched System (EMALS) like on the US Ford Class, and Dr Vivek Lall of General Atomics, formerly Boeing Military head in India, gave presentations to the Indian Navy as it is being fitted on US carriers.

Even Prime Minister Narendra Modi was supportive of the India's third aircraft carrier programme and held a Commander's Conference on board INS Vikramaditya, and Indian Navy devoted US\$5 million to the design effort from its budget. When demitting office on May 31, 2014 Chief of Naval Staff (CNS) Admiral RK Dhowan on his farewell visit to Goa said that the Government was yet to freeze the design specifications for Vishal, as nuclear energy that enables a carrier to sail for months without needing to dock for refuelling was also on the cards. A nuclear-powered carrier provides a Navy 'longer sea legs' to enhance its reach beyond territorial waters. It has been debated that the third carrier may need a nuclear generation of 180 MW for propulsion, with two reactors of 90 MW each. Talks with the Bhabha Atomic Research Centre (BARC) have taken place to propel 60,000 to 70,000 tonnes on the basis of the INS Arihant reactor.



War and peace are two sides of a coin that need constant attention for a nation like India seeking world power status. Modern war fighting doctrines will also need to be incorporated in India's marine infrastructure ashore, shipbuilding and weapons and for peacetime as required for

Humanitarian Assistance and Disaster Relief (HADR) and Flag showing, interoperability with modularity and combat capability to deter wars and fight and win future wars. A three carrier Indian Navy is inescapable for India's needs. However, then Defence Minister Nirmala Sitharaman

and later newly-appointed Chief of Defence Staff (CDS) General Bipin Rawat after reviewing the budget have postponed work on the funding and design work on the third aircraft carrier but it will be an imperative maritime need when the defence budget permits. This may take some time as priority for spending has already shifted to the Army and Air Force with more fighters and early delivery of Rafales after the belligerent intrusion of PLA forces across the Line of Actual Control in Ladakh, and build up of forces, but a third aircraft carrier of appropriate design will be a maritime imperative for India. ■

-The author is former DNI and DNO in the Indian Navy and author of books and the Indian Navy Year Book-2020.

INNOVATIONS IN DESIGNS ARE ON THE CARDS TO MAKE CHEAPER AND DUAL USE AIRCRAFT CARRIERS. BUT THE NEED IS UNLIKELY TO GO AWAY FOR NATIONS THAT CAN AFFORD THEM AND HAVE ASPIRATIONS IN THE COMITY OF NATIONS

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DPP 2020 INTRODUCES LEASING IN DEFENCE FOR FIRST TIME, FOCUSES ON MAKE IN INDIA

At the time when hard choices regarding budget cuts are looming, deliberating the comparative costs associated with a single-minded pursuit of indigenisation laid out in Draft DPP-2020 may prove to be a prudent exercise

By **SRI KRISHNA**

The draft Defence Procurement Procedure 2020 (DPP-2020) released on March 20 by Defence Minister Rajnath Singh for comments is the sixth with the first in 2006, and has been growing in volume with the current one exceeding 700 pages with focus on Make in India, pet project of Prime Minister Narendra Modi. This draft, which is the culmination of a review process set in motion by Defence Minister in August 2019 under the Chairmanship of Director General (Acquisition), built upon DPP-2016 itself has undergone 47 amendments as part of the Business Process Reengineering.

The aim of the new DPP-2020 is to achieve two broad objectives: Hastening the procurement process by removing procedural bottlenecks, and promoting Make in India. The draft has revised the existing procurement categories, increased the requirement of indigenous content (IC) under various categories, and

incorporated some new concepts of defence procurement.

It has also revised the existing offset guidelines and made changes in the contract template and other provisions of the document.

The focus of the new DPP is to further promote indigenous design capacity and higher localisation, both of which if implemented

effectively could potentially increase the role of domestic industry, especially the private sector in defence production.

The draft proposes higher levels of local content, new multipliers in defence offsets, a procurement category for leasing, and new options for equipment sustainment activity. It attempts to better the draft of DPP-2016.

The draft amends existing military procurement rules in line with Governments' long-running targets to boost indigenous defence capability and reduce reliance on imports under its Make in India initiative.

The most preferred category to process defence procurement, called Buy 'Indian Indigenously Designed Developed and Manufactured' or (Indian-IDDM), towers over and above all other categories. Under Indian-IDDM, any order will require at least 50 per cent indigenous content if the design is indigenous in addition to development and manufacture, an increase from 40 per cent. Or under Buy-Indian category with an indigenous design and manufacture, the required percentage of indigenous content will be 50 per cent or 60 per cent if product has not been designed and developed indigenously.

However, while favouring Make in India it does not make provisions to analyse or compare the cost premium and consequent potential decrease in output delivered in



Prime Minister Narendra Modi addressing on Make in India programme

implementing such high levels of indigenous content in platforms.

Indigenisation is about reducing dependency and increasing India's capability to meet its own security needs. However, India lacks several core sub-systems manufacturing capability, production expertise, resulting in many of the systems being developed and produced for the first time in India.

It has been seen in many cases where the focus has been on indigenisation, there have been numerous instances of mismanagement, time delays, late stage design modifications and cost escalations. The Light Combat Aircraft (LCA) produced by Hindustan Aeronautics Ltd; Arjun Main Battle Tank; Air Independent Propulsion (AIP) systems for the Indian Navy's Scorpene submarines; and the acquisition of a weapons locating radar for the Army before Kargil, a long list pointing to the risks associated with the development of sub-systems

and platforms afresh.

One new category for acquisition introduced for the first time is leasing in addition to the existing 'Buy & Make' templates. Under this, equipment or platforms may be leased from defence firms or countries rather than purchased for ownership by the armed forces. Firms would enter into long term or medium term contracts offering to provide a guaranteed number of operationally available frontline equipment on a daily basis (e.g. combat aircraft or tanks) with the contractor responsible for maintenance and repair for the duration of the contract.

"Leasing provides means to possess and operate the asset without owning the asset and is useful to substitute huge initial capital outlays with periodical rental payments. Leasing would be permitted in two sub categories i.e. Lease (Indian), where Lessor is an Indian entity and is the owner of the asset, and Lease (Global)," says the clause.

The draft retains the previous DPP 2016 regarding Strategic Partnerships (SP) outlining the rules governing Strategic Partnerships in the manufacture of four programmes — fighter aircraft, helicopters, armoured vehicles and submarines — to be done in collaboration with a domestic partner company in India.

The rules in this chapter continue to restrict foreign manufacturer's stakes to 49 per cent in any such partnership, creating a plethora of issues around the willingness of these companies to share the latest technologies to IPR issues. The rules place the burden of performance guarantees in terms of quality and timely deliveries on the foreign manufacturer owning a 49 per cent stake while mandating the Indian partner to be the prime contractor and bidder.

The draft has left out issues of improvements in procedures, institutional structures and issues related to accountability. How effective will the new DPP be

THE FOCUS OF THE NEW DPP IS TO FURTHER PROMOTE INDIGENOUS DESIGN CAPACITY AND HIGHER LOCALISATION, BOTH OF WHICH IF IMPLEMENTED EFFECTIVELY COULD POTENTIALLY INCREASE THE ROLE OF DOMESTIC INDUSTRY, ESPECIALLY THE PRIVATE SECTOR IN DEFENCE PRODUCTION



Tata Group's aerospace assembly line

POLICY REFORM

THE DRAFT RETAINS THE PREVIOUS DPP 2016 REGARDING STRATEGIC PARTNERSHIPS (SP) OUTLINING THE RULES GOVERNING STRATEGIC PARTNERSHIPS IN THE MANUFACTURE OF FOUR PROGRAMMES — FIGHTER AIRCRAFT, HELICOPTERS, ARMoured VEHICLES AND SUBMARINES — TO BE DONE IN COLLABORATION WITH A DOMESTIC PARTNER COMPANY IN INDIA

without these amendments? It will eventually be contingent on how the Ministry of Defence (MoD), Service Headquarters, Integrated Defence Staff now headed by the CDS, and the DRDO which constitute the labyrinthine procurement set up implements these.

However, the fundamental issue remains the quantum of funds allocated for capital expenditure or modernisation, more so with the COVID-19 pandemic's impact on the economy. In the near term, acquisition programmes including committed liabilities face being disrupted and delayed. The Ministry of Finance (MoF) has already issued directives to restrict expenses for the first quarter to either 20 or 15 per cent of the year's budget estimates to battle the fallout of COVID-19 on its revenues.

So, the Defence Ministry needs to anticipate and plan the prioritisation of spending and hard choices regarding



Defence Minister Rajnath Singh

cuts in line with the looming fiscal reality. Deliberating the comparative costs associated with such a single-minded pursuit of indigenisation as laid out in the 2020 draft defence procurement procedure may be a prudent exercise too.

What stands out in stark contrast to the previous editions of the DPP is that contracts signed through Inter-Governmental Agreements (IGAs)/ Foreign Military Sales (FMS) route is exempt from offsets. This is surprising and flies in the face

of the Government's oft-repeated assertions on self-reliance and indigenisation. Most items sourced through IGAs and through FMS (the American euphemism for pushing through arms sales conveniently bypassing any laid down procedures) relate mainly to high-end equipment and platforms.

This DPP has for the first time taken the laudable step of including product maintenance and support. However, demanding only five to eight years of lifecycle support for equipment which remains in service for two to three decades is difficult to comprehend.

The key objective of the Defence Offset Policy is to leverage the capital acquisitions and technology to develop Indian defence industry by (i) fostering development of internationally competitive enterprises and (ii) augmenting capacity for Research, Design and Development related to defence products.

— The author is a senior journalist and media consultant.



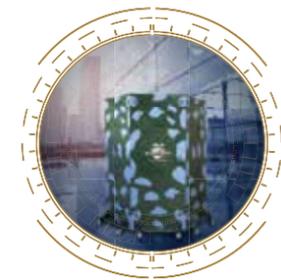
Indian defence production at display



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MUSS – THE INVISIBLE SHIELD OF THE TANK

The Battle Tank, or the Armored Fighting Vehicle, ever since it made its first appearance on the Battlefield of Somme in 1916, has retained its pre-eminent position as the primary means to carry the battle to the enemy and deliver the decisive edge in a land based engagement between Armed Forces. The appearance of tanks led to development of anti-tank munitions. In the early stages of this race, the only protection against new munitions was to enhance armor thickness which increased the weight and decreased the mobility of AFV. This method was not practically effective against defeating Munitions like High-explosive antitank (HEAT) rounds, or Explosively formed penetrators (EFPs). This led to next level of evolution of passive protection viz use of better performing, lighter alternatives to Steel like Composites and the deployment of ‘add on’ armor as spaced armor, explosive reactive armor.

In recent years, the Battle field saw the advent of a large variety of anti-tank guided missiles and unguided rockets rapidly evolving from simple First Generation Wire Guided Missiles to TOW, to Beam Riding to the 3rd generation fire-and-forget, guided, top-attack modern missiles and TOW missiles that were capable of defeating Passive and add on armor & destroy their target with

MUSS is the most advanced in-service, cost effective and practical solution to improve the survivability of Armoured personnel carrier (APC) or Infantry fighting vehicle (IFV) platforms



Col. Ravin Kumar, Director Marketing & Business Development, Hensoldt Pvt Ltd

tandem warheads. This proliferation of Anti-tank guided missile (ATGM) capable of being launched from a variety of Platforms/ Configurations soon outstripped threats posed to a tank from conventional tank fired projectiles and munitions. This necessitated a paradigm shift in AFV protection and spurred development of new technologies within the given weight limitations to counter them known as Active Protection systems (APS). These systems utilize Electronic sensors to detect & track incoming direct-fire ATGMs

and HEAT munitions & Laser Threats, and defeat them by launching countermeasures to deflect/destroy them. APSs thus once again changed the calculus, by enhancing AFV protection without significantly impacting Vehicle Weight.

HENSOLDT group core competence has been to recognize a wide range of threats and to provide practical and optimal solutions to improve the safety and operational effectiveness of military platforms. Evolution of HENSOLDT’s MUSS (Multi-functional Self-protection System) has been the endeavour in the same direction. MUSS is the most advanced in-service, cost effective and practical solution to improve the survivability of Armoured personnel carrier (APC) or Infantry fighting vehicle (IFV) platforms.

Col. Ravin Kumar, a former-Tank man of Indian Army, now Director Marketing & Business Development, Hensoldt Private Limited, had an interesting conversation with Dr Oliver Rudow, Head of Ground Protection Systems and Mr. Franck Friedlander, Sales Director at HENSOLDT in Germany about this fascinating product. Below are some excerpts

What are the key criteria that influence the choice of worldwide customers in selecting Active Protection Systems (APS) for AFV/ICV?

While the choice of APS largely depends on experience and respective military doctrine, however some Key drivers that influence the decisions are

- I. The system should not degrade/adversely impact AFV/IFV operational role and capabilities and provide 360 degree coverage to cater for all angles of arrival



- of threats including top attack munitions.
- II. Capable of detection, tracking and neutralization multiple threats (ATGMs of all types, CE & KE projectiles) that the AFV/IFV is likely to encounter in the battle field simultaneously and deploy appropriate countermeasures.
- III. No resultant collateral damage by deployment of countermeasures to crew/other dismounted personnel/soft-skinned vehicles in vicinity/optical & Optronic devices and other soft points of the AFV/IFV
- IV. The System should have minimum Size Weight & Power (SWaP) specifications. External components should not enlarge vehicle profile, block/impede access or functioning of any existing hatches/ports/Observation devices and Armament. Internal Components should not displace existing combat loads and systems and with no additional environmental/EMI impact.
- V. Cost effectiveness is a key driver. Initial and through life costs should be optimized.
- VI. The APS should be modular with open architecture and future ready to integrate additional sensors and counter measures as per requirements for a given platform limitations/Threat perception and levels of protection required.

Could you describe HENSOLDT MUSS® APS System which is already on the German Army’s PUMA IFV and what are its key differentiators?

MUSS® is a Passive Detection (PD) with a

Soft Kill (SK) effector based Active Protection System (APS), delivering a KEY protection layer against Anti-Tank Guided Missiles (ATGM) and Laser (guided) Threats (LT).

The system mainly comprises two passive sensors, a Missile Warner (MW) and a Laser Warner (LW), with two Countermeasures – a 360 degree rotatable IR Jammer (IRJ) and Directable Smoke Dispenser (DSD). The System is modular, flexible, easy to install and cost effective solution for the customer. The modular system architecture makes it easy to customize the configuration for specific vehicle ergonomics and operational requirements by combining selected sub systems to deliver a desired effect.

MUSS is an In-Service system fitted on the SPz PUMA, the most modern IFV of the Bundeswehr Armoured Infantry Brigades. MUSS was ‘designed’ into the protection solution of the SPz PUMA

- The Key product differentiators include
- Modular and scalable system for different vehicle (wheeled and tracked armoured vehicles) types and operational requirements for overall protection.
 - Highly cost effective solution
 - Significant SWaP advantages over APS using Hard Kill effectors.
 - Undetectable and Jamming proof.
 - No Collateral Damage to host Platform or Local Area
 - Easy to integrate, no strong provisions needed. Does not significantly alter/degrade platform
 - Complimentary to traditional Hard Kill APS. HK APS protection are only against certain threats and not against all RPGs

- Product Roadmap includes Interface to Hard Kill Effector, Laser Jamming & Dazzling, Tracking & Confirmation Sensor, Integration into Surveillance and C2 system and Platform Interoperability

What are key differences between Hard Kill (HK) and Soft Kill (SK) solution? And what are global trends in customer preferences that you see?

APS can be broadly classified into “Soft Kill” systems, intended to prevent the oncoming threat from accurately targeting the vehicle whereas “Hard Kill” systems are designed to use direct explosive force to destroy/deflect/degrade incoming projectiles. The Key differentiators between the two being, nature of sensors used to detect and track threats - Passive versus Active and the Type of Counter-measures deployed to neutralize the threat. Both systems defeat the threat before impact, SK by EO Jammer (or Laser Dazzle) or with Obscuration and a HK system by deploying counter kinetic effect using Multiple Explosively Formed Projectiles (MEFPs) to destroy/deflect/degrade any threat.

Whilst today some Armies have tested and in some cases, have even fitted Hard Kill Systems as an interim solution, major challenges with technological readiness & maturity of HK systems, significant integration constraints and operational restrictions coupled with usage issues are causing them to review this choice! The experience of users with Hard Kill solution seems to be triggering interest in adopting an evolutionary modular

BUSINESS INITIATIVE



approach starting with a baseline of Soft Kill systems and incrementally building capabilities on it.

I.e. the German Army recognised the advantages of a layered approach protection. Against ATGMs, where the armor is not sufficient, they use MUSS. Accordingly, the PUMA IFV is designed on a 2 step approach:

- with a level A protection armor, which can protect from ballistic threats, which weighs 31,45 tons and can be air-transported in the Airbus A400M, MUSS fitted.
- with a level C enhanced protection armor, which can protect against RPGs and which weighs around 43 tons, MUSS also fitted.

Global armed forces are now realising the need to have scalable and modular solution which has the potential to be configured as per the limitations or operational imperatives of the platform.

Could you please elaborate your views on Indian market what are your plans to introduce MUSS to Indian Customers?

The Indian Market, with its large inventory

of Tanks and ICVs as well as its future platform development programs offers huge potential. We are also cognizant about India's uncompromising focus on Military self-Reliance through "Make in India" policy.

It is important to reiterate the fact that MUSS system is already In-Service on ~350 SPz PUMA, which is the most modern

The Indian Market, with its large inventory of Tanks and ICVs as well as its future platform development programs offers huge potential. We are also cognizant about India's uncompromising focus on Military self-Reliance through "Make in India" policy

IFV of the German Army with its existing capabilities to defeat a wide range of ATGMs and low SWaP profile. The MUSS Product roadmap envisages adding Hard Kill capability by Interfacing Active Tracking & Confirmation Sensors, kinetic effectors against KE/CE projectiles, Laser Jamming & Dazzling, Integration into Surveillance and C2 system and Platform Interoperability and achieving Fleet level protection.

Therefore our approach would be to offer complete Active Protection Systems (APS) framework to Indian customers wherein Indian capabilities could be leveraged by means of Joint development, build-to-print and/or build-to-specs to realise the Indigenous APS solution in the most practical and incremental way.

MUSS with its inherent modularity of design, Multi-pronged Evolutionary approach involving technology and capability enhancement across the system in all components – sensors and effectors, feasibility of integration of parallel systems or add on Sensors and effectors in its architecture fits in well with this approach.

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'RAFAEL IS FULLY COMMITTED TO INDIAN ARMED FORCES TECHNOLOGICAL EDGE AND OPERATIONAL READINESS WITH STATE-OF-THE-ART SYSTEMS'

B

rig. Gen. (Retd.) Ariel Karo, Executive Vice President, Marketing and Business Development, RAFAEL Advanced Defense Systems joined the company five years ago. Prior to being elevated to the current position, Karo headed RAFAEL's Cyber and ISTAR Directorate. Before joining the company, he also served in various capacities in Israel Defense Forces for close to 30 years including Head of Field Intelligence and Chief Intelligence Officer.

Karo has wide experience, knowledge and understanding of both the domestic and global defence industry and establishment. He is all poised to play a major role in leading Rafael's marketing and business development activities to meet future challenges. In an interview to **Ajit K Thakur, Editor, Raksha Anirveda**, he discussed various initiatives taken by the company to boost Make in India along with future strategies. **An excerpt:**



Rafael is for Dynamic Defense. It is said Rafael-made systems move faster than threat. Your Take?

AK Our approach has always been to stay a few steps ahead of the game. Just as we are constantly developing technologies and systems to give our military the advantage it needs to win the battle, the enemy is also never staying put, constantly looking for new means to challenge us defensively and offensively, both by local development and by solicitation of foreign technologies. This is true for our immediate environment in the West Asia, and it is no less true in other regions

around the world. This is why RAFAEL invests over eight per cent (8%) of its revenues each year in R&D, and it's why we have on board the world's best scientists and engineers as we insist on excellence, out-of-the-box thinking and imagination. Systems such as the Iron Dome, David's Sling, Spice, Trophy, Spike, and many others are proof of success of this forward-thinking approach which has yielded some of the world's most ground-breaking systems.

How do you see the impact of Covid-19 on defence and security market worldwide especially in the backdrop of

recent major cancellations like Eurosatory 2020 and Farnborough air show 2020?

AK Undoubtedly, Covid-19 has had a substantial impact on everyone, across all industries. There is not one clear, binary answer since firstly, Covid-19 is still with us, and will probably stay for a while, and also because it is yet to be determined by any government precisely what impact the crisis will have on its expenditures, allocations and restructuring. While waiting for the dust to settle even slightly, we are not stagnating, and are constantly on-the-move, researching, developing, keeping in close touch with our partners and customers

around the world, adapting to the new reality of travel freeze, while maintaining relations via alternative digital routes, as we remain with a finger on the pulse, optimistic about renewed personal engagement with our Indian partners and hoping to see everyone at Aero India 2021.

A leader in C4I and ISR, Rafael Defense is into the area of land, air, naval, space and missile defence. Very recently it announced to integrate fifth generation Litening-5 and RecceLite systems into Leonardo's M-346FA light combat aircraft? What about its land, naval and missile prowess in technology?

AK Rafael's systems and solutions are applicable and can be integrated to a variety of platforms, land, air and sea, with full commonality. For more than two decades, RAFAEL has been supporting the Indian Armed Forces with state-of-the-art systems, during which RAFAEL has stood by India to supply systems at short notice in various operational contingencies, including air-to-air, air-to-ground,

air defence, ATGMs, targeting and reconnaissance pods, SDR communication and more.

RAFAEL already works with the different branches of the Indian military and the Indian security apparatus and has cooperated to integrate its electro-optical systems, advanced ordnance as well as its air-to-air and air defence systems on the IAF and IN platforms. With increasing future challenges emerging, we believe that our fifth generation systems, such as the Reccelite ISR pod with features like increased standoff and SAR capabilities, will serve a significant benefit and provide an important operational advantage to all branches of the Indian military and allow them to stay ahead of the adversary in various operational arenas

TROPHY™ is the world's only operational Active Protection System for any AFVs, including MBTs, 8X8s, and other medium-weight platforms. How it ensures Rafael Defense competitive edge among its competitors?

AK TROPHY is a pioneer system, the only operational, combat-proven APS technology in the world with over 600,000 working hours and hundreds of interceptions in tests and battle. TROPHY has been the Israel Defense Forces' Active Protection System (IDF's APS) of choice for the past 10 years with hundreds of systems installed on Merkava MBT's and NAMER APC straight out of the production line. TROPHY has also been chosen by the US Army for its Abrams tanks and has been integrated on the Stryker APC and the Bradley tank. The true operational experience we have accrued in tests and on the battlefield, has allowed us to take leaps in terms of improvements and upgrades, putting us significantly ahead of competing systems on the market.

Rafael Defense is among the few players manufacturing precision guided firearm. How its SPIKE Fifth Gen Precision Guided Tactical Missiles is different from others?

RAFAEL HAS BEEN WORKING STEADILY TO CREATE TECHNOLOGY PARTNERSHIPS OR JOINT VENTURES WITH MAJOR INDIAN COMPANIES TO ADDRESS VARIOUS PROJECTS AND HAS CREATED STRUCTURES TO ENSURE TECHNOLOGICAL TRANSFER TO INDIA, WHICH WILL ALSO SERVE AS AN IMPORTANT PILLAR IN PROPELLING INDIA TO BE PART OF A GLOBAL EXPORT SUPPLY CHAIN



IN CONVERSATION

FOR MORE THAN 25 YEARS RAFAEL CONSIDERS INDIA AS A STRATEGIC PARTNER, AND WITH THE APPROACH OF FULL COMMITMENT, RAFAEL WILL KEEP ON STRIVING FOR THE INDUCTION OF RAFAEL'S SYSTEMS IN ALL DEFENCE AND SECURITY FORCES, PLATFORMS AND UNITS

AK The SPIKE Missile family of Precision Weapon Systems has been operational and combat-proven for over two decades. The SPIKE missile is a family of off-the-shelf Fifth Generation Precision Guided Missile (FGPGM) that includes an electro-optical seeker and a bi-directional Datalink enabling high accuracy and enhanced lethality. The SPIKE Family is in use today by 34 armies, navies, air forces and Special Forces around the world, with more than 33,000 missiles supplied and 6000 missiles fired both in training and in operational combat.

The Fifth generation missiles include one additional benefit that differ it from the Fourth ATGM generation: within the missile, an internal IMU has been embedded, allowing it to receive target coordinates from a third party (UAV, adjacent forces or any other source) and load into the missile the target location, enabling the missile to be then launched in Non-Line of Sight, for rapid closure of sensor-to-shooter scenarios.

These advanced products are offered today to different armed forces in different applications.

The SPIKE Family includes the following products:

- **SPIKE NLOS (Non Line Of Sight)** –32km range
- **SPIKE ER2 (Extended Range)** –10km (ground launch), 16km (air launch)
- **SPIKE LR2 (Long Range)** –5.5km (ground launch), 6.5km (air launch*)
- **SPIKE SR (Short Range)** –up to 2000 m range shoulder-launched

The SPIKE missiles are multi-purpose and multi-platform weapons that have already accumulated a remarkable track record of target engagements including tanks, armored vehicles, soft vehicles, manoeuvring armoured Vehicle Improvised Explosive Devices (VIEDs), static and mobile radars, marine vessels, enemy anti-tank/ mortar squads and of course structural targets such as enemy ammunition storage, enemy forward-based headquarters or enemy infrastructure. Recently, the SPIKE LR missile was also successfully inducted into the Indian Army.

Barring the current Covid-19 scenario, what is the overall export market of

Rafael Defense? Kindly elaborate/ supplement with facts and figures.

AK In 2019, RAFAEL posted record sales of US\$2.7 billion, up 3.9 per cent from 2018. The international sales market share is about 60 per cent of our total sales. On top of that we have an order backlog of over US\$7 billion, which covers approximately 2.5 years of sales. Our systems are in service in all five continents ranging from naval to land to air, space and cyber solutions. We are involved in major programmes throughout the world, and are competing in major tenders, spanning digitisation of land forces, aircraft upgrades, communication across all forces, air defence, precision munition, anti-drone systems and many more.

Rafael has JVs with Kalyani Group and Astra Microwave in India. What these Kalyani Rafael Advanced Systems and Astra Rafael Communication System do? Is Rafael planning to expand its market in India? Any future collaboration in mind to Make in India. Elaborate?

AK Rafael continuously works to form JVs and industrial cooperation in line with the Make in India policy. RAFAEL has been working steadily to create Technology Partnerships or Joint Ventures with major Indian companies to address various projects and has created structures to ensure technological transfer to India, which will also serve as an important pillar in propelling India to be part of a global export supply chain.

Over the last few years, RAFAEL has continued to realise its commitment to

the Indian market and to its economy, including last summer's inauguration of a state-of-the-art facility at Hardware Technology Park, Hyderabad as part of its JV with Astra Microwave that has yielded Astra Rafael Company (ARC), for local manufacturing of the SDR BNET communication system for the Indian Air Force with a US\$30 million purchase order. In addition, RAFAEL has placed a US\$100 million order for MRSAM missile kits for the Indian Army and Air Force from Kalyani RAFAEL Advanced Systems Ltd. India (KRAS). This, among other steps, is part of RAFAEL's compliance with the Make in India policy of the Indian government and is testimony to RAFAEL's global commitment to local production, knowledge transfer and industrial cooperation.

How do you see the Government of India's announcement to increase 74 per cent FDI in defence manufacturing through automatic route? How is it going to contribute India-Israel defence and strategic relations, and also help the global defence companies to expand its footprint in India? Your comment?

AK As mentioned Rafael has already formed JVs and industrial cooperation with major Indian companies and as pioneer in its field meets the Government vision of Make in India.

The Foreign Direct Investment (FDI in defence) increase up to 74 per cent, although not new, will facilitate the procedure through the automatic route, to all those who consider an investment in the Indian market.

What is the contribution of Rafael Advanced Defense Systems in fighting against novel Coronavirus Covid-19?



SPIKE Firing

What could be the future strategy of defence industry in general and Rafael Defense in particular with the unlocking of market post Coronavirus?

AK From the very beginning of the Corona crisis, seven of RAFAEL's development teams have been deployed at 11 Israeli hospitals, working non-stop to utilise and implement advanced technologies in the fight against COVID-19. Following a comprehensive review and mapping of the most critical needs, our efforts became focused on two main goals: Protecting the medical staff from infection through technological solutions – and rapidly developing solutions that can be tested and implemented in a matter of days – not weeks or months. These goals are being achieved in record time using a variety of technologies – thanks to the selfless dedication of RAFAEL employees, who are putting heart and soul into repurposing the company's most useful technologies to create these urgently-needed solutions.

For example, our "Wisdom Stone" technology enables authorities to aggregate, research, analyse and fuse together all relevant information to facilitate control and management of this health crisis.

To minimise direct contact with Corona patients, RAFAEL

has added image processing and computer vision algorithms to an existing, off-the-shelf robot – creating a Corona Robot which can perform a number of routine nursing tasks, including distribution of food and medications, and enabling remote communication between nurses and patients via a screen.

RAFAEL's involvement in the fight against the Coronavirus is a reflection of the company's dedication – since its inception – to life-saving efforts. This strong sense of community, and of personal and corporate responsibility are part of RAFAEL's DNA – and an essential part of our success. These will benefit both the citizens of Israel and of the entire world.

How do you visualise your position in Indian defence market five years down the line?

AK For more than 25 years Rafael considers India as a strategic partner, and as such Rafael is fully committed to the Indian Armed Forces technological edge and operational readiness with its state-of-the-art systems. Given that approach, Rafael will keep on striving for the induction of Rafael's systems in all defence and security forces, platforms and units.



Undoubtedly, Covid-19 has had a substantial impact on everyone, across all industries. However, we are not stagnating, and are constantly on-the-move, researching, developing, keeping in close touch with our partners and customers around the world. We are optimistic about renewed personal engagement with our Indian partners and hoping to see everyone at Aero India 2021

Brig. Gen. (Retd.) Ariel Karo, EVP Marketing and Business Development, RAFAEL



BNET battlefield

INDO-AFRICAN GEOPOLITICS

The geo-strategic importance of Africa for the security of the Indian Ocean Region is well established, and the existing economic, political, cultural and military cooperation between the two nations provides the ideal platform for the inclusive growth and security of both

By **MAJ GEN JS KATARIA (RETD)**

The geopolitical aims of a country are largely based on its long-term goals. The five vital components around which the geopolitical aims should be woven are robust economy, diplomacy, technology, human resources development and military diplomacy supported by the strong military. These five arrows in any government's quiver need to be used in concert. Their application merits constant review as the nation state moves to become a regional/ global power. India is currently poised as the regional power with an outside reach in the global arena. Looking at the current scenario, are these five arrows in the Indian quiver poised correctly?

GLOBAL ENVIRONMENT

This year the Wuhan virus/ COVID 19, a pandemic of humongous magnitude has engulfed the entire world. It continues to infect millions, and has caused death to over 400,000. To control the blitzkrieg pace of the virus, the entire world went into lockdown with catastrophic effect on the global economy. According to the International Monetary Fund (IMF), in 2020 the world economy is expected to shrink by three (3) per cent. It would be the steepest fall since the Great Economic Depression of the 1930s.

INDIA AND ITS GEOPOLITICS

The Indian GDP growth has been declining from 8.2 per cent in 2015 to near five per cent in 2019. With India going into lockdown 1.0 to 4.0, it is now expected to

with the Chinese intrusion in the strategically important Galwan Valley of Ladakh – leading to the ongoing stand-off between India – China. India's relationship with Nepal has hit a new nadir, with the latter claiming Lipulekh, Kalapani and Limpiyadhura. There are clear indicators that both our economy and diplomacy need fresh impetus.

Prime Minister Narendra Modi, from his day one in the office, placed India's immediate neighbours First. He also gave a push to propel India's geo-political and geo-economic projection with

grow at 4.2 per cent. Compounded by cyclones Amphan and Nisarga, and the Locust attack it could even dip further. Besides, India is faced



Prime Minister Narendra Modi with the then South African President Jacob Zuma during the former's visit to that nation

special focus on West Asia, South East Asia (Look East Policy), the US and the EU. At the same time, India decided to stay away from the Regional Comprehensive Economic Partnership (RCEP) propelled by China and its One Belt One Road (OBOR) initiative. The shows held by the PM in the US, UK and other countries propelled India's image abroad. It also played positively on the psychology of the Indian nationals at home and abroad, but that is about all!

The 'Make in India' project launched in 2014 didn't yield much results. Now, the new slogan is 'Atmanirbhar' Bharat. According to the RBI Report, FDI investment in manufacturing has declined from US\$9613 million in 2015 to US\$7919 million in 2019. Despite fresh impetus to the 'Look East Policy' and the 'West Asia Focus', our GDP growth has declined and the unemployment is at all-time high. Coupled with it is the ongoing discord with Nepal. These do not augur well with our two vital components i.e. economy and diplomacy! India needs to go beyond the road shows abroad and prioritise 'Look Africa' which is on the ascendency.

INDO-AFRICA CONNECTION AND DEVELOPMENTS

The economic and cultural link between India and Africa dates back to the pre- BC era. The political connection was established during the pre-Independence era. After Independence India nurtured this ancient relationship, albeit rather slowly. Today, Africa is home to five of the top 30 oil producing countries in the world. It is an alternative source of energy for India. Countries like South Africa, Zambia, Zimbabwe,



Namibia, Angola, Mozambique and Congo are endowed with large deposits of minerals including rare and strategic metals/ minerals. According to the IMF, in 2019, Africa became home to some of the fastest growing economies in the world. China and other world powers are investing heavily in Africa. China's trade with Africa is three times that of India.

India needs to catch up with urgency. In 2014, the Indo-African trade valued at US\$78 million. It declined to US\$ 62.66 million in 2019. India needs to upgrade its Technical and Economic Cooperation (TEC) tools for Africa with a fresh outlook. In the last couple of years alone, apart from several ministers, President, Vice President and the Prime Minister made 29 visits to various African countries. Did it impact our economy significantly? Apparently, the diplomatic/ economic follow through is lacking. With the Fourth Indo-African Summit scheduled in September 2020, there is a need for out of the box thinking to take it beyond the high decibel projection and make it advantage

WITH THE FOURTH INDO- AFRICAN SUMMIT SCHEDULED IN SEPTEMBER 2020, THERE IS A NEED FOR OUT OF THE BOX THINKING TO TAKE IT BEYOND THE HIGH DECIBEL PROJECTION AND MAKE IT ADVANTAGE INDIA-AFRICA

India-Africa. Human resources development and technological advancement are the two fields which would be the key for any substantial growth in future.

DEFENCE DIPLOMACY

The fifth arrow, the defence diplomacy has three cardinal principles – defence training, defence cooperation and defence production. It is aimed to prevent conflicts, develop long term allies and build capacity for friendly nations. India has a longstanding relation of military training with half of the African nations. Indian training teams were deployed in countries viz Seychelles, Botswana, Zambia, Lesotho and Tanzania. India has also been providing training to a large number of officers from African countries in our military training institutes. Many of the current heads of African States or the



Mr Modi with Mozambique President Filipe Nyusi at the presidential office in capital Maputo

Ocean Security including the eastern shores of Africa is based on cooperation, inclusion and growth for all in the region. India's cooperation with the international community and the African nations based on the Eastern shores to mitigate the menace of piracy (non-state actors) is a case in point.

CONCLUSION

The geo-strategic importance of Africa for the security of the Indian Ocean Region is well established. The existing economic, political, cultural and military cooperation between India and Africa provides the ideal platform for the inclusive growth and security of both. The robust growth of Indian economy and the indigenous defence industry are the vital cogs in the wheel. India needs to move away from being the second largest importer of defence equipment to a defence supplier. Africa is potential

Chiefs of their Armed Forces were trained in India. It gives us the leverage to propel our geo-political and geo-strategic interests in the region.

India has been a major contributor to the UN peacekeeping missions. A number of Indian contingents/ observers have been deployed in many African nations and other parts of the world. In 2011, India pledged US\$2 million in support of the 'African Peace and Security Architecture' for



peace keeping missions under the African Union. While addressing the Ugandan Parliament in July 2018, PM Modi mentioned that India will continue to support African nations in combating terrorism, military training and capacity building. He emphasised that India's vision of Indian

market. It would help India to further strengthen its military, and assist our friends in Africa, in capacity building and developing inclusive peace and prosperity. ■

-The author is an Army veteran and New Delhi-based security and strategy analyst. His literary works have been carried by national dailies and periodic journals.

INDIA'S VISION OF INDIAN OCEAN SECURITY INCLUDING THE EASTERN SHORES OF AFRICA IS BASED ON COOPERATION, INCLUSION AND GROWTH FOR ALL IN THE REGION. INDIA'S COOPERATION WITH THE INTERNATIONAL COMMUNITY AND THE AFRICAN NATIONS BASED ON THE EASTERN SHORES TO MITIGATE THE MENACE OF PIRACY (NON-STATE ACTORS) IS A CASE IN POINT

SAAB'S TORPEDO SYSTEM FOR ARMED FORCES TOMORROW'S NEEDS

With naval warfare rapidly evolving, today's armed forces need torpedoes that are both easy to control and highly adaptable. Saab's new torpedo system now under development for the toughest environment in the world, the Baltic Sea, addresses these key challenges. The Baltic Sea is one of the most demanding marine environments on the planet. Just 70 metre deep on average, its brackish waters are crowded with rocks, islands, and small caves that make naval operations arduous and extremely challenging.



But these same characteristics also make the Baltic an ideal testing ground for developing sophisticated torpedoes. With the world's navies looking for defence systems that can manage increasingly complex combat situations, a new lightweight torpedo system is about to begin testing in the demanding waters off Sweden's east coast. "In blue water (open sea) operations, a torpedo just needs to be able to go deep and achieve a high speed to catch the target," explains Thomas Ljungqvist, Sales Director for Weapons and Sensors at Saab's Business Unit Underwater Systems. "But in shallow waters like the Baltic Sea, you need a variety of speeds. You need a torpedo that can go slow until it has a lock on the target and can then speed up for the full attack, so a more sophisticated system."

ADVANCED PROPULSION SYSTEM FOR INCREASED EFFECT

The new lightweight torpedo system, now under development for the Royal Swedish Navy and the Finnish Navy, is the successor to Torpedo 45, a lightweight torpedo system introduced by Saab in 1995. Like Torpedo 45, the new system will have the capability to be from platforms ranging from submarines and ships right through to aircraft.

However, Ljungqvist explains that it will also boast a range of new features that make it an even more effective tool for modern navies. "The new version will have a greater range of speeds, meaning it can go both faster and slower, depending on the situation it's in," he says. "It will also have a completely new propulsion system. While Torpedo 45 is propeller driven, the new torpedo will

use a pump jet system, making it quieter, more powerful and more efficient in terms of battery use."

Users of the system will also benefit from major advances to the homing and navigational systems which will be updated in line with today's sophisticated computational systems. "And the system is fully adaptable as new technology evolves in future."

ADAPTED FOR THE MODERN WARFARE

Ljungqvist explains the modifications will make the torpedo even more suitable to the rapidly changing global defence environment, where there are even greater requirement on weapons to be precise and efficient. "Today, it's very seldom that you have a full-scale war where two countries are fighting each other," he says. "Instead, we are seeing more low-conflict scenarios where small-scale clashes are outside of war and where there's civilian traffic around. You absolutely need to have true target indication on your weapon systems." Ljungqvist says the new generation torpedo system will address this need for precision in a variety of ways. Like the current Torpedo 45, the new system will employ a wire-control system. This will allow operators to target enemy assets with precision and safely abort attacks when required, for example if a civilian or other friendly vessel is at any risk.

"You can direct the torpedo to stop or select another target," says Ljungqvist. "If the wire breaks, the torpedo will either go for the designated target and kill it or in peace time, abort the mission and go into safe mode." ■

MAKING INDIA A RELIABLE DEFENCE AND SECURITY PARTNER FOR AFRICA

To truly become Africa's reliable defence and security partner, India must explore shifting its manufacturing base to select African countries and jointly produce defence and military hardware

By **ABHISHEK MISHRA**



Over the years, India and African countries have cultivated close defence and security ties. Although these ties are neither definitive nor well-entrenched, they are certainly progressing. This year provides a unique opportunity for both the nations to consolidate its defence and security partnerships. The African Union's (AU) theme this year, "Silence the Guns: Creating Conducive Conditions for African Development" is an African initiative that aims to promote prevention, management and resolution of all forms of conflict, human right violations and humanitarian disasters in Africa.

Such efforts are rooted in common aspirations as envisioned under the Africa's Agenda 2063 and the 10 Guiding Principles for India-Africa Engagement as espoused by Prime Minister Narendra Modi in 2018. Issues such as extremism, counterterrorism, transnational crimes, climate change, and the role of women in peace keeping and propagating a culture of peace are all focus areas that align with the Agenda 2063 along with India's Africa agenda.

Primarily, two shared beliefs drive India and Africa's security partnership. First, both strongly acknowledge that peace and security is intrinsically linked to

development. Without one, the other cannot be achieved. Second, terrorism is the biggest threat to humanity that has a profound effect on a country's ability to achieve economic development and social stability. India and African countries have been victims of terrorism and radical extremism from outfits such as Al-Shabaab, Boko Haram, AhluSunnah Wa-Ja'ma, Jaish-e-Mohammad, Al-Qaeda, among others. Therefore, all Indo-African efforts are directed towards rooting out terrorism in all its forms and manifestations, disrupting terrorist networks, eliminating financial channels (hawala system), and halting cross-



President Ram Nath Kovind being received by President of the Republic of Equatorial Guinea Obiang Nguema Mbasogo on his arrival at Malabo International Airport in the Republic of Equatorial, Guinea

border movements. India and African countries do not make any distinctions between 'good' or 'bad' terrorists.

Traditionally, India's contribution to peace and security in Africa has been two-fold – Providing training to African security and military personnel, and sending (contributing) troops to United Nations Peacekeeping Missions (UNPKM). There is also the maritime security aspect which we will examine later in this article. Currently, there are over five thousand Indian peacekeepers that serve in eight UN Missions in Africa wearing blue helmets, and an Indian General commands UN Mission in South Sudan. India has also deployed police missions, including a ground-breaking Female Formed Police Unit in Liberia in 2016. Politically, India

has been a strong advocate of African Union's Peace and Security Architecture (APSA) which works for conflict resolution and peace-building in the continent under the aegis of AU, and has provided financial assistance (US\$2 million in 2011) to AU Mission in Somalia.

India also supports the operationalisation of African Standby Force (ASF). Both India and African countries have vociferously urged the international community to quickly adapt the Comprehensive Convention on International Terrorism by the UN General Assembly. On the training front, India has trained military officers and security personnel from African countries in Indian institutions such as Indian Military Academy, National Defence College, and the Centre for UN

Peacekeeping (CUNPK) in New Delhi and has also set up Defence Academy and Colleges in Nigeria, Ethiopia, and Tanzania. Nigeria's current President, Muhammadu Buhari is a prominent alumnus of India's Defence Service Staff College, Wellington. India already has several requests for deputing Indian Military Training Teams to various African countries' National Defence Academy. It has also deployed training teams in many African countries and has conducted Defence Training Programmes.

India has defence partnerships with Nigeria, Zambia, Ethiopia, Ghana, Namibia, Botswana, Uganda, and Mozambique and has also assisted in setting up of military academy in Ethiopia, defence and naval war college in Nigeria, a military war game

centre in Uganda, and setting up of air force academy in Ghana.

AFINDEX, IADMC AND LUCKNOW DECLARATION

Broadly, two developments in the last couple of years attest to the growing importance India and Africa attach to enhancing defence and security partnerships. First is the inaugural Africa-India Field Training Exercise (AFINDEX) that took place in March 2019 and was attended by representatives from 17 African countries. The exercise mainly aimed at planning and conduct of humanitarian mine assistance and peace keeping operations, through sharing of best practices, team building, and tactical level operations in the conduct of UN mandated tasks. The

INDIA AND AFRICA HAVE TWO PRIMARY SHARED BELIEFS WHICH DRIVE THEIR SECURITY PARTNERSHIP. FIRST, BOTH THE NATIONS STRONGLY ACKNOWLEDGE THAT PEACE AND SECURITY IS INTRINSICALLY LINKED TO DEVELOPMENT, AND WITHOUT ONE, THE OTHER CANNOT BE ACHIEVED

AFRICAN COUNTRIES WITH SUFFICIENT DEFENCE AND MANUFACTURING CAPACITIES IN ARMS AND AMMUNITION SUCH AS SOUTH AFRICA, MOROCCO, EGYPT AND NIGERIA HAVE POTENTIAL TO BECOME KEY PARTNERS UNDER MAKE IN INDIA INITIATIVE

exercises also showcased tactical drills such as convoy protection and neutralisation of improvised explosive devices (IEDs). These exercises will be a regular feature and will help to fine-tune interoperability between Indian Army and Army of various African countries.

The other development is the India-Africa Defence Ministers Conclave (IADMC) held in Lucknow in February 2020 which coincided with DefExpo-2020. Defence Ministers and Defence and Service Chiefs from 14 African countries participated in this

conclave in addition to members of parliament and delegates from total 38 countries. The event led to the adoption of the Lucknow Declaration, which is the first such document adapted by India and African leaders pertaining specifically to Defence, Security and Military cooperation. The benefit of the IADMC is that it provides a concrete platform for Indian and African leaders to conduct sustained discussions at the topmost level and explore opportunities for investment and joint ventures in defence equipment software, research



Indian Army personnel during a UN peacekeeping mission



Indian Navy's INS Sunayna

and development, digital defence (cyber security), and provisioning of defence equipment, spares and their maintenance.

MARITIME SECURITY AND HADR

On the maritime domain, things have been progressing rapidly with a focus on increasing cooperation on securing sea lanes of communications (SLoC), preventing transnational, maritime crimes such as IUU fishing, piracy, and armed robbery. Information sharing and surveillance have become critical tools for increasing Maritime Domain Awareness (MDA) capabilities. Upgradation of surveillance systems is also a critical requirement of African countries. These are all common grounds for collaboration as highlighted in Indian Navy's 2015 Maritime Strategy and 2050 Africa Integrated Maritime Strategy, including cooperation on Blue/Ocean economy, and mapping of continental shelf. Goodwill port visits from Indian side have increased in recent years. Through its Mission-based deployments, the Indian Navy has been able to maintain a strong, regular, and sustained presence in African waters and protect key strategic 'chokepoints' at the points of entry in the Western Indian Ocean such as Gulf of Aden, Strait of Hormuz and Mozambique Channel.

Recently, INS Sunayna sustained a deployment in Gulf of Aden for 80 days for anti-piracy operations without entering any ports. The ship was replenished in the sea by Indian Navy and United States Navy tankers. Sustaining such extended deployments is a remarkable achievement and a testimony to Indian Navy's operational outreach. India also conducts hydrographic surveys for five African countries (Kenya, Seychelles, Mozambique, Mauritius, and Tanzania) and

has MoU on hydrographic cooperation with Mauritius, Tanzania, and Seychelles. It also has MoUs on sharing White Shipping Information with Kenya, Mozambique and has shared a draft agreement with Tanzania. India has defence agreements with all the four Vanilla Island Nations and in March 2020 joined the Indian Ocean Commission (COI) as an Observer State, after expanding Ministry of External Affairs' (MEA) Indian Ocean Division to include all the five African Indian Ocean island nations. India is also looking to post Navy Liaison Officers at the Regional Maritime Information Fusion Centre (RMIFC) in Madagascar, which will help to boost linkages between India's IFC-IOR along with other information fusion centres to become a repository of maritime data in the Indian Ocean Region and keep a tab on Chinese activities. Human Assistance and Disaster Relief (HADR) operations is one of the most visible elements in India's evolving Indian Ocean strategy as encapsulated by the vision of SAGAR. Indian Navy has built up its credentials as 'first responder' in times of crisis, as was demonstrated during Cyclone Idai and Kenneth (Mozambique, March 2019), and Cyclone Diane (Madagascar, January 2020).

GOING FORWARD

India will continue providing African countries with Offshore Patrol Vessels (OPVs), Fast Interceptor Boats (FIBs), Dornier Do-228 Aircraft, arms and ammunition, Unmanned Ariel Vehicles (UAVs), and Sport Utility Vehicles (SUVs), and night vision goggles. African countries with sufficient defence and manufacturing capacities in arms and ammunition such as South Africa, Morocco, Egypt



HAL's LCA Tejas inflight

and Nigeria have potential to become key partners under Make in India initiative. However, it is not a question of Making in India or Making in Africa. Instead, we must focus on exploring options to jointly produce for the mutual benefit of our people. The South African defence firm Denel, which has now been removed from India's blacklist, has already entered into an agreement under which Indian Army will procure 700 anti-material rifles (AMR). 400 AMR's has already been purchased but the remaining 300 is put on hold.

Due to India's large market base and technological advancements, India has immense potential to become a reliable defence partner for African countries. We have set a target of achieving US\$5 billion worth of defence exports by 2025. Although this is an ambitious target, achieving it is not entirely impossible. Currently, more than two-third of African countries use Chinese arms and military equipment which China sells by using enticements like favourable financing and below-market prices. Therefore, the allure of Indian defence products for African countries must be its 'reliability' and affordable prices. In the future, India is considering exporting the Akash Surface to



Air Missile System, Light Combat Aircraft, Dhanush Artillery Gun System, and Combat Helicopters to African countries. To truly become Africa's reliable defence partner, India must explore shifting its manufacturing base to select African countries and jointly produce defence and military hardware. This will not only provide employment to local Africans but will also increase Indian defence firms' visibility in African markets, apart from regular interactions at DefExpo and Aero India.

-The writer is Junior Fellow at Observer Research Foundation.

THE SEARCH FOR THE SILVER BULLET IN SMALL ARMS INNOVATION

The future of small arms will depend on the ability to plan and experiment in context of future realities along with instinctive innovation in moments of pressure and sudden yet critical disruption

By **HAMAD AL AMERI**

In contrast to the diverse, invisible and unpredictable threats our world faces today, the conflicts of previous decades seem straight forward, at least retrospectively. In this precarious modern world, negotiating the balance between war and peace is a delicate, but necessary affair. We must be ready for it to go either way and ensure we are equipped to respond.

As a direct consequence of this uneasy stability that is a reality today, and given the technological proliferation affecting all aspects of the military and defence sector, it is clear that the small arms need of soldiers fighting on the frontlines of future battlefields will require an instinctively innovative approach to weapons procurement.

They will need arms that are lighter and

more adaptable, versatile, precise, and reliable than ever before. All of which starts with the foresight and imagination to plan for a range of future realities that could be poles apart in actuality. Either way, the shortcomings need to be addressed and rectified expeditiously and with a spirit of innovation if nations are to stay ahead of adversaries to protect their nation.

Whether it's the Ferguson rifle, the Maxim gun or the Winchester Magnum, the technological superiority of small arms remains transient and often limited. Combined with a long-term dependence on standardised ammunition that spotlights the limitations of current arms in operation, it has encouraged the development of alternative small arms and ammo that can efficiently meet emerging requirements.

In this regard, the localisation of production



Hamad Al Ameri, General Manager, CARACAL

of military equipment will be crucial for states enhancing their national security capabilities. In India, this means supporting the country's ambitious "Make in India" strategy.

The immense potential of India's military sector is a natural place to continue the transformation of this vision of a dynamic localised manufacturing hub into a reality. Brokering deals to supply the latest cutting-edge small firearms, and the skillset required to continue their development will only serve to accelerate India's end-goals.

The need for such international cooperation and collaboration is clear. Emerging technologies will dramatically change the relationship between soldiers and small arms, and are set to

have major implications on the entire spectrum of military arms, its application, inter-operability and the way they are made.

The traditional measures of small arms efficiency, such as calibre, range and rate of fire will also shift with the times.

Whether its redesign in the human soldier-weapon interface, the powered-up exoskeletons or the AI-enabled robotic platforms that are being charged with the shooting and suppressing of adversaries – they all call for a radical and innovative approach in creating small arms that will be decisive in theatres of future conflict.

The fundamental premise remains the same: firing bigger payloads with less weight to carry around. That is more with less. Yet, we are looking at a future where soldiers are equipped with small arms that are designed as the linchpins of combat forces capable of greater lethality than ever before. The ability to fire more rounds, and downrange with unerring accuracy, impervious to any weather or terrain in the natural world, overpowering anything any adversary has at their disposal – in short, we are seeking the small arms' silver bullet.

Adaptability, customisation and future scenario planning are crucial to navigating this search. How the future national security landscape evolves will be key in determining the intersection between soldier and small arms. Defence contractors, suppliers and

Using advanced machining concepts, additive manufacturing, innovative moulding technologies, state of the art heat and surface treatment, and no-compromise quality strategies - the production of next-generation firearms is being built on a foundation of scenario planning and alternative realities of the future battlefield at CARACAL's state-of-the-art facility in Abu Dhabi

scenario of large-scale ground wars.

Just as standardised high-velocity projectiles cannot be equally suitable to close-quarter engagements for special ops task forces, and to longer distance engagements for regular ground forces, while providing the same amount of stopping power to both sets of missions.

Precision is also a keen consideration for modern small arms. What was in previous eras considered an acceptable level of collateral damage, is now not an option for military operations. The rules of engagement have changed and it is now a priority and moral duty for countries to preserve civilian lives.

Furthermore, there is the consideration of the transition from rural to urban operations, and the changing terrains they will include will require versatile weapons systems. To move and mobilise rapidly, troops will need to be as light as possible to execute manoeuvre-based tactics that require a decrease in individual unit mass.

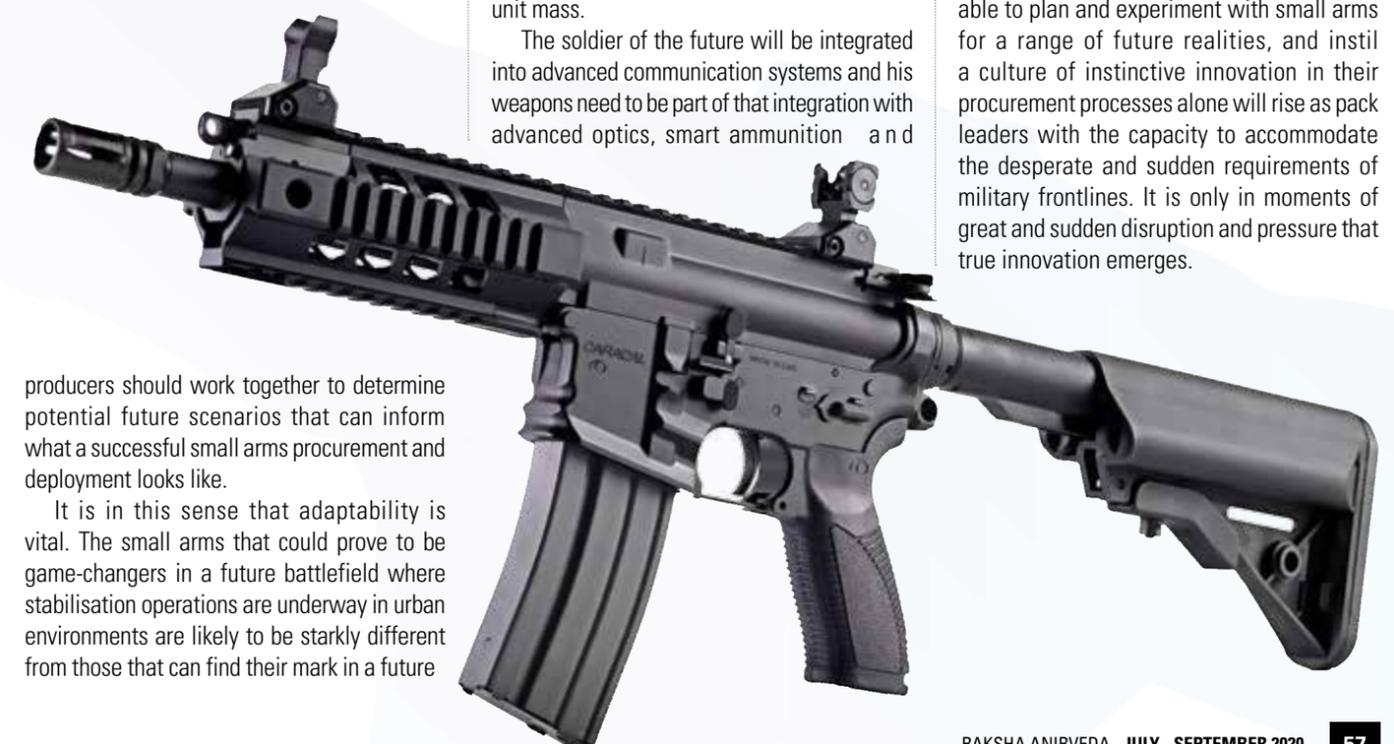
The soldier of the future will be integrated into advanced communication systems and his weapons need to be part of that integration with advanced optics, smart ammunition and

remote diagnostics. This will close the loop with applications of small arms in unmanned vehicles, both in the air and on the ground.

Looked at collectively, these are the considerations we take into account at CARACAL's state-of-the-art facility in Abu Dhabi. Using advanced machining concepts, additive manufacturing, innovative moulding technologies, state of the art heat and surface treatment, and no-compromise quality strategies - the production of next-generation firearms is being built on a foundation of scenario planning and alternative realities of the future battlefield.

From here, CARACAL is able to quickly and accurately refine the ergonomics of each weapon component to surpass its stringent NATO and CIP performance requirements to procure lighter, customisable weapons that can be adapted to various mission environments.

Forward looking organisations that are able to plan and experiment with small arms for a range of future realities, and instil a culture of instinctive innovation in their procurement processes alone will rise as pack leaders with the capacity to accommodate the desperate and sudden requirements of military frontlines. It is only in moments of great and sudden disruption and pressure that true innovation emerges.



producers should work together to determine potential future scenarios that can inform what a successful small arms procurement and deployment looks like.

It is in this sense that adaptability is vital. The small arms that could prove to be game-changers in a future battlefield where stabilisation operations are underway in urban environments are likely to be starkly different from those that can find their mark in a future



MULTIPLE MISFIRES: INDIA'S ELUSIVE QUEST FOR A QUALITY RIFLE

The multibillion INSAS fiasco which led to the development of a malfunctioning rifle should be a warning against having entrenched monopolies in the small arms sector

By **RAKESH KRISHNAN SIMHA**

The process to replace the glitch prone INSAS began more than a decade ago but has suffered multiple misfires. The primary reason was that those in charge of procurement kept changing the requirements. Had the army kept its General Staff Qualitative Requirements (GSQRs) at a realistic level, Indian soldiers wouldn't be saddled with a malfunctioning rifle.

Initially, the army wanted a rifle which could shoot two types of cartridges – the Kalashnikov 7.62 mm and the INSAS 5.56 mm, but it found no international arms manufacturer willing to bite the bullet. According to Lt Gen (retired) Syed Ata Hasnain, former commander of XV Corps based in Jammu & Kashmir, "The Indian Army's dream personal weapon of twin calibre capability with changeable

barrels to cater for different calibres has resulted in the acute delay in the final decision. There appears to be no takers for this variety which the General Staff had desired."

Until the 1980s, Indian soldiers were more or less happy with the locally made 7.62 mm Self Loading Rifle. The situation worsened when the Defence Research and Development Organisation

(DRDO) instead of improving a tolerably good rifle, offered to design a new one. The army's ever changing demands combined with the DRDO's over-reach proved fatal for the INSAS project.

Military historian Timothy D. Hoyt explains in 'Military Industry and Regional Defense Policy - India, Iraq and Israel': "In the early 1980s, DRDO made a commitment to develop a new series of 5.56 mm small arms for the Indian armed forces called the INSAS. Both Heckler & Koch of Germany and Steyr of Austria offered to provide for India's immediate needs and transfer technology worth \$4.5 million for free. These offers were declined and DRDO spent the next decade, and approximately Rs 2 billion (about \$100 million in 1990), reinventing a family of small arms based heavily on Steyr and H&K technology.

In the meantime, India imported AK-47 rifles from former Warsaw Pact nations to fill requirements. The INSAS finally entered service in the late 1990s."

HOW NOT TO MAKE A RIFLE

Although the INSAS was more accurate than an AK-47, it flopped because of reliability issues. Indian soldiers hated it. According to Army officers, the 5.56 calibre rifle either jammed or its components would crack in the cold and icy mountains. Sometimes the gun would fire in full-auto mode when the selector switch was turned to the burst mode (three shots at a time). Incredibly, this happened despite the rifle not having a full-auto mode. The situation was so dire that it led to emergency imports of tens of thousands of Kalashnikovs. Kalashnikovs were hurriedly sent to the frontline, proving to be both "lifesavers and face-savers" at Kargil.

Why is it that India can manufacture supersonic aircraft, large surface warships, sophisticated diesel attack submarines, and spacecraft that can travel to Mars 650 million km away, but it cannot produce a simple assault rifle that works?

The INSAS rifle is made by the Ordnance Factories Board (OFB) but the government run organisation has failed to produce a world class assault rifle despite four decades of work. Thousands of crore of rupees have gone down the drain - or more likely into the pockets of vested interests. This is because the OFB is managed not by weapons experts but IAS bureaucrats who may have never held a gun in their lives, forget having knowledge of ballistics or propulsion. Soldiers and officers with battlefield experience, especially in the area of urban warfare, are not involved

in weapons design nor is their opinion sought.

The INSAS rifles designed by the OFB lack finish and look amateurish, clearly not meant for one of the largest fighting forces in the world. According to the website www.indiansforguns.com, the designers have tried to copy the AK-47 and AK-74, with parts scaled down from the larger Russian rifles. There's plastic everywhere, including the magazine, causing it to crack or jam when used in extreme cold conditions. "The crude scratching that passed off as lettering was too shallow and the lazy (workers) at the factory simply squished some

white enamel over the general areas and didn't even bother to wipe off the excess."

THE WAY FORWARD - THREE-PRONGED

For a country like India which has spectacularly failed to manufacture something as simple as an assault rifle for four decades, the best option is to keep things simple. Here is a primer for small arms acquisitions.

1. Incubate small arms startups, support them with assured orders so their production lines are kept going for years, helping

ALTHOUGH THE INSAS WAS MORE ACCURATE THAN AN AK-47, IT FLOPPED BECAUSE OF RELIABILITY ISSUES. INDIAN SOLDIERS HATED IT. ACCORDING TO ARMY OFFICERS, THE 5.56 CALIBRE RIFLE EITHER JAMMED OR ITS COMPONENTS WOULD CRACK IN THE COLD AND ICY MOUNTAINS



DRDO Multi Caliber Rifle



AK-203 INSAS

COVER STORY: PATCHY HISTORY OF SMALL ARMS



Kalashnikov AK-47 assault rifle

INCUBATE SMALL ARMS START-UPS, SUPPORT THEM WITH ASSURED ORDERS SO THEIR PRODUCTION LINES ARE KEPT GOING FOR YEARS, HELPING THEM ATTAIN CRITICAL MASS. THIS WILL HELP CREATE A WEAPONS ECOSYSTEM IN WHICH PRIVATE PLAYERS CAN COMPETE WITH EACH OTHER

them attain critical mass. This will help create a weapons ecosystem in which private players can compete with each other. Think of India's telecom sector which was a monopoly of BSNL and MTNL for decades, with customers waiting in line for up to three years to get a phone line. Deregulation opened up the sector to private enterprise and today India has one of the most competitive telecom sectors in the world.

2. Joint venture partnership. This is already in the pipeline, with a 49.5-50.5 joint venture between Russia's Kalashnikov and the OFB. The plant in Korwa, UP, will produce a whopping 750,000 AK-203 rifles for the Indian armed forces. The deal gives India access to Kalashnikov's supply chain and technical expertise. In theory, India should get the complete technology of manufacturing and development which will

elevate the OFB to a certain level where it will be able to acquire the knowledge and expertise of manufacturing a modern assault rifle. According to Hoyt, "Licensed production adequately responds to most military needs, provides leverage against supply blackmail by external powers, and demonstrates Indian military and industrial capabilities." However, in practice, things may pan out differently. For instance, problems have already cropped up over pricing the AK-203, a pointer to the flip side of licensed production.

3. Limited imports. Imports should be permitted only if a rifle is not available through the Make in India route. Plus, it should be only for emergencies, as during the Kargil War, and through the government to government route to avoid kickbacks.

INNOVATION IS KEY

The OFB's failure is not a reflection of indigenous talent. In fact, there is no lack of ingenuity in the defence forces. As the army was wading through its procurement bureaucracy, a soldier modified the INSAS rifle, reducing its overall length and weight, allowing corner shot capability. The modified weapon was reportedly more stable while firing, compact, easy to carry and has better accuracy. Prime Minister Narendra Modi was so impressed that he gave the soldier – whose identity remains secret – an "innovation certificate". It's sad that innovators like this soldier remain unsung and are unlikely to be absorbed into the defence industry. India must acknowledge the value of soldier technocrats.

– The writer is a globally cited defence analyst. His work has been published by leading think tanks, and quoted extensively in books on diplomacy, counter terrorism, warfare and economic development.

SSCBC is a collaboration between SSS Defence & Companhia Brasileira de Cartuchos (CBC). A "Make in India" venture, SS CBC aims to serve the future needs of Indian military & law enforcement, with high quality ammunition. CBC's presence in over 100 military markets worldwide combined with SS CBC's forte in lean manufacturing is designed for India to be on the international map in the next decade.

From Special Forces to Army, Navy and Air crew, the SS CBC portfolio will provide lethality, reliability & consistency to perform an all-important duty for the nation. We provide the firepower to complete your missions, without fail.

When your mission counts trust us to deliver.



SMALL ARMS DEVELOPMENT: CAN PRIVATE PLAYERS HIT THE TARGET?

The government's decision to allow private companies entry will help in creating a viable small arms and ammunition ecosystem in India and meet the requirements through indigenous manufacturing

By **RAKESH KRISHNAN SIMHA**

The Indian Army is in the midst of a massive modernisation drive that will re-equip over a million troops with advanced personal arms. In parallel, the country's paramilitary forces, comprising nearly a million soldiers, have unequivocally declared they would no longer accept shoddy INSAS rifles. Since a procurement exercise of this scale is no longer viable through imports, the key to equipping the forces is indigenisation.

The country's long search for quality small arms - which includes rifles, carbines, sniper rifles and handguns - seems to have forked into the following directions:

Firstly, outright imports. In 2019 a tender competition narrowed down the participants to the US-based SIG Sauer's SIG 716 rifle and the UAE arms firm CARACAL's CAR 816 carbine. The SIG 716 was selected after the company quoted the lowest price for India's fast track procurement of 72,400 new assault rifles. Of the total order, the Navy gets 2,000, the Air Force 6,000 and the Army 64,400 rifles. In a separate bid for 94,000 carbines, the CAR 816 carbine got the green light after CARACAL's quote was found to be the lowest. Both the SIG 716 and the CARACAL 816 are based on the American AR-15 rifle.

Secondly, the Indian Army has signed a contract with PLR Systems partner Israel Weapon Industries through the Fast Track Procurement route for 16,479 Negev 7.62x51mm light machine guns (LMGs). For the balance quantity of 40,949 LMGs, the Ministry of Defence issued a request for proposal (RFP) in October 2019 with the categorisation being Buy & Make (Indian). PLR Systems is one of the five companies which has responded to this RFP.

Thirdly, there is a government to government deal with Russia for the procurement of 750,000 Kalashnikov AK-203 assault rifles, with 40,000 to be directly imported. A brand new plant has been built at Korwa in Uttar Pradesh where the assault rifles are to be manufactured by a joint venture firm in India led by Ordnance Factory Board (OFB) under the Buy & Make (Indian) category. The AK-203 is a modern iteration of the legendary AK-47 assault rifle. These deals are the closest the Indian Army has come to equipping its infantry soldiers with new small arms in over a decade. However, they are not a permanent solution for two chief reasons.

One, imports are at best a short-term solution as these rifles will need replacement within a few years. Then it'll be back to tendering and red tape and - depending on which government is in power - the inevitable corruption scandals.

Two, the Kalashnikov deal has hit a bottleneck. The Rs 4,300 crore project has been stalled for over a year, with the Russian partner and the OFB unable to present a reasonable pricing plan. This is nothing new in deals involving Russian manufacturers. In fact, it is a pattern that goes all the way back to the 2001

Gorshkov aircraft carrier deal where the cost quickly ballooned from US\$700 million to US\$3.2 billion. Don't forget this is a marriage involving the Russia, which has an atrocious supply chain system, and an Indian public sector monopoly not known for its work ethics. If morning shows the day, it'll be a long time before the Korwa plant produces a single Kalashnikov.

PRIVATE PUSH

Thankfully, there is another way out of the quagmire. This time the government has left the door open for a number of private manufacturers to start small arms production in India. In June 2018, the government revised the Arms Rules 2016, allowing private companies to set up manufacturing units in India and cater to export orders. As per the new rules, Indian companies will be granted a seven year licence after due vetting and will be allowed to set up units in special economic zones.

Also, under a new policy on ammunition, the Ministry of Defence is willing to provide long-term commitments and firm orders of multiple types of ammunition to private players, but at competitive prices. This allows private companies a crack at the over US\$1 billion ammunition market which is currently dominated by foreign importers and the OFB.

Raksha Anirveda spoke to five of the new private companies which have quickly moved into the small arms and ammunition manufacturing segment. Here's what they say.



Company: **PLR Systems**
Location: Bhind, Madhya Pradesh



Col Ajay Soni (Retd), Director, PLR Systems

PLR Systems is an Indian Joint Venture with Israel Weapon Industries (IWI) to manufacture the entire range of IWI weapons from MASADA pistol/Uzi Sub Machine Gun, TAVOR, NEGEV and Galil family of weapons in India. The PLR plant came up in Bhind, Madhya Pradesh in 2017 and since then PLR has supplied Made in India X95-Micro Tavor Carbines, Uzi SMG and Galil Sniper Rifles to Indian state police and CAPF making it India's first private small arms manufacturer. PLR is participating in all GOI small arms tenders as an Indian Prime, notably the 40,949 balance quantity LMGs tender wherein India has recently signed the contract of 16,479 NEGEV LMG with its partner IWI. In IWI, PLR has found an ideal partner whose products were already in service and being used by the elite be it the Special Forces, PARA battalions, MARCOS, CRPF & BSF Special Units.

According to company Director Col Ajay Soni (Retd) the government's decision to increase the FDI limit to 74 percent, procurement of upto 200 Crore only from Indian companies and the introduction of negative import



list will go a long way in giving the Make in India campaign the much needed impetus. "Small Arms are an ideal starting point for achieving self sufficiency because there is a long outstanding demand for modern small arms for our troops and the technology is relatively easy to absorb", he says.

Soni brings out that in response to Make in India, PLR identified a world class small arms product line, partnered with the OEM, brought and absorbed technology, and has started manufacturing full products in India. "It's time for the Govt to walk the talk of VOCAL FOR LOCAL, as India for the first time in PLR has an entire range of best in class Made in India small arms products to choose from." He is positive that in coming days more states, CAPF and Armed Forces will consider his products over any foreign OEMs.

Soni feels small arms manufacturing in India is a highly licensed and regulated domain, may be the most regulated of all defense products and rightly so. The government after issuance of license after strict diligence must facilitate the processes of multiple clearances through a single window concept. "The private sector still new to small arms manufacturing needs govt's support in terms of access to local



TAVORS holding with Indian Special Forces, now Made in India by PLR Systems

firing ranges, govt labs, interaction with end user for feedback on product under development, and faster import export clearances."

Meanwhile, PLR Systems has set its sights further afield. "We are in talks with multiple nations for export of our products and have received encouraging response from some of them. The role of our High Commissions and Defense Attaché is pivotal in advocating Indian products in their respective countries and regions to shape India's future sales."

As a former Armyman, Col Soni says he cannot describe the feeling of pride seeing an Indian soldier holding a weapon manufactured at his plant. "We look forward to seeing more entrepreneurs participating in the Made in India campaign and the government rewarding their entrepreneur spirit."



Company: **SSS Defence**
Location: Bangalore, Karnataka



Vivek Krishnan, CEO, SSS Defence



Satish Machani, MD, SSS Defence

SSS Defence is the defence and aerospace umbrella brand of Stumpp, Schuele and Somappa Springs Pvt Ltd which is a company with more than 70 years of manufacturing experience. SSS Defence focuses on manufacturing weapons and weapon systems; in particular small arms, ammunition, high-end optics and firearm accessories and tactical gear for military and law enforcement.

In business since 2017, SSS Defence has small arms, ammunition and military optics as platforms. Its products include the Saber, a .338 Lapua Magnum long range sniper weapon; the Viper, a 7.62X51 mm tactical sniper weapon; and the P-72 family of rifles. Soon to come are products for the international civilian and sport shooting market.

The company's small arms platform is a 100 per cent Indian owned company and has no foreign joint ventures. "We do not foresee a partnership considering that a phenomenal effort has been invested in the development of

intellectual property from our India R&D ops," says CEO Vivek Krishnan.

The military optics platform too is 100 per cent Indian owned and holds its own design for products. The ammunition platform of SSS Defence holds a joint venture and strategic partnership with Companhia Brasileira de Cartuchos. This unique alliance will be the first to produce small and medium calibre ammunition within the private sector, and service both domestic and export demand. A world leader in ammunition for portable weapons and one of the main suppliers to NATO, CBC is a premier defence brand in the small calibre segment.

SSS Defence received the industrial license for manufacturing small arms via the Ministry of Home Affairs in 2018 and commenced planning for the small arms plant. The first phase of the small arms plant at Bangalore will be operational in November 2020. Construction of the ammunition plant will also commence soon and the plan is to be operational in July 2021. This unit will come

up on over 60 acres of land in Anantapur, Bangalore, and will include manufacturing, ballistic labs and tactical range (for advanced training) infrastructure. This will be a first in the Indian private sector space.

According to Managing Director Satish Machani, all products that SSS Defence has introduced so far have been indigenously designed and developed. "A modern approach to development included the use of additive manufacturing, flow dynamics, simulation and a very advanced UX design philosophy," he explains. "We applied anthropometric data to design for Indian physical forms. The use of materials is another area where we have invested significant time and resources. Our parent company's core competence in industrial scale manufacturing with metal alloys allowed us access to high end metallurgy and processes. For the most part, we have used aerospace grade alloys in our construction and continue to work on lightweight alloys. Our bolt actions for the sniper are proprietary designs and do not build on any existing system like the Remington 700."

The advantage of SSS Defence's approach is the company can leapfrog certain elements of weapon construction where the West and Russia have traditionally been slow, owing to their persistence with older manufacturing processes. This allows the company to develop advanced technology within its labs - a new way of doing things in the Indian defence sector.

Krishnan believes that small arms manufacturers in India need to be given a chance. "The Make in India policy introduced in 2016



lit a fire in the hearts of many entrepreneurs," he says. "The potential within India is immense, and the advantages of buying from an Indian manufacturer would be ten-fold."

However, these are early days and there are several teething issues. Krishnan lists out the critical ones:

i) A large number of Indian manufacturers seek solace in transfer of technology. While there is some value in it, there is a tendency to believe that transfer of technology in itself is a silver bullet. In several cases, the Indian partner ends up like a Build to Print manufacturer or component supplier to the global OEM. A drawn-out battle ensues thereafter to ensure that indigenisation takes place instead of reliance on CKD/SKD options. The Indian government can ensure that Make II and IDDM (Indigenously Designed and Manufactured) cases are given priority over indigenous manufacturing with just cosmetic transfer of technology.

ii) Ensure that the use of military and public sector infrastructure that relate to testing is made available to Indian manufacturers.

iii) Global tenders should be the last option and relied upon only when there are absolutely no Indian vendors capable of putting forward viable options. Recent steps like the restriction on issuance of global



tenders for acquisitions less than Rs 200 crore will surely help.

iv) Every country has policies that encourage domestic industry and restrict competition. The champions for free market - the US and Europe - have regulations like ITAR and the Buy American Act to ensure domestic firearm and defence industries are protected. The government needs to take a few risks here and allow for some level of protection to the small arms and ammunition sectors.

v) Acquisition of foreign capital equipment via agents and authorised representatives of foreign OEMs should be given the lowest priority in government tenders/bids irrespective of the agency - MoD or MHA.

vi) The timeline for closure of bids and arbitrary cancellation

of bids is a clear negative for risk taking in the private sector. If the military space has to grow, the government has to have specific project management teams for critical procurements that can work in tandem with industry for identifying and closing requirements in a time bound manner.

vii) Encouraging exports of defence equipment including small arms and ammunition is a great step that the present administration is pursuing. The strategic geopolitical value of being a defence powerhouse is now starting to take meaning. We need more aggressive steps in this direction.

viii) The policy should encourage a Special Forces Technology cell. We are very keen to apply some of our advanced tech so that bespoke products for our special forces can be developed. Firms like us would be keen to work on such weapons despite the smaller size of orders. For us, these are opportunities to showcase our commitment to the forces. Indeed, the US Special Operations Command (SOCOM) has programmes of this variety and many exciting products like the Next Gen Squad Weapon (NGSW) have evolved this way.

ix) Framing of GSQRs should be more in tune with practical reality.

THE ADVANTAGE OF SSS DEFENCE'S APPROACH IS THE COMPANY CAN LEAPFROG CERTAIN ELEMENTS OF WEAPON CONSTRUCTION WHERE THE WEST AND RUSSIA HAVE TRADITIONALLY BEEN SLOW, OWING TO THEIR PERSISTENCE WITH OLDER MANUFACTURING PROCESSES. THIS ALLOWS THE COMPANY TO DEVELOP ADVANCED TECHNOLOGY WITHIN ITS LABS - A NEW WAY OF DOING THINGS IN THE INDIAN DEFENCE SECTOR



Company: **Hughes Precision**
Location: Bangalore, Karnataka



Sanjay Soni, Director, Hughes Precision

up to the 12.7x108mm cartridge which is used in anti-aircraft guns. It also manufactures different type of bullets such as FMJ, ball and armour piercing, and has received orders from the UAE, Russia and the Czech Republic.

In addition, Hughes Precision has bid for the Indian Army tender for 4.34 million rounds and has received enquiries from several other domestic and international customers as well. "We will be exporting a major part of our production and that is the reason for setting up the company as an Export Oriented Unit," says Soni. "We are producing cartridges to NATO specifications and testing is carried out as per NATO

of automation and precision. The setup and changeover time between production runs of different calibres is minimal thus enabling the company to meet demand for a range of calibres from the same machines.

Commenting on the Indian defence manufacturing sector, Soni feels one of the biggest obstacles is the complicated procurement procedure which is extremely difficult for MSMEs to navigate. Secondly, the DGQA doesn't have updated specifications and continue to follow antiquated testing procedures for small arms and ammunition. "The procurement cycles are also very long and can take years," he says. "How does a



standards. Therefore, we will be supplying cartridges of the highest international quality to the Indian armed and paramilitary forces."

Hughes Precision has opted for using American technology which is already being used by other manufacturers in the US and in several other countries. The technology lends itself to manufacturing with a high degree



manufacturer sustain in the interim is a question most entrepreneurs looking to get into this field are faced with."



Company: **Kalyani Group**
Location: Pune, Maharashtra



Rajinder S. Bhatia, President, Defence and Aerospace, Kalyani Group

For more than 35 years, Kalyani Group has been a traditional supplier of components and subsystems to the Indian defence sector. Its product range are ammunition and shells, aluminum road wheels, track shoe assembly for tanks, Grad BM 21 rocket tubes, T-72 crankshafts, front axle beams, steering knuckles, transmission parts, etc. However, all these supplies were restricted to the component and subsystem levels. Kalyani Group is now targeting the system level segment.

The company believes the recently released Draft DPP 2020 and the Public Procurement Policy favourably support production by Indian companies. Going ahead most programmes will require indigenous products. "These policy developments will provide the much needed impetus to the small arms business in India," says Rajinder S. Bhatia, President, Defence and Aerospace.

The Group is currently in the process of setting-up a dedicated state-of-the-art facility for small arms including a hammer forging facility required to manufacture small arms barrels. According to the company, "No private industry in India has the capability to manufacture small arms barrels. In this process we are absorbing technological knowhow from various global partners and skill sets to develop and produce these small arms," says Bhatia.

Currently, Kalyani Group is manufacturing the complete 5.5x30mm calibre weapon for DRDO with their existing capabilities and dedicated supply chain partner. It has successfully

Sniper Rifle 8.6mm.

Kalyani Group is keen that the government streamlines the defence procurement process to avoid delays, promote competition and ensure efficiency. According to Bhatia, "There is an urgent need to shorten the existing acquisition cycle. This could be done by putting in place a time-bound plan for each stage of the acquisition cycle. A steering committee facilitating and monitoring the process may help ensure timely execution of the acquisition cycle."

"The acquisition categorisation done at the time of grant of Acceptance of Necessity by the Defence Acquisition Council (DAC)

completed the initial trials with Getting-First-Time-Right manufacturing philosophy and will have extensive trials soon.

Using their strong metallurgical knowledge, design, and engineering capability and manufacturing experience, the group has over the last few years invested heavily to create a world class manufacturing ecosystem for various products under its portfolio. From making its own ESR grade (weapon grade) steel to having full-service supply capability - right from product conceptualisation to designing to manufacturing, product testing and validation. Backed by several decades of experience in metal forming, forging, machining and metallurgy, the group has realised a major breakthrough in the small arms segment within a short frame of time with a product for DRDO.

The company's product profile includes a series of small arms - Assault Rifle 7.62 x 39mm, CQB Carbine 5.56 x 45mm, Light Machine Gun 7.62 x 51mm, Protective Carbine 5.56 x 30mm, Sniper Rifle 7.62 x 51mm and



should encourage categories defined in DPP 2016/ DPP 2020, in the same order of precedence, based on a detailed assessment of existing capabilities and capacities of the Indian Industry. This will also give the right impetus to Make in India."

"Also, small arms manufacturing is a controlled sector and requires Defence Industrial License to manufacture. The process of issuing of license also needs to be a time bound function to facilitate growth of indigenous capability."

UNDER A NEW POLICY ON AMMUNITION, THE MINISTRY OF DEFENCE (MOD) IS WILLING TO PROVIDE LONG-TERM COMMITMENTS AND FIRM ORDERS OF MULTIPLE TYPES OF AMMUNITION TO PRIVATE PLAYERS, BUT AT COMPETITIVE PRICES.



Company: **Jindal Stainless Ltd**
 Location: Hisar, Haryana



Abhyuday Jindal, Managing Director, JSHL

On January 27, 2020, Jindal Stainless (Hisar) Ltd signed a joint venture agreement with Taurus Armas SA, Brazil for transfer of technology to manufacture small arms in India. Taurus is a leading firearms manufacturer having products in service with many countries. The product range includes a wide range of small arms such as 5.56mm carbine/assault rifle, 7.62mm assault rifle, 9mm pistol for the armed forces and also Non-Prohibited Bore (NPB) small arms like the .32 revolver/ pistol for the civilian market.

In the initial phase, the company intends to manufacture NPB pistols and revolvers for the civilian market through progressive indigenisation. In respect of small arms for military use, the approach

is to capitalise on the opportunities emerging through RFIs/RFPs/ tender from the army and other armed forces and accordingly plan production. Proactively, it is also offering small arms to the armed forces for trial on a 'no-cost, no-commitment' basis.

Currently, JSHL's main focus is to establish an ultra-modern infrastructure for manufacturing of small arms in Hisar. "At present, I may not be able to indicate the quantities which Jindal will be producing but I may confirm that we are targeting a product-mix capacity of 100,000 units per annum," says Abhyuday Jindal, Managing Director, JSHL.

Jindal adds that Prime Minister Narendra Modi's Make in India initiative and his subsequent call for Atmanirbhar Bharat have created huge enthusiasm in the private sector to invest in the manufacture of small arms. The liberalised FDI regime, issue of license for manufacturing of small arms to the private sector and also the ongoing/planned RFI/RFP under the Buy and Make (Indian) category of acquisition

are testimony to the government's commitment towards wider participation of the private sector to facilitate competitive procurement of modern small arms. These initiatives are aimed at extracting the best value for money against acquisition by the armed forces and to reduce dependency on import in this critical segment.

Jindal is of the view that the biggest obstacle being faced by the small arms manufacturers is abnormal delay that is taking place in regard to the procurement of small arms. This is despite industry being proactive and venturing into MoUs and joint ventures with foreign OEMs to create a robust defence infrastructure. For instance, in respect of the 5.56mm carbine, since 2011 repeated RFIs have been floated for procurement through indigenous production but not concluded to the contract stage.

The government has also resorted to preferential treatment to state owned production units as in the case of the Ordnance Factory Board, Korwa, which will jointly



manufacture the Kalashnikov AK-103 assault rifle. The deal locks in the long-term requirements of the armed forces. No opportunity was extended to private players for competitive bidding. "In this connection, I must mention that in order to sustain indigenous small arms manufacturing by the private sector, the standalone efforts by industry need to be supplemented by a consistent business opportunity. Also, in respect of the armed forces' actual requirement, there is also limited flow of information to the private sector," says Jindal.

In such an uncertain scenario, with regard to the acquisition programme and also actual technical requirement of the small arms, private industry struggles to firm-up their investment programme and take timely preparatory action to effectively respond when formal requirements emerge.

The abnormally long procurement process, particularly the time involved in finalisation of RFI/RFP, is a matter of concern and requires improvement. The licensing process also needs streamlining with the introduction of the online process for application of license, like DPIT. Private industry, being a new entrant in the sector, is not aware of various regulatory clearances and procedural requirements that are required to be met in respect of infrastructure creation and manufacture of small arms. The Ministry of Defence and Ministry of Home Affairs should provide requisite support to the private sector in this regard.

"In any theatre of war, the soldier on the ground will always have primacy and is critical to success," says Jindal. "In this backdrop, we must acknowledge that equipping our soldiers with high quality indigenously



produced small arms are highly morale boosting for the nation and a matter of pride as these are their personal weapons."

CONCLUSION

Over the decades, India has spent billions of dollars on high-end weapons that have ensured it remains the pre-eminent military power in the region. Today, it is poised to become a pan-Asian power with the ability to project power into the South China Sea and up to the Horn of Africa. But while pursuing regional dominance through Agni missiles, SSBN submarines and aircraft carriers, the political leadership must not forget that it is the soldier on the ground who keeps the enemy at bay. If India is going in for expensive Sukhois and Rafales, why should the Indian soldier carry the glitch prone INSAS? Shoddy rifles for the humble soldier therefore reek of elitism and discrimination. Personal weapons are just as important to the outcome of wars as the acquisition of aircraft, tanks and guns.

Also, there is the spinoff effect on the economy. With the ballpark requirement of small arms for the military and paramilitary forces at well over two million, the cake is big enough that both the state owned OFB and private players can have their shares

WHILE PURSUING REGIONAL DOMINANCE THROUGH AGNI MISSILES, SSBN SUBMARINES AND AIRCRAFT CARRIERS, THE POLITICAL LEADERSHIP MUST NOT FORGET THAT IT IS THE SOLDIER ON THE GROUND WHO KEEPS THE ENEMY AT BAY. IF INDIA IS GOING IN FOR EXPENSIVE SUKHOIS AND RAFALES, WHY SHOULD THE INDIAN SOLDIER CARRY THE GLITCH PRONE INSAS?

without acrimony. And that's not including the police forces of 30 different states that also require automatic rifles, carbines and handguns. Add in the demand for sports rifles, and we are looking at one of the largest markets for small arms in the world.

Also, depending on the environment they are used in and how well they are maintained, small arms have a life of 5,000 to 6,000 rounds. That means ongoing replacements, which should keep production lines humming for decades. The number of jobs this will create and the innovators the industry will spawn will without a doubt kickstart a new era in the Indian defence sector. Due to various reasons, for more than 70 years India missed the opportunity to create a thriving small arms industry. With a favourably disposed government in power, now is the time to make up for lost time.

- The writer is a globally cited defence analyst. His work has been published by leading think tanks, and quoted extensively in books on diplomacy, counter terrorism, warfare and economic development.



“All products that SSS Defence has introduced so far have been indigenously designed and developed. A modern approach to development included the use of additive manufacturing, flow dynamics, simulation and a very advanced UX design philosophy. Our bolt actions for the sniper are proprietary designs and do not build on any existing system like the Remington 700.”

Satish Machani, MD, SSS Defence

“Prime Minister Narendra Modi’s Make in India initiative and his subsequent call for Atmanirbhar Bharat have created huge enthusiasm in the private sector to invest in the manufacture of small arms.”

Abhuday Jindal, MD, JSHL



“No private industry in India has the capability to manufacture small arms barrels. In this process we are absorbing technological know how from various global partners and skill sets to develop and produce these small arms.”

Rajinder S. Bhatia, President, Defence and Aerospace, Kalyani Group

“There is a huge potential in the Indian small arms and ammunition market. The recent policy developments are very positive for the sector and will give a boost to the local defence industry.”

Sanjay Soni, Director, Hughes Precision



“It’s time for the Govt to walk the talk of VOCAL FOR LOCAL, as India for the first time in PLR has an entire range of best in class Made in India small arms products to choose from.”

Ajay Soni, Director, PLR Systems

7.62 VERSUS 5.56: SELECTING THE RIGHT CALIBRE

The Indian Army's decision to switch to a higher calibre rifle shows that the brass has woken up to the realities of the modern battlefield. At the same time, taking a cue from the US Army's search for a better calibre, India must continue R&D in the field of ammunition

By **RAKESH KRISHNAN SIMHA**

Perhaps the only good thing about the demise of the INSAS is that its comparatively smaller 5.56 mm calibre round is a liability in modern warfare. The Indian Army had long subscribed to the Western military wisdom that the 5.56 mm rifle is better suited for war because it generally injures an enemy soldier, thereby tying down two of his mates who would carry him to safety. On the other hand, the 7.62mm bullet usually causes death, thereby eliminating the soldier from the battlefield.

The current thinking makes a 180-degree turn. Firstly, soldiers don't pick up a fallen comrade during a charge. For, that would not only slow down the charge but also expose the rescuers to hostile fire. No army in the world teaches such tactics to its soldiers and it is therefore surprising that such 'wisdom' prevailed for so long.

During the Vietnam War, the first

major war in which both sides fought with automatic weapons, the US Army found that its M-16

was more accurate than the AK-47s of the Vietnamese Army when firing individual shots at shorter ranges. But the wounding power of the M-16's 5.56mm bullet fell off rapidly at ranges over 100 meters. While the 7.62 rounds have an

overall lower velocity, they do tend to hold on to their velocity better than the 5.56 where velocity bleeds off rapidly.

The 7.62mm bullet is also capable of travelling longer ranges. It is easily capable of 800-metre hits on a human size target though most battlefield engagements happen within 300 metres. A declassified CIA report titled 'Some Points on the Status and Development of Small Arms' is a must read for the Indian Army brass. The report, published in the CIA's Military Thought journal, says the 7.62 mm calibre rifle is much better when it comes to combat. "This cartridge will kill a soldier at ranges of up to 1,500 metres and with full reliability penetrate a helmet or armoured vest at ranges from 600 and 900 metres," says the US report.

Also, being a heavier round it is less affected by cross winds especially at longer ranges, thereby improving accuracy. According to the military website Strategy Page, "The larger and heavier 7.62mm round is more effective at blasting through walls and doors, and many troops believe it has better stopping power." That is, the 7.62mm bullet is able to stop the soldiers it hits.

COUNTER-INSURGENCY WARFARE

Most conflicts these days involve terrorists, who are generally high on drugs, adrenaline and religious fanaticism and it takes a lot more than a single bullet to stop them, especially at medium to long ranges.



INSAS gun



M16

The 7.62 mm rifle is ideal in counter-insurgency warfare because it is better to take out terrorists before they come close for suicide bombing. Also, terrorists don't stop to rescue a fallen comrade.

Unlike bullets fired from other rifles, the 7.62 mm creates a mushroom-like mini blast at the entry point. This causes disruption of tissues, leading to greater trauma and blood loss. This is significant in counter-insurgency warfare because unlike modern armies, terrorists don't have immediate access to medics. A terrorist hit by a 7.62mm bullet is more likely to succumb to their injuries on the battlefield.

WEIGHT ISSUES

The one clear advantage of the 5.56mm is that its lighter weight allows soldiers to carry a much greater quantity of ammunition on their person. This can help them stay longer in the combat zone. However, the equation has changed today. With advancements in technology, it is possible to have a higher calibre bullet with lighter effective weight. Even the new 7.62x51mm rifles are significantly lighter and have lower recoil than their predecessors. The 7.62mm cartridge can be made lighter

by using polymer or plastic shell casing which will result in a weight reduction of up to 35-40 per cent.

FUTURE CALIBRE - 6.8MM

Despite its longevity, even the 7.62 may not be around forever. Currently, the US is testing a new 6.80mm round. After sticking with the same standard for nearly 60 years, the US Army has decided the old is not going to cut it against modern body armour. The service wants a larger, heavier bullet that can penetrate current and future body armours. The new round is also expected to be accurate to greater ranges.

The US Army has called on five manufacturers to deliver six competing designs for the new SAW (Squad Automatic Weapon, or light machine-gun) and M4 assault rifle replacements chambered for the new 6.8mm round. Current rifle and SAW designs in development or production can be offered as long as they accommodate new 6.8mm round.

Prototypes will be delivered in 2021 and a winning design will be selected for low rate production a year or two after that. The new 6.8mm round may be caseless or have non-metallic (and lighter) cartridge case. According to Strategy Page, "The US army is depending on the



Hughes Ammunition

SSS Defence Ammunition

many recent (since the 1990s) improvements in technology (for cartridge and bullet design as well as new propellants) will produce a 6.8mm round able to demonstrate sufficient superiority and reliability to current ammo to justify the switch."

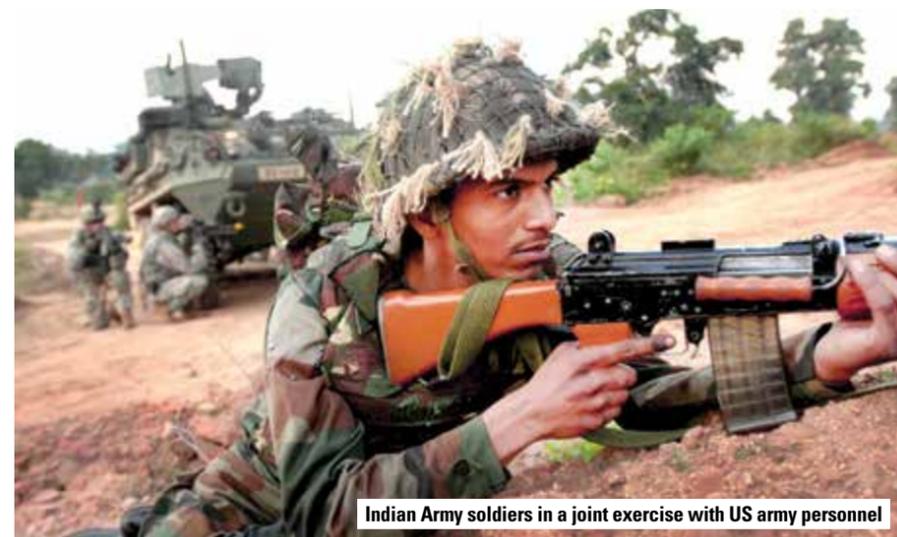
CONCLUSION

With the advent of new technology and lower prices, the use of body armour is at rise world over. Also, the army will be fighting terrorists more often than full-on wars. In this backdrop, the Indian Army's decision to switch to a higher calibre rifle shows that the brass has woken up to the realities of the modern battlefield. At the same time, taking a cue from the US Army's search for a better calibre, India must continue R&D in the field of ammunition.

- The writer is a globally cited defence analyst. His work has been published by leading think tanks, and quoted extensively in books on diplomacy, counter terrorism, warfare and economic development.

"The larger and heavier 7.62mm round is more effective at blasting through walls and doors, and many troops believe it has better stopping power."

Strategy Page, a Military Website



Indian Army soldiers in a joint exercise with US army personnel

EZRAIDER: A PERSONAL MOBILITY SYSTEM FOR COMBAT SOLDIERS

The need that has led to the development of the unique system became obvious when the Israel Defense Forces (IDF) learnt the lessons from recent years of fighting in Gaza, Lebanon and other remote places that did not make the headlines

By **ARIE EGOZI**



DSRaider-built EZRaider: A Personal Mobility System

THE EZRAIDER HD 4 IS AN OFF-ROAD ELECTRIC-POWERED MANNED VEHICLE THAT WITHOUT ANY DOUBT CREATES A NEW CATEGORY IN THE FIELD OF PERSONAL TACTICAL VEHICLE. THE VEHICLE HAS A UNIQUE GO-ANYWHERE MOBILITY CHARACTER AND THUS ACTS AS AN OPERATIONAL POWER-MULTIPLIER OF THE USER

A

sian defence forces are immediate potential customers for the Israeli developed EZRaider personal mobility system for combat soldiers. The Israeli company DSRaider, that has developed the system, is already working with Japanese company Jalux. The need that has led to the development of the unique system became obvious when the Israel Defense Forces (IDF) learnt the lessons from recent years of fighting in Gaza, Lebanon and other remote places that did not make the headlines.

In many scenarios, a small commando unit has to get as close as possible to the target without being detected to achieve the advantage of surprise.

This operational need prompted many Israeli companies to try and come up with solutions.

In combat zones, soldiers do not move on paved roads. They select the most unlikely way to get to the target. Transporting soldiers and equipment through rough terrains requires tactical solutions that could navigate in terrain previously only reached by foot.

The first company that

presented a solution is DSRaider, which developed a revolutionary personal tactical vehicle for armed forces. The EZRaider HD 4 is an off-road electric-powered manned vehicle that without any doubt creates a new category in the field of personal tactical vehicle. The vehicle has a unique go-anywhere mobility character and thus acts as an operational power-multiplier of the user.

The US armed forces have evaluated the vehicle and after a successful set of tests have purchased a number of vehicles in order to continue the operational evaluation.

The Israel Defense Forces are also in the middle of an operational evaluation.

According to the company, the EZRaider HD 4 provides operational simplicity, high reliability and durability, enhanced operative advantages in a variety of operational scenarios with a high level of safety for the user.

The EZRaider HD 4 is powered by four 1200 W electric motors and can carry onboard up to two fighters with full combat gear. It can be connected to a special electric cart with two 1500 W electric motors for additional equipment. The electric motors with high torque and precise response to user commands are powered by a 3000 W battery that

drives the vehicle an operational range of up to 80 km.

According to the Israeli company, the EZRaider HD 4 can be easily folded for transportation. The vehicle's width is 27 inch and it weighs 280 pounds. EZRaider is equipped with an Intuitive and accurate driving system control.

Brig Gen (Res.) Miki Bar, DSRaider CEO says that the unique vehicle can carry a payload up to 440 pounds, and an additional 550 pounds while equipped with Raider electric powered cart.

The four wheels are connected to special suspension systems that give every wheel an independent horizontal and vertical movement "that allows

the vehicle to cope with rough terrain," Bar explained.

The board on which the soldier stands is 20 inch above ground, and this also adds to the vehicle's capability to move in rough terrain.

"The soldier uses body movements like the ones skiers of water gliders use to control the movements."

Bar added that the IR signature of the vehicle is very low, a fact that adds to its stealthiest. "The electric motors emit something like 122 Fahrenheit and that can be lowered with simple heat shielding materials.

Mistral, a US company has teamed with the Israeli company and that resulted in making the EZRaider HD 4 a standard item

that can be purchased by the different fighting units.

The interest is not limited to the armed forces. Recently the vehicle was tested in a drill that was designed to improve the readiness of local law enforcement organisations to cope with emergencies. An American source, without divulging the details, said that in this drill the Israeli developed vehicle was tested "above and under the ground."

The Israeli police are already using the EZRaider HD mainly in its border police units.

Naturally, the enthusiasm from the new vehicle is big but I went to talk with the experts that know the operational problems from long years of service and command.

SHOWCASE



The mobility system 'EZRaider' in a difficult combat zone

THE INTEREST IS NOT LIMITED TO THE ARMED FORCES. RECENTLY THE VEHICLE WAS TESTED IN A DRILL THAT WAS DESIGNED TO IMPROVE THE READINESS OF LOCAL LAW ENFORCEMENT ORGANISATIONS TO COPE WITH EMERGENCIES. AN AMERICAN SOURCE, WITHOUT DIVULGING THE DETAILS, SAID THAT IN THIS DRILL THE ISRAELI DEVELOPED VEHICLE WAS TESTED "ABOVE AND UNDER THE GROUND"

Major Gen. (Retd.) Giora Eiland is a former head of the Israel National Security Council. During his service, he was among other things the commander of an airborne battalion and the Chief Officer of the IDF's infantry corps.

I asked Eiland what are the advantages of the EZRaider HD 4 for a commando unit "This system is tailored for special operations when a small commando unit has to

cross a distance in total silence and fast."

He added that the advantages are clear when we look at the speed, the quiet operation and the low thermal signature.

He added that the advantage will be even greater in mountainous areas where the oxygen percentage is low, and the fighter carrying a heavy backpack in addition to a weapon is very limited in his pace of movement.

All the other Israeli experts, I talked with, stressed that the special vehicle can be very useful when a special unit is flown by a helicopter to perform an attack. This is the scenario they all described - a CH-53 helicopter lands a 100 km from the target, and in seconds a group of soldiers get off from the back ramp and prepare the EZRaider HD 4 for the covert dash to the fighting area.

All the experts agreed that the EZRaider HD 4 is a real revolution in the combat concept. "The combination between a heavy helicopter and a unit equipped with this mobility system creates an unexpected dimension when it comes to speed and distance and that among other things create the capability to surprise the enemy. It will without any doubt make a revolution in the operation of special forces," said one of the experts.

And according to Miki Bar, in recent weeks his company in cooperation with Israel company Soft Ride are working on developing a dual use EZRaider. The basic version will be capable of autonomous operation equipped with Lidar systems.

- The author is an Israel-based freelance writer. He has served in Israel Defense Forces.



Our products and solutions to meet MIL Standards

Our Credentials

ISO - 9001 2015 Company
 DGQA Approved
 OEM of Life critical systems for upcoming submarines
 Industrial Products and Industry 4.0 ready Solution
 Turnkey Solutions for ATE for Thermo vacuum Testing of satellites.
 Chandrayan & Mangalyan tested with our systems.
 Key vendor for Protocol Converters to Dubai Metro and All Indian Metro's.

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MOSCOW-NEW DELHI RELATIONS IN THE BACKDROP OF RED SQUARE PARADE

China may be a neighbour but India is a time-tested friend, this was the spirit at the recently-concluded Red Square parade in which 75-member Tri-service contingent of Indian Armed Forces took part to honour the heroism and sacrifice made by the Russian and other friendly people

By **VINAY SHUKLA**

Moscow. Square military parade to mark the 75th anniversary of the Soviet Red Army's Victory on the Eastern Front in the World War-II was a much awaited event. 75 years ago on May 8 (May 9 in Moscow due to time difference) the Nazi Germany had signed the instrument of surrender before the four allied powers – Soviet Union, USA, United Kingdom and France after the Red Army captured Berlin and raised red banner over the Reichstag – seat of Hitler's power. More than 27 million Soviet military and civilians, mostly Russians as well as Ukrainians and Belarusians were killed in the war on the Eastern Front – known as the Great Patriotic War of 1941-1945 in Russia.

To acknowledge immense sacrifices made by the Russians and other Soviet people, many world leaders including Prime Minister Narendra Modi had accepted President Vladimir Putin's invitation to attend it on May 9, as originally planned, however, the Chinese Wuhan Coronavirus pandemic upset all the plans.

Why June 24 was chosen as an alternative date for the parade? On this day in 1945 first Victory Parade was held at the Red Square at which the Russian troops threw colours and standards of the defeated Nazi regiments and units at the feet of Marshal Josef Stalin, the wartime leader of the USSR.

INDIA'S BRILLIANT PARADE DIPLOMACY

Against the backdrop of Chinese transgression of LAC in Ladakh, in a brilliant diplomatic move Prime Minister Narendra Modi deputed 75-strong tri-services military contingent for parade led by Colonel Anil Kumar of Sikh Light Infantry, which had covered itself with glory during the WW-II when the two countries were allies and fighting a common enemy.



Seventy five member Tri-service Indian contingent during Victory Day Parade in Russia



Defence Secretary Dr Ajay Kumar with his Russian counterpart



Indian and Russian defence officials in a delegation level meet

This was fortified by Defence Minister Rajnath Singh's three-day visit to Moscow at a time when speculations were rife about Russia's stance amid confrontation between its two strategic partners.

However, while refusing to mediate between New Delhi and Beijing on the grounds that they have enough instruments to resolve bilateral disputes, Moscow assured its timely support for India's security and defence and agreed to speed up crucial supplies including state-of-the-art S-400 Triumf air defence missile systems.

Singh was highly impressed by the warmth of his Russian hosts when Russian Deputy Prime Minister Yury Ivanovich Borisov, setting aside the protocol formalities, with his team came to his hotel for talks. DPM Borisov is

the Kremlin's India pointman.

"I am fully satisfied with talks with DPM Borisov," Indian Defence Minister declared after his meeting and announced that Defence Secretary Dr Ajay Kumar had separate parleys with his Russian counterpart, Deputy Minister of Defence, Alexander Vasilyevich Fomin.

Commenting on Rajnath Singh's Moscow talks, Russia-based leading business daily "Kommersant" disclosed that China had hinted that it would not be appropriate to rush defence supplies to India at this juncture. "Moscow ignored Beijing's hints and one should not be surprised to see S-400 missile system at the Republic Day parade on January 26, 2021," the "Kommersant" daily wrote.



In their telephonic conversation on July 2, Prime Minister Narendra Modi and President Vladimir Putin reiterated their commitment to further strengthen bilateral special, privileged strategic partnership in all spheres.

China may be a neighbour but India is a time-tested friend, this was the spirit at the recently-concluded Red Square parade. ■

- The author is a Moscow-based independent analyst. Views are personal.

Alexander A. Mikheev,
CEO of JSC Rosoboronexport, along with other industry leaders in a meeting



Defence Minister Rajnath Singh during his recent visit to Russia

A GLIMPSE OF VICTORY DAY PARADE



KERALA'S MAOIST CONNECTION

Maoists are indeed establishing their foot presence in Kerala. This calls more for the State government to be vigilant and take proactive measures in tribal hamlets and surrounding areas to contain the spread of Maoist activities in the region



Kerala Chief Minister Pinarayi Vijayan

By **DR MATHEW SIMON**

It is a common parlance in the strategic community to understand and comment on Kerala's Islamic state connection given that 21 people from northern part of Kerala went to Afghanistan and joined the Islamic state in 2016. However, of late there is another form of terror that is springing up in the plantations of Kerala - CPI (Maoist) party or Left Wing Extremism (LWE). According to South Asia Terrorism Portal (SATP) data, since March 2000 Kerala has recorded eight LWE-linked fatalities. The maximum number of fatalities (five) was reported in 2019, followed by two in 2016 and one in 2014.

THE BEGINNING OF LWE IN KERALA

The ripples of the Naxalbari uprising in North Bengal in the late 1960s reached Kerala as well. North Kerala, including Wayanad, was a hotbed of the ultra-Left movement. A Varghese, a CPM leader who turned to Naxalism, and K Ajitha, who is now a prominent feminist activist, inspired a series of revolts against landlords. The so-called 'Spring Thunder', however, suffered a blow when Varghese, who had won the hearts of tribals, was killed in an encounter.

Recently, the Maoists have made their presence felt in Palakkad, Malappuram and Wayanad districts of Kerala as reported by Ministry of Home Affairs (MHA) in 2019. The above districts fall along the tri-junction area of Kerala-Karnataka-Tamil Nadu (KKT) border. Earlier, State Home Minister Ramesh Chennithala acknowledged in the Kerala Assembly on June 9, 2014, that there were also reports of Maoists presence in Kozhikode, Kannur, and Kasaragod districts.

The increased nature of Maoist activities in these regions may be caused by two reasons. Firstly, the increased successes of the security operations against Maoists in the states of Chhattisgarh, Jharkhand and Odisha have pushed the

Maoists downwards in the South, especially along the KKT border areas. Secondly, the Maoists are keen to open newer, fresher areas of operations to expand their influence and command over the tribal populations. The similar case in point is the heightened Maoist activities along the Maharashtra-Madhya Pradesh (MMC) corridor in the recent years.

The Kerala Police had filed its chargesheet in one Vellamunda Maoist case on January 1, 2016. Further, National Investigation Agency (NIA) filed a chargesheet related to the above case on January 30, 2018 against three Maoist cadres for allegedly threatening a police officer at Vellamunda in Kerala in 2014 for conducting anti-Maoist operations. The case was originally registered at Vellamunda Police Station in Wayanad district of Kerala against CPI (Maoist) activists Roopesh, Anu, Jayanna, Kanya and Sundari.

The accused had formed an unlawful assembly with prohibited weapons and trespassed into the house of the Kerala Police officer at Mattilayam in Thondernadu, Wayanad district of Kerala on April 24, 2014. Likewise in the same year, the Maoists also attacked a KFC eatery outlet in Palakkad and vandalised the property of Kochi corporate office of Nitta Gelatin India limited (NGIL)

A major Maoist incident was reported on November 24, 2016, when two CPI-Maoist leaders, including 'central committee (CC)' member and 'secretary' of the Western Ghats Special Zone Committee (WGSZC), Kuppuswamy Devarajan aka Shanker, and Ajitha aka Kaveri, a woman leader, were killed in



Maoist cadres during a training

an encounter with the police inside the Nilambur Forest in Malappuram.

Since 2016, there have been series of Maoist related incidents reported that emphasises their growing clout, strength in the tribal areas of the state. To recount a few major ones during the years that followed, these were incidents of violence that clearly demonstrated that the Maoists in Kerala are putting up the posters in Malayalam, attacking people at resorts and demanding food from tribal people. On December 3, 2016, State DGP Loknath Behera acknowledged that the Maoist threat was on the rise in Kerala along the tri-junction area.

KERALA'S MAOIST MODUS OPERANDI

As reported in the media and elsewhere, it is observed that Maoists are operating through four Dalams namely Kabani, Nadakuni, Bhavani, Varahinidams in Kerala. It appears that leadership of

Maoists in Kerala is headed by non-Keralites from the states of Telangana and Tamil Nadu. So there certainly appears those at the helm of affairs are not from the state. The Maoist in Kerala typically enters villages or tribal hamlets bordering forests, address the local people, and distribute leaflets.

They have not, however, had any significant success in winning over youths in the tribal hamlets, for which several factors are responsible: the socio-economic profile and standard of living of tribals in Kerala is far better than elsewhere, and improved policing and greater socialisation of tribal youths make recruitment difficult. The Maoists mostly return to the jungles after collecting provisions from the villages.

However, the situation may continue to worsen in terms of recruitment among the Maoist cadre. This was evident with the arrest of 2 young CPI (M) activists under Unlawful Activities (Prevention) Act (UAPA), 1967 for Maoist related activities from Kozhikode in November 2019. In terms of sympathy and support

RECENTLY, THE MAOISTS HAVE MADE THEIR PRESENCE FELT IN PALAKKAD, MALAPPURAM AND WAYANAD DISTRICTS OF KERALA AS REPORTED BY MINISTRY OF HOME AFFAIRS (MHA) IN 2019. THE ABOVE DISTRICTS FALL ALONG THE TRI-JUNCTION AREA OF KERALA-KARNATAKA-TAMIL NADU (KKT) BORDER

KERALA: THE NEW HOTBED



Left Wing Extremists in Kerala

IN 2017, KERALA CHIEF MINISTER PINARAYI VIJAYAN INFORMED THE STATE ASSEMBLY UNDER HIS LEADERSHIP TO CONTAIN THE SPREAD OF MAOIST ACTIVITIES IN THE STATE FOCUSING ON OPERATIONS AGAINST MAOIST SYMPATHISERS AND SERVE AS A FORUM TO REVIEW DEVELOPMENTAL ACTIVITIES IN THE MAOIST-AFFECTED AREAS OF THE STATE

for the Maoist causes, it is reported that they get logistic and ideological backing from organisations such as Porattam and Ayyankalipada, as well as from human rights activists.

STATE RESPONSE

The State Government has, nevertheless, taken clear cognizance of the emerging threat. In 2017, Kerala Chief Minister Pinarayi Vijayan

informed the State Assembly that the Unified Command was formed under his leadership to contain the spread of Maoist activities in the State focussing on operations against Maoist sympathisers and serve as a forum to review developmental activities in the Maoist-affected areas of the State. It is also learned that State government initiated a special operation Anaconda under the Thunderbolts against Maoists in their KKT areas. Apart from that, Kerala government has also revamped its surrender and rehabilitation policy of Maoists.

CONCLUSION

Maoists are indeed establishing their foot presence in Kerala. This calls more for the State government to be vigilant and take proactive measures in tribal hamlets and surrounding areas to contain the spread of

Maoist activities in the region. The developmental activities in tribal villages need to undertake a serious review in terms of ensuring State and Central government schemes reach its rightful beneficiaries.

The Kerala Police in coordination with NIA ought to follow up on the Maoist related cases and bring the culprits to book on the basis of sound evidence for prosecution at the courts. The leaders and activities of their front organisations need to be under due scanner and scrutiny by security forces so as to stem flow of further recruitment among the Maoist cadres.

The author is a researcher at Manohar Parrikar Institute for Defence Studies and Analyses. Views expressed are of the author and do not necessarily reflect the views of the MPIDSA or of the Government of India.



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INDIA-MYANMAR: TIME TO EXPLORE BIG STRATEGIC HORIZON

Apart from security interests, economic and energy security dimensions, Myanmar can be a bridge between India and ASEAN. At a time when India has initiated the ambitious programmes like Act East Policy, relations with Myanmar attain substantive height

By **SHIBDAS BHATTACHARJEE**

T

here is hardly any doubt in the fact that India's North and Northwest frontiers figure prominently in the nation's strategic calculus. India's strategic and security policies have been mostly Kashmir and Pakistan centric so far. This wrong approach has done much damage to India's strategic interests in the East and Northeastern frontiers. Reality is: despite facing formidable military challenges that came from the other side of the Northeastern frontier of the country in the form of Chinese aggression in 1962, New Delhi hardly changed its strategy regarding these frontiers.



Indian leadership is yet to heed that along with Pakistan and China, this region and bordering nations pose formidable security and strategic challenges. In fact, prominence of Kashmir and

India-Pakistan relations never allowed India's policy makers to focus attention on India's neighbouring nations in the East. This is one of the prime causes why India's Foreign

Policy looks utterly shaky in case of Eastern and Northeastern Neighbours. India-Myanmar relation is a classic example of this. This exposes a policy crisis at its worst. However, both for internal political atmosphere of Myanmar and geo-strategic location of this country bear special significance for India.

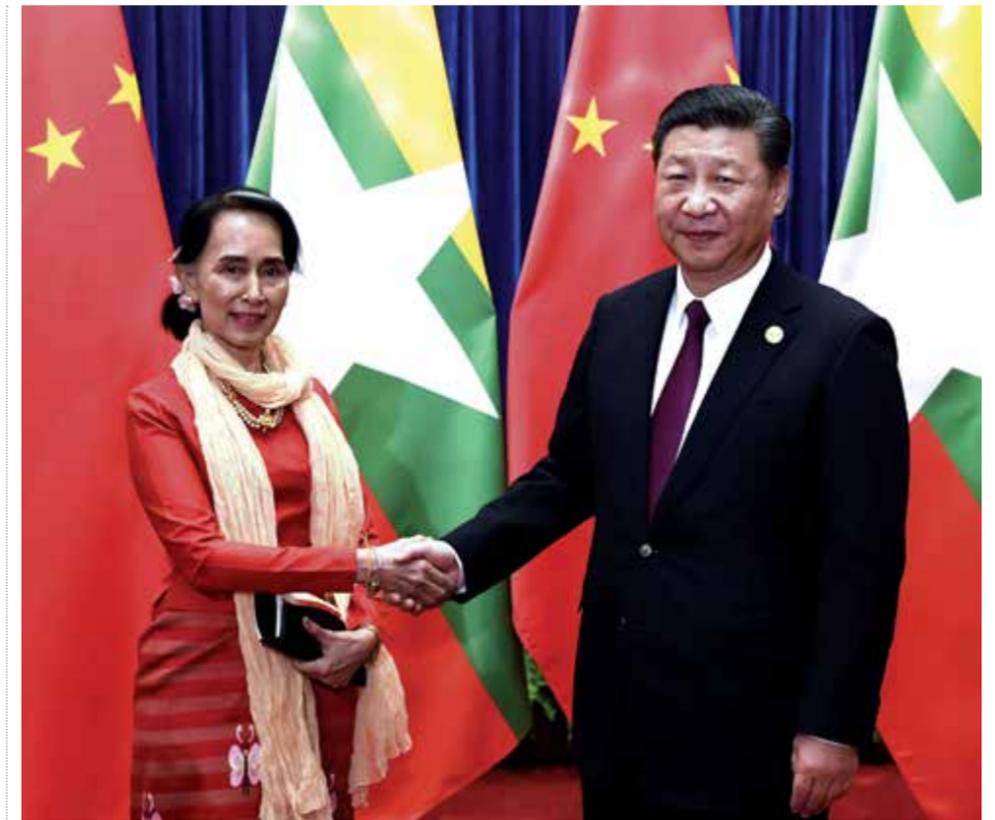
India's four Northeastern Indian states; Arunachal Pradesh, Nagaland, Mizoram and Manipur share 1,643-km border with Myanmar; Arunachal Pradesh (520 km), Nagaland (215 km), Manipur (398 km) and Mizoram (510 km). There is dense forest in most part of India's bordering areas with Myanmar and the region lacks road accessibility as well, which is a matter of grave security concern. For a long time Myanmar remained safe hide-out of the Northeast-based insurgent outfits. But porous border area and the issue of illegal trafficking between India's Northeastern States and Myanmar have not been addressed properly by New Delhi so far. Rather, Indian leadership has ignored this issue so far.

Be the state of border fencing, floodlight and other logistics, India lacks an effective mechanism. Issue of Northeast-based insurgent outfits, illegal narcotic trade, border guarded

by Assam Rifles with limited resources, occasional clash with the indigenous tribe communities ultimately prove that India-Myanmar border lacks technology and skilled work force for proper vigilance. Geo-strategic location of the area like dense forest, lack of road accessibility and absence of other related infrastructure make the point clear why Myanmar border is so vulnerable for India.

But far more challenging aspect for India is: Myanmar has been one of the focal points of conflict in South East Asia. Both United States and China tried to make it their military base. Now China has overpowered US in terms of dominance. The Beijing-Islamabad axis emerged as new dominating force. So also, during the pro-democratic movement of Myanmar, New Delhi failed to appear as a stakeholder despite the expectations of the people and democratic leadership of Myanmar. India's mere ideological support to the democratic aspiration hardly could satisfy the people of Myanmar. This ultimately damaged India's image.

At one hand, India supported the democratic movement of Myanmar but on the other. it wanted other countries to intervene and involve in this. This policy crisis impacted India's relationship with Myanmar even after restoration of democracy in that country. The grim reality is that out of absence of a definite Myanmar policy, India has lost a substantial strategic ground in the region that connects India's landlocked Northeast with South East Asia. But far more important factor for India is the security dimension and preventing China in building choke-point in already volatile Eastern border of India. Apart from Northeast-



National League for Democracy (NLD) leader Aung San Suu Kyi with Chinese President Xi Jinping

based terror outfits building bases in Myanmar, using forest route for illegal trafficking and transfer of arms, China built its logistic bases and presents formidable challenges for India's security mechanism. Increasing Chinese influence in Myanmar proved to be another disaster for India on the strategic-front.

But India's relation with Myanmar is not confined to domestic political situation of that country. This is not merely a question of India's Northeastern States as well. It is a harsh reality that even democratic Myanmar relies more on China than India. In fact, Myanmar is an example of India's utter failure in expanding democratic culture and enhancing bilateral ties in the region that better serves India's strategic and regional aspirations. But the most unfortunate thing is

IN FACT, PROMINENCE OF KASHMIR AND INDIA-PAKISTAN RELATIONS NEVER ALLOWED INDIA'S POLICY MAKERS TO FOCUS ATTENTION ON INDIA'S NEIGHBOURING NATIONS IN THE EAST. THIS IS ONE OF THE PRIME CAUSES WHY INDIA'S FOREIGN POLICY LOOKS UTTERLY SHAKY IN CASE OF EASTERN AND NORTHEASTERN NEIGHBOURS. INDIA-MYANMAR RELATION IS A CLASSIC EXAMPLE OF THIS

democratic India's failure to frame effective policy regarding all those nations in the Eastern and Northeastern frontiers. Apart from security interests, economic and energy security dimensions, Myanmar can be a bridge between India and Association of Southeast Asian Nations (ASEAN). At a time when India has initiated the ambitious programmes like Act East Policy, relations with Myanmar attain substantive height.

India needs to build relations with the present Myanmar



Indian soldiers with seized arms and ammunition

APART FROM NORTHEAST-BASED TERROR OUTFITS BUILDING BASES IN MYANMAR, USING FOREST ROUTE FOR ILLEGAL TRAFFICKING AND TRANSFER OF ARMS, CHINA BUILT ITS LOGISTIC BASES AND PRESENTS FORMIDABLE CHALLENGES FOR INDIA'S SECURITY MECHANISM. INCREASING CHINESE INFLUENCE IN MYANMAR PROVED TO BE ANOTHER DISASTER FOR INDIA ON THE STRATEGIC-FRONT

regime. India should have good relations not only with the political party in power in Myanmar, India's relations should be equal with Aung San Suu Kyi-led National League for Democracy (NLD), Their Sein-led Union Solidarity and Development Party (USDP), The National Unity Party (previously called the Burma Socialist Program Party), The National Democratic Force (NDF) and all others. Along with bilateral visits made on the executive level, India should keep sending Parliamentary teams. Parliamentarians of Northeastern States must be included in any Parliament delegation visiting from India to Myanmar. After all, India's Northeast region knows Myanmar better. Government of India should put their knowledge about Myanmar into

use. Similarly, India must take pro-active role as a democratic nation regarding the issues and concerns of Myanmar's democracy.

In fact, relation between two democracies; India and Myanmar is of far greater importance. Better understanding of mutual benefits of India-Myanmar relations is important for both the nations. However, India; a stable democracy and with a government having decisive mandate must shoulder greater responsibility. This will ultimately help India regaining the status on the strategic front that New Delhi lost because of shaky Foreign Policy towards Naypyitaw (capital of Myanmar); the most important neighbour in the East that can open the land route for investment from the ASEAN and give encouraging push to India's

economic aspirations, security requirements and strategic needs. Fact is: productive India-Myanmar relations can provide India both shield and arms against China. China does not want a democratic Myanmar as it does not suit Beijing's strategic interests. But it suits India and her foreign policy initiations. Time is to extend helping hand to make democracy thriving strongly in Myanmar. This will provide India the opportunity to make strategic partnership with Myanmar. After all, India-Myanmar formal strategic partnership serves mostly India's interests. Therefore, this demands to be pro-activeness on the part of New Delhi to explore larger strategic interests in the eastern and northeastern frontiers of the country.

- The author is a Guwahati-based strategic affairs expert.

EASTERN NAVAL COMMAND GETS NEW CHIEF OF STAFF

New Delhi. Vice Admiral Biswajit Dasgupta assumed charge as Chief of Staff of Eastern Naval Command (ENC), Visakhapatnam on June 12. He takes over from Vice Admiral SN Ghormade, the outgoing Chief of Staff who has proceeded on transfer as Controller, Personnel Services at Integrated Headquarters, Ministry of Defence (Navy).

Vice Admiral Dasgupta is an alumnus of National Defence Academy. He was commissioned into the Indian Navy in 1985 and is a specialist in Navigation and Direction.

He has commanded four frontline ships including the missile corvettes INS Nishank, INS Karmuk, stealth frigate INS Tabar and the aircraft carrier INS Viraat.

The Vice Admiral has held other operational, training and staff appointments such as Commander Work Up at Headquarters at Indian Naval Work up Team (Kochi), Directing Staff at the Defence Services Staff College



(Wellington), Officer-in-Charge of the Navy's Navigation and Direction School, Naval Assistant to the Chief of the Naval Staff and Fleet Operations Officer of the Western Fleet.

On promotion to Flag Rank, he

was appointed as Chief Staff Officer (Operations) at Headquarters, Western Naval Command at Mumbai. During 2017-18, he held command of the prestigious Eastern Fleet at Visakhapatnam and was thereafter appointed as Additional Director General at NCC Headquarters, New Delhi.

On promotion to the rank of Vice Admiral and prior to his return to Visakhapatnam as the Chief of Staff, Eastern Naval Command, he was the Controller Personnel Services at Integrated Headquarters, Ministry of Defence (Navy).

VAdm Dasgupta is a graduate of Defence Services Command and Staff College, Bangladesh, Army War College, Mhow and National Defence College, New Delhi.

The Flag Officer is a recipient of the Ati Vishisht Seva Medal and Vishisht Seva Medal for distinguished service. He was also awarded the Yudh Seva Medal for coordinating evacuation operations from strife-torn Yemen in 2015 under Operation Raahat.

AIRBUS ANNOUNCES RÉMI MAILLARD AS PRESIDENT, AIRBUS INDIA

New Delhi. Airbus has appointed Rémi Maillard as President of Airbus India and Managing Director of South Asia region effective September 1, 2020. Rémi, currently Head of Airbus Services, will succeed Anand Stanley who will move to Singapore as President, Airbus Asia-Pacific. Both report directly to Christian Scherer, Chief Commercial Officer and Head of International of Airbus.

In his new role, Rémi will lead Airbus' business in South Asia. He will be responsible for commercial aircraft sales and business development, and he will manage Airbus' regional footprint, which includes engineering, innovation, customer support and services as well as training. He will also help progress Airbus' top defence



and helicopters campaigns and boost the company's Make in India programmes. Rémi, 40, joined Airbus in 2008 and has held several leadership roles. He started his career at Airbus Helicopters, leading

a transformation programme for the company's Research and Development activities. Rémi then served as the Chief Engineer of the Tiger programme before playing a key role in the development of the H175 programme and its Entry-into-Service as the Chief Engineer.

He also held the position of Head of Development Chief Engineers spearheading engineering activities for major helicopter development programmes. Prior to joining Airbus, Rémi worked as an Associate Director with a consulting firm specialising in industrial strategy. Rémi holds degrees in Engineering and Master of Business Administration (MBA) from Ecole Nationale des Ponts et Chaussées in Paris.

VIVEK LALL APPOINTED CHIEF EXECUTIVE AT GENERAL ATOMICS GLOBAL CORPORATION

New Delhi. Leading Indian-American aerospace and defence expert Vivek Lall has been appointed as the Chief Executive of General Atomics Global Corporation at its headquarters in San Diego, California. Lall had in April last resigned as Vice President of Aeronautics Strategy and Business Development at Lockheed Martin, wanting to spend more time with his family in San Diego, where he resides. Within weeks, the world's premier drone manufacturer roped him in.



"We are pleased to announce that Dr Vivek Lall will assume the position of Chief Executive at General Atomics Global Corporation effective immediately," General Atomics (GA) said in a statement. General Atomics (GA) is one of the world's leading privately held nuclear and defence company.

"Dr Lall's extensive experience in

the US and international markets will strengthen the company's international growth," said General Atomics, which along with its affiliated companies operates on five continents.

For the Jakarta-born, Lall, this is his second stint with General Atomics, which

produces a series of unmanned aircraft and provides electro-optical, radar, signals intelligence, and automated airborne surveillance systems. In his new role as Chief Executive, Lall, 50, would be heading the General Atomics Global Corporation. For over a decade now, Lall has been instrumental in major bilateral defence deals worth around US\$18 billion. This includes the procurement of 24 MH-60R Multi-Role Helicopters from Lockheed Martin for the Indian Navy worth US\$2.6 billion, which was announced during the India visit of President Donald Trump in February. He was appointed to the US Federal Aviation Advisory Committee two years ago and has overseen multiple campaigns as well as pan India strategic industrial tie-ups.

Trained as a private pilot at the Phoenix International Flight Training Center in Florida, Lall has conducted his doctoral work in collaboration with NASA.

ANAND STANLEY APPOINTED PRESIDENT AIRBUS ASIA-PACIFIC



Toulouse. Airbus has named Anand Stanley as President Airbus Asia-Pacific, effective July 1. Based in Singapore, Anand Stanley will lead the strategy and future positioning of Airbus and its divisions across the region.

In this role he will have responsibility for commercial aircraft sales and customer affairs, group-wide government affairs, industrial and joint venture partnerships, as well as the local operations at Airbus sites across the region. Anand Stanley reports to Christian Scherer, Airbus Chief Commercial Officer and Head of International, and will work closely with the Heads of Region for the Airbus Helicopters and Defence and Space divisions who are co-located at the company's Asia-Pacific headquarters in Singapore.

Anand Stanley joined Airbus in 2018 as President & Managing Director of Airbus India, where he has overseen the Airbus business development and advanced the company's position with key stakeholders,

including customers, government agencies and industry partners. Prior to joining Airbus, Anand Stanley held senior positions in the civil aerospace, defence and helicopter markets, as well as in strategic management and M&A planning, having worked with the Linde Group, UTC, Pratt & Whitney, Lockheed Martin and Sikorsky. Over his career he has worked extensively internationally, with more than two decades of involvement in Asia and the Pacific region.

Anand Stanley has an MBA from the University of Virginia-Darden in the US, a Bachelors of Engineering from Andhra University, as well as a postgraduate degree from IMI-Delhi. Anand Stanley succeeds Patrick de Castelbajac, who is leaving Airbus.

JOHN SLATTERY TO BECOME PRESIDENT AND CEO OF GE AVIATION



MOSTON, Mass. GE announced on June 15 that David Joyce, vice chair of GE and president and CEO of GE Aviation, will retire from the company after 40 years of service.

With David's retirement, John Slattery, Embraer's president

and CEO of Commercial Aviation, has been named president-and CEO-elect of GE Aviation, effective July 13. At GE Aviation, Mr. Slattery will run the world-leading provider of commercial and military jet engines and services, as well as avionics, digital solutions, and electrical power systems for aircraft.

Mr Slattery led Embraer's largest business, Commercial Aviation, typically accounting for over half of the Group's revenue and free cash flow as well as about 10,000 of its 18,000 employees. During his tenure at Embraer Commercial Aviation, the E-Jet installed base doubled, the number of operators grew by 45 per cent, the unit backlog grew by 36 percent, and the number of countries

operating the E-Jet increased by 39 per cent.

Mr. Slattery said, "I have long considered GE Aviation to be the leading aviation franchise in the world, and I am humbled to take the helm from David and lead this talented team forward. This is a time of unprecedented change in the aerospace industry yet also an opportunity to reimagine the future of flight and how we can best serve our customers."

In order to ensure a smooth and thorough handover, Mr. Slattery will fully assume the role of president and CEO of GE Aviation on September 1, 2020, at which point Mr. Joyce will transition to non-executive chair of GE Aviation through December 31, 2020.

RK DASH JOINS GRSE AS DIRECTOR, FINANCE



Kolkata. Ramesh Kumar Dash assumed charge as Director (Finance) and Chief Finance Officer (CFO) of Garden Reach Shipbuilders & Engineers Limited (GRSE), Kolkata on July 1. He is an Associate Member of the Institute of Cost Accountants of India. Dash holds a Master Degree in Commerce besides being a Bachelor of Law. Prior to joining GRSE, he was working in HAL, Bangalore. Dash has around 28 years of experience in the field of Finance and Accounts while working in different CPSUs.

JIM TAICLET BECOMES NEW LOCKHEED MARTIN PRESIDENT AND CEO

BETHESDA, Md. In a planned leadership transition, experienced chief executive, Gulf War veteran and pilot James D. Taiclet, 60, on June 15 became president and CEO of Lockheed Martin Corporation.

He succeeds Marillyn A. Hewson, 66, who has served as chairman, president and CEO since 2014 and president and CEO since 2013. Taiclet will continue to serve as a member of the corporation's board, which he joined in 2018. Hewson will become executive chairman of the board and provide ongoing support for the leadership transition.

Taiclet's tenure as CEO of American Tower Corporation started in 2003 and he became chairman, president and CEO in 2004. Since then, American Tower grew significantly and increased its market capitalisation from approximately US\$2 billion to more than US\$100 billion. Taiclet guided the company's transformation from



a primarily US business to a global player in its industry and he is widely regarded as one of America's most successful CEOs.

Prior to joining American Tower in 2001, Taiclet was president of Honeywell Aerospace Services, a unit of Honeywell International, and prior to that was vice president, Engine Services at Pratt & Whitney. He was also previously a consultant at McKinsey & Company, specialising in telecommunications and aerospace strategy and operations.

Taiclet began his career as a US Air Force officer and pilot and served a tour of duty in the Gulf War. He holds a Master's degree in public affairs from Princeton University, where he was awarded a fellowship at the Woodrow Wilson School, and is a distinguished graduate of the United States Air Force Academy with degrees in engineering and international relations.

BRAHMOS ALCM BECOMES INDIA'S FIRST INDIGENOUS WEAPON TO GET 'FLEET RELEASE CLEARANCE' CERTIFICATION

The successful culmination of the BRAHMOS-Su-30MKI weapon-platform integration programme was achieved with the "fleet release clearance" certification awarded to highly advanced BRAHMOS air-launched cruise missile (ALCM), a first for an indigenous weapon of India, from the CEMILAC, DRDO

New Delhi. In a landmark development, the highly advanced BRAHMOS air-launched cruise missile (ALCM), designed and developed by BrahMos Aerospace, has become the first indigenous weapon of India to get the "fleet release clearance" certification from the Centre for Military Airworthiness and Certification (CEMILAC), a regulatory body under Defence Research and Development Organisation (DRDO).

BRAHMOS ALCM, integrated on the Sukhoi-30MKI air combat platform, was successfully inducted into the Indian Air Force on January 20 this year after undergoing a series of spectacular test firings to validate its impeccable land-attack and anti-ship capabilities.

The "fleet release clearance" certification has paved the way



for the pilots of Indian Air Force (IAF) Squadrons to use the missile during combat missions.

The certification was issued to BRAHMOS airborne weapon system by CEMILAC in Bangalore in the presence of all major stakeholders.

FRC is a critical certification for all who are into missile programmes as based on this can the weapon be used during a mission. It is required as it has to be cleared and certified since both the weapon and the

platform be it aircraft or other which will carry the missile have to go through changes.

Before being integrated on Su-30 MKI, the BrahMos underwent several Critical Design changes including weight reduction from the original 2.9 to 2.5 tonne.

This has led to the successful culmination of the BRAHMOS-Su-30MKI weapon-platform integration programme.

GE, SEFINE SHIPYARD SIGN DEAL TO PROVIDE LM 2500 GAS TURBINES TO POWER TURKISH NAVAL FORCES' NEW FLEET REPLENISHMENT SHIP

EVENDALE, OHIO. GE Marine announced it has received a contract from Sefine Shipyard to provide two LM2500 marine gas turbines to power the Turkish Naval Forces' new Fleet Replenishment Ship. Known as the DIMDEG project, this new-generation ship will satisfy the fuel, water transport and supply needs of Turkey's surface combatants in the open seas around the world.



GE has long been a trusted supplier to the Turkish Naval Forces. In fact, all four of Turkey's Ada-class MILGEM multi-purpose corvettes are powered by a GE LM2500 and two diesel engines in a combined diesel and gas turbine configuration. Total propulsion power is 31,000 kilowatts, allowing each ship

to reach maximum speed in excess of 29 knots. Each corvette has an overall length of 99 meters with a displacement of 2,300 tonnes. Additionally, 24 LM2500s operate aboard the Turkish Navy's Barbaros- and Gabya-class frigates.

With a GE gas turbine, navies have worldwide support whether onshore or at

sea, and interoperability benefits with other allied ships. GE has delivered gas turbines onboard 646 naval ships serving 35 navies worldwide and provides 97 per cent of the commissioned propulsion gas turbines in the United States Navy fleet.

With GE's split casing compressor and power turbine design, in-situ maintenance is allowed, often making a gas turbine removal unnecessary; navies save millions of dollars a year and weeks/months of ship unavailability. GE's marine gas turbine business is part of GE Aviation and is headquartered in Cincinnati, Ohio. GE is one of the world's leading manufacturers of marine propulsion products, systems and solutions including six aero-derivative gas turbines ranging from 6,000 to 70,656 shaft horsepower/4.6 to 52.7 megawatts. These gas turbines reliably operate the world over in some of the most arduous conditions in temperatures ranging from -40 to 120 degrees F/-40 to 48 degrees C.

LOCKHEED MARTIN DELIVERS FIRST KC-130J SUPER HERCULES TANKER TO US MARINE CORPS



MARIETTA, Ga. Lockheed Martin recently delivered the first KC-130J Super Hercules tanker assigned to Marine Aerial Refueler Transport Squadron 452 (VMGR-452), the Marine Forces Reserve squadron at Stewart Air National Guard Base, New York. A US Marine Corps crew ferried the aircraft from Lockheed Martin's facility in Marietta on May 28 to the aircraft's new home. VMGR-452 is the second Marine Reserve squadron to operate KC-130Js and this delivery signifies the recapitalisation of the squadron's existing KC-130T fleet. VMGR-452 — known as the Yankees — has operated Hercules tankers for more than 30 years, flying KC-130s in support of Operations Desert Storm, Enduring Freedom and Iraqi Freedom. The proven and battle-tested KC-130J builds

on the Hercules' proven tanker refueling system while taking full advantage of the tremendous technological and performance enhancements found only in a Super Hercules. Compared to legacy models, the KC-130J delivers increased speed and fuel efficiency, improved payload/range capabilities, an integrated defensive suite, automated maintenance fault reporting, high-altitude ramp and door hydraulics, and unmatched situational awareness with its digital avionics and dual Head Up Displays.

NAVANTIA SETS EXAMPLES TO BOOST MAKE IN INDIA WITH 100 SIDE MEETINGS, SUBMITTING 300 RFIS FOR P75 (I)

New Delhi. In a boost to Make in India in the defence industry, five weeks since April 21 when the Industry Day organised by Spanish state-owned company known for its design and construction of high technology military and civilian vessels Navantia saw it holding more than 100 side meetings and submitting 380 Requests for Information (RFIs) specific to P75(I) submarine project.



The Navantia-organised programme saw participation by more than 200 Indian companies, and the RFIs receiving companies were 90 per cent Indian and they cover 80 per cent of the P75(I) submarine cost items.

Navantia is participating in the P75(I) project using the basis of the S80 plus, the only 3000 t AIP submarine currently under construction worldwide.

“This baseline is very close to the requirements of the Indian Navy, possibly the closest among any possible. For this reason, technical effort at this stage is minimum and Navantia is focusing in other aspects such as the indigenisation

of major equipment and materials, and Transfer of Technology (ToT) options,” said Pablo Martínez de Rituerto, Navantia’s Project Director for P75(I). “This baseline is very close to the requirements of the Indian Navy, possibly the closest among any possible. For this reason, technical effort at this stage is minimum and Navantia is focusing in other aspects such as the indigenisation of major equipment and materials, and Transfer of Technology (ToT) options”

At the Industry Day in April, Navantia informed that they had some areas with no Indian supplier identified, and that they planned the submission of Purchase Technical

Specifications. Despite the COVID-19 situation, Navantia and their Indian partners have continued working online, which has proved to be a very effective solution, enabling an average of three to four meetings per day, with significant reductions in travel time and cost savings. More than 100 side meetings have been organised, and all the areas with no Indian supplier have been covered.

One hundred fifty Purchase Technical Specifications (PTs) have been submitted in the last five weeks together with nearly 380 Requests for Information (RFIs), 92 per cent to Indian companies, enabling Navantia to gain a high understanding of the Indian industry and its capabilities. This information covers 80 per cent of the P75(I) submarine cost items.

The indigenisation effort still continues with the target of achieving 500 PTs and nearly 1500 RFIs within the next three to four months. This activity includes the consultation to current S-80P key suppliers, to promote either fabrication in India, or the incorporation of Indian components.

Pablo Martinez de Rituerto assures “Navantia is fully committed to India’s P75(I) project, and is willing to provide the required “Know How” and “Know Why” through a Technology Transfer programme to achieve permanent design, construction and maintenance capabilities in India”.

This programme leverages previous successful ToT experiences, for example in Australia where in June 2020 the Commonwealth of Australia signed a Strategic Agreement with local company Navantia Australia Pty Ltd. recognising it as a Design Authority for four classes of Royal Australian Navy (RAN) ships.

INS JALASHWA EMBARKS INDIAN NATIONALS AT BANDAR ABBAS, IRAN

New Delhi. Indian Naval Ship INS Jalashwa arrived off Iranian port of Bandar Abbas on the evening of June 24 and entered harbour on June 25 for another mission under the Indian Navy’s Op Samudra Setu. The ship embarked 687 Indian citizens after the mandatory medical and baggage screening.

During the transit to Iran, the crew of INS Jalashwa undertook preparatory activities for evacuation operation which included sanitisation and preparation of living spaces for evacuees, preparation of welcome kits comprising masks and toiletries followed by allocation of bunks as per passenger manifest received from the Indian Embassy in Tehran. The ship also handed over two Air Evacuation Pods indigenously developed by the Indian Navy, to the Iranian authorities. Living spaces onboard Jalashwa have been divided into three zones, while adhering to COVID-19 precautions, with zones earmarked for embarked personnel as well as the ship’s crew that may frequently come in contact with them. The ship sailed out of Bandar Abbas late in the evening on June 25 on completion of embarkation.

UN SECRETARY GENERAL HONOURS INDIAN ARMY MAJOR SUMAN GAWAN

New Delhi. Indian woman army officer Major Suman Gawani has been honoured by United Nations chief Antonio Guterres on May 29 along with Commander Carla Monteiro de Castro Araujo from Brazil with the 2019 UN Military Gender Advocate of the Year Award, saying their “inspiring work” promotes equality in the forces. Secretary General Guterres bestowed the award to Gawani and Araujo in a virtual ceremony, commemorating the International Day of Peacekeepers. This is the first year the prestigious award has gone to a peacekeeper from India. Military Observer Gawani has recently completed an assignment in South Sudan. Araujo is working in the United Nations’ Multidimensional Integrated Stabilisation Mission in the Central African Republic. He said Gawani and Araujo’s “inspiring work has made a remarkable difference in promoting gender equality and empowering local women and your own colleagues.” “Your contributions are proof that women peacekeepers are vital to peace and security everywhere,” the UN secretary general said.

INDIA KEEPING A CLOSE EYE ON ONGOING PAKISTAN AIR FORCE WARGAMES ‘HIGH MARK’

New Delhi. The ongoing Pakistan Air Force (PAF) war games “High Mark” is being closely monitored by India. The exercise by the PAF involves its fighter and other aircraft fleets. The wargames are being held over Pakistan air space and a Notice to Airmen (NOTAM) had been issued by the Pakistan Air Force to inform about its aerial drills, a news agency said quoting government sources. A close watch is being kept on their activities by the Indian Air Force as the Pakistani jets have been carrying out different manoeuvres including night-time flying by its combat aircraft including Chinese JF-17, F-16s, and Mirage-3s, sources said.



The Pakistani aircraft also have been practicing drills like defending against night-time raids like the Balakot aerial strikes by the Indian Air Force in February last year, they said. The Pakistani jets also flew extensively over Karachi city last night in practice missions. Last month also, Pakistan had started flying night time sorties anticipating retaliation by Indian Air Force after a Colonel was martyred in an encounter in Handwara in Kashmir.

INDIAN NAVY INDUCTS INDIGENOUSLY DEVELOPED TORPEDO DECOY SYSTEM



New Delhi. Anti-Submarine Warfare (ASW) capability of the Indian Navy received a major boost on June 26 with the conclusion of a contract for Advanced Torpedo Decoy System ‘Maareech’ capable of being fired from all frontline warships.

Design & Development of this anti-torpedo decoy system has been undertaken indigenously by Defence Research and Development Organisation (DRDO) labs NSTL and NPOL. Defence Public Sector Undertaking (DPSU) Bharat Electronics Limited (BEL) would undertake the production of this decoy system.

The prototype of this system installed onboard a nominated naval platform had successfully completed all user evaluation trials and demonstrated the features as per the Naval Staff Qualification Requirements (NSQRs). This induction not only stands testimony to the joint resolve of the Indian Navy and DRDO towards indigenous development of defence technology, but has also given a major fillip to the Government’s Make in India initiative and the country’s resolve to become ‘Atmanirbhar’ in niche technology.

AIRBUS DEVELOPING SIXTH GENERATION AIRCRAFT

New Delhi. With countries rapidly developing integrated air defence systems, hypersonic weapon technologies and low observability technologies there is an imperative need for western air forces need to regain their ability to counter threats by accessing highly contested environments in a scalable, flexible and dynamic way rather than a local and static one.

To counter this, French aircraft manufacturer Airbus is developing sixth generation manned fighters with unmanned platforms, the Next Generation Weapon System (NGWS) which will provide European air forces and navies with capabilities well beyond existing fighters.

The Next Generation Fighters (NGF) will set the next level of survivability in terms of passive stealth (signature reduction and electromagnetic emission control) and active stealth (electronic counter measures).

The heart of the NGF will be provided by its extremely capable avionics and sensor suite. The increase in processing power, storage and connectivity will grant the pilot with greatly heightened situational awareness

and the ability to rely not only on its own sensors and effectors, but also on other platforms' ones.

Combined with the introduction of artificial intelligence and the ability to team with unmanned platforms, the NGF will become a battlefield management platform capable of operating deep within the enemy airspace.

The NGF alone will not suffice for the most demanding missions in highly contested environments. To counter such threats, the NGF will team with unmanned platforms called Remote Carriers or RCs acting as force multipliers. Adding capabilities in a scalable and flexible manner will enhance the overall mission effectiveness, efficiency and survivability of the NGWS.



RAFAEL UNVEILS MULTI-MISSILE SPIKE NLOS LAUNCHER CONFIGURATION ON BWP-1

TEL AVIV. RAFAEL Advanced Defense Systems Ltd. is participating in Poland's "Ottokar-Brzoza" tender (formerly known as "Tank Destroyer") in co-production with local Polish Conglomerate PGZ, which is competing, in part, with BWP-1 and KTO ROSOMAK Armoured platforms.

Recently, RAFAEL has unveiled its new multi-missile launcher design including eight ready-for-launch SPIKE NLOS missiles. With a standoff range of 32km, SPIKE NLOS is the longest range variant of the SPIKE Family, featuring all-weather performance, enabling the weapon to effectively prosecute enemy tank formations. One SPIKE NLOS battery can cover very large operational areas, creating a significant tactical footprint.

SPIKE NLOS is a 5th Generation ATGM, which includes a highly advanced electro-optical guidance unit, enabling passive target engagement (no laser emission, radar signals or GPS-dependence). The unique combination of standoff and EO guidance allows a SPIKE NLOS unit to launch stealth salvo attacks, engaging multiple armoured targets simultaneously, breaking the enemy's momentum.

The SPIKE NLOS missile is in service with numerous armed forces around the world, including several NATO members

The new SPIKE NLOS launcher is based on a stand-alone multi-purpose launcher that can be integrated onto any current or future Polish platform as the Polish BWP-1, the KTO ROSOMAK or the Future Borsuk IFV.

HENSOLDT LEADS NEW RADAR CONSORTIUM



Taufkirchen, Germany. Sensor system supplier HENSOLDT has been awarded a contract by Airbus Defence and Space to develop and produce a new Active Electronic Scanning Array (AESA) radar for the German and Spanish Eurofighter fleets. The project is jointly financed by the Eurofighter partner nations Spain and Germany, who will also be the first users of the radar in their fleets. Following budget approval by the Spanish government and most recently by the German Bundestag in mid-June, the contracts worth over 1.5 billion euros have now been signed.

"The fact that Germany and Spain are taking a pioneering role in the modernisation of the Eurofighter is a signal of confidence in European defence cooperation," said HENSOLDT CEO Thomas Müller. "This decision ensures that our armed forces will continue to be able to fulfill their mission in the future while being protected in the best possible way."

The contracts cover the German-Spanish new development of core components of the Eurofighter radar – including a digital multi-channel receiver and transmitter/receiver modules of the antenna – and the equipping of approximately 130 Eurofighter aircraft of tranches two and three.

The development is being carried out by a Spanish-German industrial consortium under German leadership with the support of the Eurofighter nations Great Britain and Italy.

HENSOLDT has already been involved in the development and production

of the Eurofighter sensor technology currently in use. At its radar centre in Ulm, HENSOLDT currently employs 2,200 people, and in the Eurofighter radar sector alone, the company expects to create 400 highly qualified jobs over the entire programme period. The sensor specialist is also investing around 15 million euros in the necessary capacity expansion, primarily at the Ulm site. HENSOLDT is a pioneer of technology and innovation in the field of defence and security electronics. Based in Taufkirchen near Munich, the company is a German Champion with strategic leadership positions in the field of sensor solutions for defence and non-defence applications.

HENSOLDT develops new products to combat a wide range of threats based on innovative approaches to data management, robotics and cyber security. With approximately 5,500 employees, HENSOLDT generated revenues of 1.14 billion euros in 2019.

FRENCH NAVAL GROUP HAILS FDI LIMIT HIKE

New Delhi. The move by the Narendra Modi government to hike Foreign Direct Investment limit to 74 per cent in the defence sector has been welcomed by French firm Naval Group saying it will help Indian military industry to increase its capabilities and also invite global manufacturers to invest and create manufacturing bases in India.

"We welcome the forward-thinking announcement to increase the foreign direct investment (FDI) limit in defence to 74 per cent under automatic route. This will support the Indian defence industry, as part of economic sustenance post-COVID-19, to increase its capabilities. This also may attract foreign OEMs to gradually invest in the sector and create technical and manufacturing bases in India," Naval Group's Senior Executive Vice President Alain Guillou said. Guillou said the Indian government should now share the fine prints of the new FDI policy with the industry soon along with its integration with the new Defence Procurement Policy-2020 to empower the Make in India policy.

On the government emphasis on acquiring Make in India products, he said that "Naval Group is the only foreign manufacturer to have established an Indian company solely for the purpose of 'Make in India' by developing the Indian defence eco-system and building design services with talented Indian engineers." Asked how should the Indian Navy move ahead with its submarine building plans in times of COVID-19 when fund crunch is likely to be there, Guillou said Naval Group has been shortlisted for the Indian Project-75 India programme and would be consulting with two Indian strategic partners L&T and MDL.





BAE SYSTEMS TO PRODUCE MORE VERTICAL LAUNCHING SYSTEM CANISTERS FOR US NAVY

New Delhi. The US Navy has awarded BAE Systems a contract to produce multiple types of Vertical Launching System (VLS) canisters with a total lifetime maximum value of US\$955 million. The initial contract was awarded in February with US\$24 million funded, followed by contract modifications of US\$99 million and US\$43 million received in March and May respectively. Options on the contract include additional canister types for future Navy production requirements. VLS canisters serve in a multifaceted role as containers for missile shipping and storage as well as launch tubes when loaded into the VLS. They also provide identification and firing support to multiple missile types, including the Tomahawk Land Attack Missile, Standard Missile-2, Standard Missile-3, Standard Missile-6, and the Evolved SeaSparrow Missile.

Under this latest contract, BAE Systems will produce canisters not only for the US fleet but also for allied nations under a Foreign Military Sales programme. Deliveries for the initial order are expected to begin in early 2021, and if all options are exercised, the contract could support the production of canisters over a five-year period, with deliveries extending into 2025. Work on the new contract will be performed at the BAE Systems production facility in Aberdeen, South Dakota, with engineering and programme support in Minneapolis. ■

MEIL FORAYS INTO DEFENCE SECTOR

H **Hyderabad.** In keeping with the Government's policy of encouraging the indigenous industry in the defence sector, Hyderabad-based infra major Megha Engineering and Infrastructures Limited (MEIL) is setting up a facility with an investment outlay of Rs 500 crore as part of its entry into the defence equipment manufacturing sector.

The company has obtained necessary permissions to manufacture weapons, vehicles, ancillaries and arms and equipment for the defence sector, a press release from the company said on June 15. "To produce weapons, vehicles, ancillaries and arms, MEIL has applied for permission under Defence Procurement Policy 2020 which is a part of the Make in India initiative. After careful examination of MEIL's capabilities under various government stipulations, the Government of India issued the approvals. MEIL group will set up a manufacturing unit with a capital outlay of Rs 500 crore at various stages," it said.

MEIL had begun its journey with

the construction and infrastructure sector and expanded its wings into oil and gas, power, solar power, aviation sectors and is now entering defence equipment production. "With the necessary approvals in place, Megha group is setting up most modern manufacturing facilities to produce various cutting-edge defence equipment indigenously at our upcoming new facility at Hyderabad. I am happy that Megha group is fulfilling Prime Minister's vision and dream of Make in India initiative," Srinivas Bommareddy, President, MEIL, said.

MEIL's upcoming defence manufacturing unit will produce ancillaries to the combat vehicles, light combat vehicles, armoured engineer recovery vehicles, armoured recovery vehicles. This unit will also produce soldiers carrying vehicles (APC), infantry combat vehicles (ICV), armed multi-purpose vehicles, mine-laying vehicles, bridge laying vehicles, all-terrain light combat vehicles (ACTV). It will manufacture missiles, multi-barrel rocket launchers, machine guns, rockets, cannons and equipment to missiles, it added. ■



GRSE DELIVERS FIFTH FAST PATROL VESSEL TO INDIAN COAST GUARD

K **Kolkata.** India's premier warship builder Garden Reach Shipbuilders and Engineers (GRSE) Ltd on June 9 delivered ICGS Kanaklata Barua, the fifth and final ship in the series of Fast Patrol Vessels (FPVs) for the Indian Coast Guard. This is the 105th vessel delivered by the Miniratna Category 1 Defence PSU shipyard. The handover was done at GRSE's Fitting Out Unit in Kolkata.



The Protocol of Delivery and Acceptance was signed between Rear Admiral VK Saxena, IN (Retd), Chairman & Managing Director, GRSE and Commanding Officer of the vessel, Comdt (JG) Subhash Kapoor in the presence of DIG RH Nandodkar TM, SS Dogra, Director (Finance), Cmde S Nayyar, Director (Shipbuilding), Cmde PR Hari, Director (Personnel) and other senior officials of GRSE and Indian Coast Guard.

The Fast Patrol Vessels which have been entirely designed by GRSE's Central Design Office. With an efficient hull form developed in-house and proved through extensive model testing, these ships are designed to achieve speeds exceeding 34 knots with an endurance of more than 1,500 nautical miles.

These fuel-efficient and powerful platforms are well suited for operations like patrolling, anti-smuggling, anti-poaching and rescue.

They are fitted with state-of-the-art Main Engines with advanced control systems & water jet units and an 'Integrated Bridge System' integrating

all Communication and Navigation Systems.

These ships are also fitted with 40/60 Gun as Main Armament and have improved habitability features with fully air-conditioned modular accommodation for 35 personnel. GRSE had earlier made deliveries of FPVs ICGS Priyadarshini, ICGS Annie Besant and ICGS Amrit Kaur in this series.

GRSE has successfully developed an array of world-class platforms armed with high-tech infrastructure in the six decades since its inception in 1960. This includes Frigates, Missile Corvettes, Anti-Submarine Warfare Corvettes, Landing Ship Tank (Large), Landing Craft Utility Ships, Fleet Tanker, Survey Vessels, Fast Attack Crafts, Fast Patrol Vessels, Inshore Patrol Vessels, Offshore Patrol Vessel, Hovercrafts, Fast Interceptor Boats for the Indian Navy and Coast Guard and friendly foreign nations.

The only shipyard in the country to have delivered 105 warships, GRSE is eminently positioned to construct large warships harnessing advanced modular shipbuilding technology at par with the best in the world.

The enhanced shipbuilding capacity enables GRSE to construct 20 ships concurrently. Apart from shipbuilding and ship repairs, GRSE has also made its mark in the engineering business, building Bailey Bridges, Deck Machinery for ships and Diesel Engines for marine applications. ■

RAYTHEON TECHNOLOGIES TO TRAIN AFGHAN AIR FORCE PILOTS



ORLANDO, Florida. The US Army Contracting Command has selected Raytheon Intelligence & Space, a business of Raytheon Technologies, to train Afghanistan Air Force pilots under a three-year contract valued up to US\$145 million.

Raytheon will conduct initial flight training for the US Army's Program Executive Office for Simulation, Training and Instrumentation. The Afghanistan Air Force students will go through flight school in third-party nations in Europe and the West Asia. Raytheon will provide tailored training for the Afghanistan Air Force pilots, including classroom, fixed-wing and rotary aircraft instruction.

The Raytheon Afghanistan Air Force pilot training program began in 2010. The original mission for basic flight proficiency has expanded to advanced aircraft qualifications and flight techniques. Raytheon's focus on mentorship and leadership training helps the programme maintain a 93 per cent graduation rate with every student returned to Afghanistan.

The Afghanistan Air Force Pilot Training programme was awarded under the Enterprise Training Services Contract vehicle. Raytheon previously announced a related task order for the Aviation Maintenance Training programme. ■

GE AVIATION DELIVERS FIRST F414 ENGINE TO SOUTH KOREA FOR KF-X PROGRAMME

Melbourne. With GE Aviation delivering the first engine for South Korea's indigenous KF-X fighter jet, although development partner Indonesia continues to rack up overdue payments for its share. The engine manufacturer announced on June 5 that it delivered the first F414-GE-400K engine to Korea Aerospace Industries in May. KAI is developing the KF-X for the South Korean Air Force, which intends to replace its fleet of McDonnell Douglas F-4 Phantom II and Northrop F-5E/F Tiger II fighters with the new jet.



KAI selected GE Aviation in May 2016 to supply F414-GE-400K engines for the KF-X fighter, with an eventual total of 240 F414s plus spares to be supplied to KAI to power 120 KF-X jets for South Korea.

A total of 15 engines and six prototypes are expected to be

produced for the programme by 2021, with first flight expected in 2022. Development is expected to be completed by 2026.

The F414 also powers the Boeing F/A-18E/F Super Hornet, the Saab JAS 39E/F Gripen and India's HAL Tejas Mark 2 combat aircraft.

South Korea plans to primarily



equip the KF-X with indigenous avionics. These will come mostly from LIG Nex1 and Hanwha Tecwin, although Israel's Elbit Systems will supply terrain following and avoidance systems for the active electronically scanned array radar under development by Hanwha. The Israeli company announced the US\$43 million contract in early February.

The KF-X is also to be compatible with European air-to-air missiles. South Korea signed a contract with European missile-maker MBDA in November 2019 to integrate the Meteor, while Diehl-BGT is also reportedly set to sign a similar contract for its IRIS-T.

GOVERNMENT MULLS SEPARATE BUDGETARY PROVISIONS FOR INDIGENOUS DEFENCE ITEMS

New Delhi. In a move to encourage domestic industry in the defence equipment sector, the government will make separate budgetary provisions for procuring only India made defence items and will generate a negative list of weapons that can be imported as part of larger reforms to boost the economy in the post Covid-19 world.

Announcing a series of reforms for defence production on May 16, Finance Minister Nirmala Sitharaman said that the idea is to bring down India's large weapons import bill and while certain high technology systems will still be procured from abroad, emphasis will be on procuring locally made products.

The government also announced that the Foreign Direct Investment (FDI) limits are being enhanced from 49 per cent to 74 per cent under the automatic route, even though security clearances will still be required. It is not immediately clear how much impact this could have, given that even 100 per cent FDI is currently allowed in the defence sector on a case by case basis.



On imports, the minister said that while essential weapons not produced here will be sourced from abroad, a negative list will be generated and notified for which all imports will be banned. This list will be generated by the Department of Military Affairs (DMA) and will have year wise timelines to reduce import dependency.

The government said that it would

also move towards indigenisation of spare parts for foreign systems that are already in service. Indian industry will be encouraged to produce spare parts locally for the consumption of the armed forces.

Besides the overhauling of testing and trial procedures, the defence ministry will also set up a Project Monitoring Unit to support contract management.

PHILIPPINES EXPLORES OPTIONS TO BUY BRAHMOS

New Delhi. Philippines has expressed interest in buying several defence platforms including the BrahMos missile, said Indian ambassador to the Philippines Jaideep Majumdar.

"There are discussions going on a range of weapons systems between India and the Philippines. Once travel becomes possible, the joint committee that looks at defence logistics will meet and discuss

these things," Majumdar said on May 18. The Philippines and India have had price negotiation talks for the BrahMos cruise missile jointly developed by India and Russia, with the aim of concluding a deal in 2020, sources in the know said.

The Philippines is one among several countries in Southeast Asia, including Thailand, Indonesia and Vietnam that has shown an interest in purchasing

the land and sea-based versions of the supersonic cruise missile.

The cost of the system was a key factor in Manila's decision to equip the Philippines Army's first Land Based Missile System Battery, which was raised and activated in October last year. Though India has offered a \$100 million line of credit to the Philippines for defence purchases, Manila is exploring

MISSILE FROM INDIA



the option of acquiring the BrahMos system with its own funds to be allocated in the next budget.

During Prime Minister Narendra Modi's visit to the Philippines in 2017, India and the Philippines had signed an MoU on defence industry and logistics cooperation to provide a framework for strengthening cooperation and coordination in

logistics support and services, and in the development, production and procurement of defence hardware.

BrahMos was developed by the Indo-Russian joint venture set up in 1998. The Indian Navy inducted the missile on its frontline warships in 2005 and the army began inducting the BrahMos from 2007 after a series of tests.

TATA ADVANCED SYSTEMS, LOCKHEED MARTIN JOINT VENTURE TLMAL TO ACCELERATE MANUFACTURING IN INDIA



Hderabad. Tata Lockheed Martin Aerostructures Ltd (TLMAL), a joint venture between Tata Advanced Systems Limited (TASL) and Lockheed Martin, is seeing growth opportunities through its operations in Hyderabad, at a time when Central government is bringing defence reforms in terms of defence procurement, pushing indigenous manufacturing and increasing foreign direct investment (FDI).

Sharing the near-term outlook, Abhay Paranjape, chief operating officer, Tata Lockheed Martin Aerostructures, said, “we are already engaged in additional manufacturing for fighters and helicopters in Hyderabad. This will accelerate more by the end of 2020. Once the new defence procurement procedure (DPP) is finalised, there will be more clarity on investment opportunities.”

The company is also developing F-16 wings at its facility. It expects a capacity to make three to four wings a month in the steady state. Talking about the ecosystem in the State, Paranjape said, Telangana has an advantage as it has a right mix of private industry in Adibatla

cluster and in the GMR Aerospace Park, as well as the presence of public sector units and research labs headed by DRDO and MIDHANI.

Paranjape observes that the recent DPP aims at time-bound procurement. Delays in procurement have been plaguing the Indian defence procurement system for years and that has been one of the major hurdles for industry to go and participate in the procurement process. With the time-bound procurement process, there will be a lot of interest in the industry, globally, to try and see how they can participate in the defence procurement.

There will also be another trend, ‘buy global but make in India’, which

will make global original equipment manufacturers (OEMs) to look at setting up their manufacturing base in India. These developments will open up new doors for the indigenous industry in the country.

From the technology point of view, he said, “new materials are coming in for all sorts of platforms and products. Composites are getting more and more prevalent in structures. Smart structures are coming through that give stealth to aircraft. The man-machine interface is going through radical changes. Unmanned aircraft systems (UAS) are being increasingly used. India is poised to take advantage of all these developments.” Smart network systems are also offering new ways of operations, both in terms of on-ground as well as the systems in air. Machine learning, artificial intelligence and networking are going to make a significant impact. Industry 4.0 will bring a new change in defence manufacturing, Paranjape noted.

BOEING ROLLS OUT FIRST LOYAL WINGMAN UNMANNED AIRCRAFT

SYDNEY. A Boeing-led Australian industry team has presented the first unmanned Loyal Wingman aircraft to the Royal Australian Air Force, a historic milestone for the company and the Commonwealth. The aircraft, which uses artificial intelligence to extend the capabilities of manned and unmanned platforms, is the first to be designed, engineered and manufactured in Australia in more than 50 years. It is Boeing’s largest investment in an unmanned aircraft outside of the United States. As the first of three prototypes for Australia’s Loyal Wingman Advanced Development Program, the aircraft also serves as the foundation for the Boeing Airpower Teaming System (ATS) being developed for the global defense market. More than 35 members of Australian industry are supporting prototype work across four Australian states. With a global market demand for highly capable but extremely affordable unmanned aircraft, Boeing applied company-wide innovation to achieve those goals.

The aircraft was engineered using a digital twin to model its structures, systems, capabilities and full life-cycle requirements; manufactured with Boeing’s largest-ever resin-infused single composite piece; and assembled using proven advanced manufacturing processes. The Loyal Wingman prototype now moves into ground testing, followed by taxi and first flight later this year.



SIKORSKY SIGNS US\$905 MILLION DEAL FOR 24 MH-60R ANTI-SUBMARINE HELICOPTERS FOR INDIAN NAVY



New Delhi. Sikorsky has officially inked a contract with the US Navy to provide 24 MH-60R helicopter to the Indian Navy for anti-submarine warfare. The US\$905 million deal with New Delhi was anticipated, as it was reportedly cleared by the Defence Ministry in February and the sale will be handled by the US Navy via the Foreign Military Sale (FMS) process. The first helicopter delivery to the Indian Navy is anticipated next year.

Sikorsky declines to say what weapons and subsystems the Indian navy’s MH-60Rs would have. However, the manufacturer says the equipment would enable anti-submarine and anti-ship warfare, as well as special operations, search and rescue, utility, vertical replenishment, and command and control missions.

However, that former notice valued the possible deal at US\$2.6 billion, much higher than the package

announced today, so it is not clear what weapons and related equipment would be included in the final sale.

The main operator of the MH-60R helicopter is the USN, which has 289 in its fleet. It plans to fly the aircraft through 2040. The Royal Danish Navy, Royal Australian Navy and Royal Saudi Naval Forces fly the aircraft as well.

The Indian Navy is also looking for 111 Naval Utility Helicopters (NUH) to replace its aging fleet of Hindustan Aeronautics Ltd’s Chetak helicopters. Those new helicopters are intended for search and rescue, casualty evacuation, passenger and cargo transportation and torpedo drop roles.

India wants 95 helicopters out of the 111 Naval Utility Helicopters to be manufactured in country. The local offset would help replace production for the Chetak, a version of the Airbus Alouette III built in India under license.

CONTROL ON MATERIAL AND MANUFACTURING CAPABILITY TO BE SELF-RELIANT: DRDO CHIEF

New Delhi. The response from the defence scientists to the COVID-19 pandemic has been "tremendous" and that "this is the right moment to promote indigenous technology and indigenous products and we all have to energise ourselves and ensure the system works. There is need to develop products of tomorrow," said Dr Satheesh Reddy, Secretary Department of Defence R and D and Chairman Defence Research and Development Organisation (DRDO).

Speaking on "Self Reliance in Defence Technologies" on a web programme, he said that it is imperative to become self-reliant in defence technology and for this there is need to focus on "control on material and manufacturing completely. It is very important on the need to concentrate and work towards manufacturing capability."

Apart from this, he said it is encouraging to see that more and more industries are joining hands in the defence sector. "Industry has come a long way and from the 1980s when there were very few industries working in defence, today technology scenario has changed and there are over 1,800 industries working in the defence sector," Dr Reddy said.



GA-ASI PARTNERS WITH CONFLUX ON ADDITIVE MANUFACTURING TO INTEGRATE ONTO RPAS

SAN DIEGO. General Atomics Aeronautical Systems, Inc. (GA-ASI) has partnered with Australia-based Conflux Technology on the development of a heat exchanger. The part is being developed using a metal Additive Manufacturing process for possible integration onto GA-ASI's line of Remotely Piloted Aircraft Systems (RPAS). Conflux Technology is an Additive Manufacturing applications company based in Geelong, Victoria that specialises in thermal and fluid engineering. Conflux is providing design expertise in the optimization of Additive Manufacturing heat exchangers to increase the performance of RPA.

"GA-ASI and Conflux are developing novel and state-of-the-art thermal solutions for application to our existing and next generation RPAS. This will allow enhanced endurance and lower manufacturing cost, as well as more flexibility in our product design and integration," said Linden Blue, GA-ASI CEO. MQ-9B follows the legacy of GA-ASI's Predator® series of RPAS, the world's most trusted and capable armed Medium-altitude, Long-endurance (MALE) RPA Systems. The entire fleet has accumulated more than six million flight hours to date.



MOD CONTINUES DIALOGUE WITH EMPLOYEES ASSOCIATIONS ON OFB CORPORATISATION

New Delhi. A High Level Official Committee (HLOC) of Department of Defence Production (DDP), Ministry of Defence (MoD) continued dialogue with employees' federations/associations to address their concerns regarding corporatisation of Ordnance Factory Board (OFB) in New Delhi on June 25.

It is part of the Atmanirbhar Bharat package that the Government announced on May 16, stating its corporatisation will improve autonomy, accountability and efficiency in ordnance supplies.

Immediately after the announcement, the Committee headed by Additional Secretary in the Department along with senior Army officials had commenced dialogue process with employee federations and associations on June 5. The HLOC has been holding these meetings through video conferencing with OFB employees' associations and federations.

The discussions were held in a cordial atmosphere. The request of the associations to hold more meetings with them was considered by the Committee headed by VL Kantha Rao, Additional Secretary, DDP, MOD and it was assured that the engagement with the federations and associations will continue.

'STRONG INDIGENOUS DEFENCE MANUFACTURING CAPABILITIES WOULD SAFEGUARD INDIA'S PROSPERITY'

New Delhi: Minister of State for Defence Shripad Naik has emphasised on the need for a strong indigenous defence-manufacturing capabilities as this would help India safeguard its prosperity generated over the last couple of decades.

Inaugurating a two-day "Defence Conclave 2020" in Gujarat via video-conferencing on June 25, a Defence Ministry release said that Naik told the participants that "strong defence capabilities would help the nation in

safeguarding the prosperity generated over the last couple of decades and also protect key economic interests like trade routes and safety going forward." Naik emphasised on the huge opportunity the defence sector presents for the micro, small and medium enterprises (MSMEs). "The slowing down or saturation of markets in other sectors has also been responsible for directing their (MSMEs) interest towards the unexplored defence sector, which promises sustained business opportunities," he said.



BOEING AWARDED \$3.1 BILLION IN US NAVY CONTRACTS FOR CRUISE MISSILE SYSTEMS



ST. CHARLES, Mo. The US Navy has awarded Boeing a combined \$3.1 billion in contracts for Harpoon and Standoff Land Attack Missile Expanded Response (SLAM ER) weapon systems in support of Foreign Military Sales (FMS). "We are pleased to continue our long legacy of partnering with the Navy to build weapons that defend America and its international partners," said Cindy Gruensfelder, vice president, Boeing Weapons. "These awards will not only extend production of the Harpoon program through 2026, they will also restart the production line for SLAM ER and ensure deliveries through 2028." Boeing last delivered the SLAM ER weapon system in 2008. In October 2019, Boeing began construction on a new 35,000 sq. ft. manufacturing facility to support increased production for the Harpoon and SLAM ER programmes. Construction is expected to be complete in 2021.

BOEING DELIVERS FIRST F/A-18 BLOCK III SUPER HORNETS TO US NAVY FOR FLIGHT TEST

ST. LOUIS, Mo. Boeing delivered the first two F/A-18 Block III Super Hornets to the US Navy for flight testing. One jet is a single-seat E model and the other is a two-seat F model.

"The aircraft will be used for carrier suitability and integration testing of all Block III mission system components," said Steve Wade, Boeing vice president, F/A-18 & E/A-18G programmes. "These test jets will ensure crews have plenty of time to become comfortable with the new, next-generation systems before receiving operational aircraft."

The Navy will use the aircraft to familiarise pilots with the advanced cockpit system's new 10-inch-by-19-inch touch screen display and test the capabilities delivered with the enhanced network capability. Last year, Boeing was awarded a contract from the Navy for 78 Block III Super Hornets. Boeing and Navy test teams have also flown conformal fuel tank prototypes.





ROSOBORONEXPORT TO SHOW RUSSIAN PRODUCTS FOR ALL SEGMENTS OF GLOBAL ARMS MARKET AT ARMY 2020 FORUM

Moscow. Rosoboronexport JSC (part of the Rostec State Corporation) is all set to present to its foreign partners weapons for all segments of the global arms market at the Army 2020 International Military-Technical Forum, which will be held on the premises of the Patriot Convention and Exhibition Center of the Armed Forces of the Russian Federation at Kubinka near Moscow from August 23 to 29. For several years, the Army Forum has become not only one of the most representative Russian exhibition projects, but also one of the most authoritative international venues for discussing issues of military and military-technical cooperation. Rosoboronexport is one of the main sponsors and active participants of the event.

Among the key features of the Army Forum are the exceptional visibility and comprehensive nature of the exhibition. The combination of static displays and live demonstrations makes it possible to better assess the advantages of the presented weapons, military and special equipment, and civilian products. For this purpose, three Land Forces, Naval and Air Force demonstration clusters are used.

UP GOVERNMENT INVITES US-BASED COMPANIES TO SHIFT INVESTMENT FROM CHINA

New Delhi. In the wake of COVID-19 pandemic and souring US-China relations, Uttar Pradesh government of chief minister Yogi Adityanath is making changes in the industrial and sectorial policy to attract US-based companies to shift their investment from China to the state. Taking the first step in the direction, the state government held a discussion with over 100 companies through video conferencing on April 28. According to reports, the companies that were part of the discussion were FedEx, UPS, Cisco, Adobe, Lockheed Martin, Honeywell, Boston Scientific.

"US has significant investment in China. Both Prime Minister Narendra Modi and CM want to use the opportunity where industries are moving out of China and try to bring them to India, and to Uttar Pradesh. Video-conferencing was held with over 100 American companies on April 28, and they shown interest," said Sidharth Nath Singh, Minister for MSME, Investment and Exports in the Uttar Pradesh government recently. Singh also told the potential investors from the US that Uttar Pradesh government had announced various incentives such as capital subsidy, land subsidy and said that companies like Lockheed Martin could benefit from the defence corridor being developed in the state.



UKDSC HOSTS FIRST UK-INDIA VIRTUAL INDUSTRY ENGAGEMENT FORUM

New Delhi. UK Defence Solutions Centre (UKDSC) hosted the first UK-India Virtual Industry Engagement Forum bringing together a broad representation from the United Kingdom and Indian defence industry on June 10. Director DSO, Mark Goldsack kindly agreed to support the event along with the High Commission of India in London. The forum presented the far-reaching implications of COVID-19 and the potential effects on UK and India defence procurement. Presenters from the UK India Business Council and the Society for Indian Defence Manufactures gave a great insight into the recently announced reforms in India and what it means for UK business. This was the first of several virtual government and industry activities that will be utilised to strengthen this consortiums effectiveness for a long-lasting impact. UKDSC Chief Executive Mark Barclay said, "The virtual forum was a great way to show our partners in India that the UK is looking beyond the COVID-19 pandemic in supporting India's aspirations for self-reliance and long-term international partnerships."

NDA ACT IN US SENATE SEEKS FIGHTER JET TRAINING DETACHMENT FOR INDIA, JAPAN, AUSTRALIA IN GUAM



Washington. The National Defense Authorization Act (NDAA) bill for fiscal 2021 introduced in the US Senate proposes procurement of 48 Long Range Anti-Ship Missiles (LRASMs) that it said will be especially useful in the Indo-Pacific, which the Department of Defense has named its priority theatre.

The text of NDAA 2021, for the fiscal year beginning October 1, was introduced in the Senate on June 25. With an eye on the aggressive Chinese behaviour, the National Defense Authorization Act for the fiscal 2021 has sought fighter jet training detachment for India, Japan and Australia in the US Pacific territory of Guam.

The move comes six months after the US Defense Secretary Mark Esper and Singapore Defence Minister Ng Eng Hen signed a Memorandum of Understanding for Singapore to set up a fighter jet training detachment in Guam. The Act directs the Secretary of Defense submit to the congressional defense committees a report assessing the merit and feasibility of entering into agreements similar to that of Singapore with other US allies and partners in the Indo-Pacific region, to include Japan, Australia, and India.

NDAA also seeks acceleration in the American effort to establish an F-35A operating locations forward in the Indo-pacific region.

INFRASTRUCTURE RAMP UP ALONG SINO-INDIAN BORDER; BRO TO COMPLETE WORK ON 42 STRATEGIC ROADS

New Delhi. With increasing tension along the Sino-Indian border and clashes between the armies of the two nations, India is all set to ramp up its infrastructure along the international border and complete work on as many as 42 strategic India-China Border Roads (ICBRs) before 2022, officials have said. The Centre had identified 73 "strategic roads" along the China border, 28 of which were made operational, 33 are still under construction while the work on remaining are in the initial stages, they added. Confirming this, BJP councillor from Tangtse constituency in eastern Ladakh Tashi Namgyal said that the Border Roads Organisation (BRO) has engaged a large number of porters and labourers from several border villages for construction of roads in Darbuk, Shyok and Daulat Beg Oldie areas along the LAC.



CHINA NEEDS TO REASSESS ITS ACTIONS AND TAKE CORRECTIVE STEPS: EXTERNAL AFFAIRS MINISTER



New Delhi. External Affairs Minister Dr S Jaishankar told his Chinese counterpart Wang Yi that the need of the hour was for the Chinese side to reassess its actions and take corrective steps. In a telephonic talk, Jaishankar said that Chinese should strictly respect and observe the Line of Actual Control (LAC) and not take any unilateral action to alter it. It was agreed that both sides would implement the dis-engagement understanding the agreement of June 6 sincerely. Neither side would take any action to escalate matters and instead ensure peace and tranquility as per bilateral agreements and protocols, said a statement by the Ministry of External Affairs (MEA). The two sides are in regular touch through their respective embassies and foreign offices. At the ground level the two sides have maintained communication at the commanders' level. Meetings of other established diplomatic mechanisms such as Working Mechanism for Consultation and Coordination on Border Affairs (WMCC) are under discussion. The statement said that India and China have been discussing through military and diplomatic channels the de-escalation of the situation in the border area in Eastern Ladakh.



F-15E BECOMES FIRST AIRCRAFT COMPATIBLE WITH NEW NUCLEAR BOMB DESIGN

Washington. The US' newest nuclear bomb design has been successfully tested on the F-15E making the Strike Eagle the first fighter jet to be officially compatible with the B61-12 design. Two test flights were flown twice in March at the Tonopah Test Range in Nevada, says a release by Sandia Labs. The mock weapon was released on one test at about 1,000 feet and at nearly the speed of sound, while a higher-altitude test occurred at around 25,000 feet; both tests hit the target as designed.

BOEING DELIVERS FIRST SUPER HORNET BLUE ANGEL TEST JET

JACKSONVILLE, Florida. Boeing has delivered the first Super Hornet test aircraft for the US Navy's Blue Angel flight demonstration squadron. The unpainted aircraft now enters the flight test and evaluation phase at Naval Air Station Patuxent River in Maryland. Boeing expects to deliver a total of 11 aircraft for the squadron in 2020. The flight demonstration squadron has flown Boeing or Boeing-heritage aircraft for more than 50 years, starting with the F-4J Phantom II in 1969, and then moving to the A-4F Skyhawk. The team currently operates the F/A-18A-D Hornet. Boeing converts F/A-18 Hornets and Super Hornets into Blue Angels at the company's Cecil Field facility in Jacksonville, Florida.



BELL BOEING DELIVERS 400TH V-22 OSPREY TILTROTOR AIRCRAFT

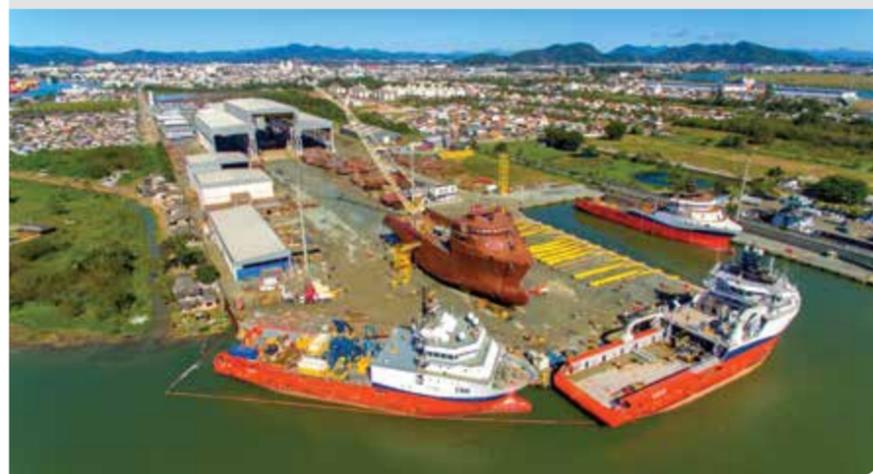
HURLBURT FIELD, Fla. The Bell Boeing V-22 team delivered its 400th aircraft, a CV-22 for US Air Force Special Operations Command. The first production V-22 was delivered on May 24, 1999, and today deliveries occur under the Multi-year Procurement III contract valued at US\$5 billion. That agreement, which runs through 2024, includes variants for the Marines, Air Force, and Navy, as well as the first international customer, Japan. The V-22 takes off, hovers, and lands like a helicopter yet flies long distances like a turboprop aircraft. The CV-22 variant performs special operations missions, including infiltration, extraction, and resupply, that conventional aircraft can't. The V-22 has been deployed in a variety of combat, special operations, and humanitarian roles since becoming operational in 2007. Having accumulated more than 500,000 flight hours, the V-22 is safe, survivable, and combat proven. Bell Boeing's post-delivery support includes comprehensive maintenance, modifications and supply chain expertise, innovative data insights and more than 160 field operations employees embedded at customer locations.



GERMANY'S TKMS BUYS BRAZILIAN SHIPYARD FOR LOCAL FRIGATE PROGRAMME

Cologne. In a boost to German defence industry in the wake of the COVID-19 pandemic sweeping across the globe, German shipbuilder ThyssenKrupp Marine Systems will buy the Oceana shipyard in the southern Brazilian state of Santa Catarina to manufacture Tamandaré-class frigates for Brazil's Navy, the company announced this week. The German vendor heads the Águas Azuis consortium, which is building an initial set of four ships based on its MEKO vessel design. The industry team also includes Embraer Defence and Security as well as its subsidiary Atech.

TKMS, based in Kiel, Germany, has no production facilities for surface ships, which means the company must make arrangements for local production when selling its flagship vessel design overseas. The acquisition is subject to approval by Brazilian antitrust authorities, and it is contingent on the frigate contract going into effect sometime in the "middle of the year," the statement read. Embraer is slated to be the systems integrator for weapons and sensors on the new ships. Atech, with help from TKMS subsidiary Atlas Elektronik, will supply the combat management system.



RAFAEL AWARDED INTERNATIONAL CONTRACT TO SUPPLY LITENING 5 AND RECCELITE AIRBORNE EO SYSTEMS

Tel Aviv. RAFAEL Advanced Defense Systems announced on May 21 that it has been awarded a contract to supply fifth generation Litening and RecceLite airborne electro-optical systems for installation on a combat platform of an undisclosed air force. Integrated with RAFAEL's pods, the jet will now have combat-proven, stand-off capabilities using the Litening from five multi-spectral airborne targeting pod. The Litening pod is in use by 27 air forces and carried by over 25 platforms globally, including F-16, F-15, AV8B, F-18, F-4, F-5, A-10, B-52, Jaguar, LCA, AMX, Mirage 2000, Tornado, Typhoon, MiG21, MiG27, M346, KC390, Gripen, and Sukhoi 27 & Sukhoi 30, and others. Litening 5 delivers real-time, forward-looking infrared (FLIR+SWIR) and day HD color camera imagery. Its high-resolution sensors and effective EO/IR design ensure reliable operation at significant stand-off ranges. Litening 5 allows the operation of all types of air-to-surface smart weaponry, such as laser-guided, GPS-guided and EO/IR imaging-guided munition. Litening pods have logged over two million flight hours, with more than two-thirds in contingency operations worldwide. RecceLite has been delivered to 13 customers worldwide and integrated onto various aircraft, including the F-16, F-18, Jaguar, AMX, Tornado, Typhoon, Gripen, M-346 and others. It is used by air forces in Europe, the Far East and South America.



NEW DEFENCE PROCUREMENT POLICY IN THE PIPELINE, SAYS HAL CMD R MADHAVAN



New Delhi. The slew of measures announced by the government in a move to push indigenous and local material and software as part of the 'Atmanirbhar Bharat' initiative, taking the vision of the draft defence procurement policy even further has been hailed as an extremely positive step by R Madhavan, CMD, Hindustan Aeronautics Limited (HAL). Madhavan said raising the sectoral cap of foreign direct investment (FDI) (automatic approval) from the existing 49 per cent to 74 per cent and a negative list for the import of defence equipment in India were major steps in the right direction.

The company has a number of major orders in the pipeline and will complete the delivery of 70 Hindustan Turbo Trainer (HTT)-40 by 2026. "We have made a pitch for an Advanced Light Helicopter (ALH), and can make necessary modifications." Focusing on the 'Make in India' initiatives, Madhavan said, "The private industry should take the initiative and partner with OEMs to set up manufacturing in India. The availability of a large population of technically qualified manpower is a boost for the country." Although he is of the view that there is a need to see a speed up of the decision-making process. Aerospace according to him will see an increase in demand. "Aerospace is highly technologically driven and needs a lot of capex. There is a requirement of enhancing capacity in certain areas," said Madhavan.



RAFAEL AND GROUP 42 JOIN FORCES TO DEFEAT COVID-19

Tel-Aviv. Rafael Advanced Defense Systems Ltd and Group 42 (G42), a leading technology company based in Abu Dhabi, announced on July 3 the signing of two distinct Memorandums of Understanding (MoUs) to explore collaborations in the research and development of effective solutions to combat SARS-CoV-2, the virus that causes COVID-19 disease. Executives from each company took part in a signing ceremony held via video conference between the UAE and Israel. During the event, they discussed ways of leveraging their respective expertise to develop cutting-edge solutions and medical initiatives that could not only benefit the population of the two countries, but humanity as a whole.

IN NEWS

ISRAELI MOD ORDERS RAFAEL'S SPIKE FIREFLY LOITERING MUNITION FOR IDF GROUND FORCES

TEL AVIV. Israel's Ministry of Defense (MOD) has placed an order for RAFAEL's SPIKE FireFly (known in the IDF as "MAOZ") loitering munition. Jointly developed by RAFAEL and the IMOD, FireFly weighs only three kg and provides Behind-Cover Precision Attack Capabilities for the Dismounted Soldier. Ordered for the IDF (Israel Defense Forces) ground forces, FireFly was designed for fighting within the urban arena where situational awareness is limited, the enemy is behind cover, and precision is critical. FireFly is rapidly deployed within seconds. It is portable, durable and includes a rugged airframe to withstand the harsh environment of urban combat. Its single-user operation is designed for the dismounted soldier – light, small, and agile. Firefly features a dual seeker, target tracker, homing algorithms, computer vision, Safe & Arm fusing mechanisms, and a rugged tablet-based HMI (Human Machine Interface).



JAVELIN JOINT VENTURE COMPLETES FIRST F-MODEL MISSILE

Orlando, Florida. The Javelin Joint Venture team, a partnership of Raytheon Missiles & Defense, a business of Raytheon Technologies, and Lockheed Martin completed the first production Javelin F-Model (FGM-148F) missile. Javelin is a versatile, man-portable, fire-and-forget weapon system. The F-Model has an advanced, multipurpose warhead that can defeat current and future armor, including explosive reactive armor. The F-Model also adds a fragmenting steel case to take out soft targets and light armored vehicles. Javelin has been used extensively in combat operations in Afghanistan and Iraq. US and coalition forces have used the Javelin in more than 5,000 engagements since its deployment in 1996. With orders for more than 45,000 Javelin missiles, the system is expected to be in the US military's operational inventory through 2050. As such, Javelin is subject to continual upgrades to retain overmatch against emerging threats and to support evolving operational needs.

GREECE, ISRAEL DEAL SPOTLIGHT LEASING MODEL FOR MILITARY UAVs



Jerusalem. Greece's Ministry of National Defence will lease unmanned aerial vehicles from Israel in a deal that offers up an alternative to pricey acquisitions amid budgetary constraints.

The Heron long endurance drones, manufactured by IAI, will be used for border defence under a leasing model that IAI said may grow more appealing with the new pandemic dynamics that countries face. Executive vice president and general manager of AIA's Military Aircraft Group, Moshe Levy, praised the new deal with Greece as "yet another example of the successful leasing model promoted by IAI in many parts of the world."

Greece will have an option to purchase the Herons after the lease term ends in three years. The Heron is one of the most popular of IAI UAVs, which have collectively seen 1.8 million operation flight hours with over fifty partners worldwide, the company says. IAI could not comment on the overall value of the lease agreement. The twin-boom Heron comes in several models, including the smaller tactical Heron unveiled in 2019, and the longer endurance Heron MK II unveiled this year. With development roots in the early 1990s, the larger Heron UAVs have been active with the Israeli Air Force since the early 2000s and been used by countries such as Turkey, India, Australia, Singapore, Azerbaijan and Germany.

Greece and Israel have become closer partners in defence and maritime relations over the last decade. The new Heron MK II, with a wingspan of 16 meters, weighs 1,300 kg and can reach an altitude of 35,000 feet for up to 45 hours. It has a new more powerful Rotax 915 iS engine, says Levy, who pointed to increased demand for versatile vertical-take off and landing (VTOL) options or UAVs that require only a short runway.



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