

Raksha

ANIRVEDA

PURSUING SELF RELIANCE IN DEFENCE



**Defence
Production**
Impact of Recent
Reforms

UAV: A Modern Day Necessity

The Use of Unmanned Aerial Vehicles is in Vogue
by Present Day Armies

India UAE Relations

Enhancing Bilateral
Partnership in Defence

India Russia Partnership

Defence the Strongest
Pillar of two-nation Ties

Interview: Neeraj Gupta

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-Editor

RESPONSE

'Raksha Anirveda' editorial team is always happy to receive comments on its articles and to hear readers' views on the issues raised in the magazine contact details can be found on page.

Editorial

The Real Game Changer: Secured Order Flow under Make in India



India elects its political representatives to govern but surprisingly when it comes to judge them on effective trust norms, these leaders get a dismal credit score. Similarly, the government officials also score poorly.

However, the same government and officials are responsible to make, execute and implement policies for welfare of the people. Narrowing down to security of the nation and its people, one should not be amused that they have faltered on many occasions to perform their roles effectively.

The government's Make in India initiative successfully broke the chronic inertia that had set in the Indian defence manufacturing sector for the last seven decades and provided a roadmap to achieve self-reliance in the near future. But, the pace as well as clarity to get the desired results are missing.

With elections around the corner, one wonders whether this initiative would continue in case there is a change in the government or would it be put in a cold storage, a common trend among the Indian political parties due to their ideological differences.

Besides, shouldn't it be better for the government to implement the lateral entry policy in the defence research organisations and defence PSUs like it did in the Niti Aayog, Invest India and economic policy making. This would pave way for resolving many issues that have been affecting the Indian defence manufacturing sector and I'm sure this move will find wider acceptance

among various stakeholders in defence establishments.

The Made in India initiative achieved a great success in the automobile sector where the private sector is dominant. So, to curtail the trust deficit that is quite common in the defence manufacturing sector and among the government, defence PSUs and private sector organisations, special thrust should be given on measures to minimise it, and create a level-playing field for all the stakeholders. And, the first step in that direction can be providing a model procurement order outlook, both short-term and long-term, to provide a clear roadmap for all in this capital intensive sector based on three core parameters namely technology, cost and fast track delivery within the time frame.

With global providers of the next generation fighter jets taking keen interest in India, wouldn't it be prudent and pragmatic for the government and IAF to reap maximum benefits to fill in the depleting squadrons. Can't IAF devise a solution based on its combat requirements and accordingly raise a new fleet that fits in all the best available options. This would also provide our IAF pilots to get their hands on various flying machines and hone their skills for future actions.

The defence start-ups, SMEs, MSMEs and corporates have already shown their innovative and technological sparks, and with a secured order flow from the government and symbiotic synergies among all the stakeholders, India's long-cherished dream to become self-reliant in its defence requirements can surely become a reality.

With best wishes...

Ajit Kumar Thakur
Editor & Business Director

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Eurosatory 2018

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More than two years after the defence procurement procedure was tweaked to galvanise Make in India in defence, there is little evidence of a turnaround in domestic production of the defence equipment. Reliable information is hard to come by but going by

whatever is in the public domain the measures taken in the last four years are yet to pick up an irreversible momentum, not necessarily because of any inherent weakness in the reforms but on account of other factors that have a bearing on production and acquisition but remain inadequately addressed.

Tata-Lockheed
Martin joint
ventures assembly
line

Of reforms, there has been no dearth. In 2014, the cap on foreign direct investment (FDI) in defence was raised from 26 to 49 per cent. In 2016, the Defence Procurement Procedure (DPP 2016) was amended to include a new procurement category called 'Buy (Indian Designed, Developed and Manufactured)'. The amended procedure also saw the 'Make'



Defence Production and Acquisition: The Impact of Recent Reforms

Although the Govt is bullish with Make in India programme in defence, however, the measures taken in the last four years are yet to pick up a momentum not because of any inherent weakness in the reforms but on account of other factors. **BY AMIT COWSHISH**

procedure being made more broad-based to encourage the private sector.

A year later, the Strategic Partnership (SP) model was adopted and the same year a Defence Technology Fund was set up. Meanwhile, the industrial licensing regime was streamlined and many other measures announced, such as setting up of a Defence Investor Cell and, more recently, two Defence Industrial Corridors in the states of Uttar Pradesh and Tamil Nadu.

What has been the upshot of these reforms? One would imagine

that the ultimate objective of the reforms is to ensure that the needs of the Indian armed forces are met in time, preferably through indigenous design, development and manufacture of defence equipment. That being the case, the efficacy of the reforms can only be tested on the touchstone of domestic defence production and acquisition by the Ministry of Defence (MoD), especially from the local sources.

Many would argue that it is too early to pass a judgement as it takes a long time for the reforms to start producing tangible results. While this is true to some extent, especially in relation to the decisions like setting up of the industrial corridors announced only earlier this year, it is not a day too soon to take stock of how these reforms are playing out and whether there are unmistakable signs that the things are headed in the right direction in relation to production of defence equipment in India and acquisition by the MoD.

There are several factors that impact defence production but the one which is predominant among all these is the demand for the defence products. The demand is not the same as the requirement. The armed forces have a long list of requirement ranging from ammunition, carbines, rifles, guns, submarines, other naval vessels, helicopters to aircraft and the like. But these requirements have to be converted into specific demands through the tendering process. Unless this happens, there is no business case for the industry to ramp up production.

The changes made in DPP 2016 are intended to smoothen the process of converting the requirements into specific demands and making sure that while doing so the possibility of meeting the demand from the local sources is kept in mind. This objective is sought to be achieved through a revamped system of categorisation of defence procurement.

The most talked about feature

of DPP 2016 is the introduction of the 'Buy (IDDM)' category as the most preferred of all the five procurement categories. Any equipment that is designed and developed in India and has an indigenous content of at least 40 per cent has to be sourced from the Indian vendors under this category. Even if any equipment is not designed and developed in India, DPP 2016 requires that it be bought from the Indian sources provided such equipment has indigenous content of at least 60 per cent, if bought under the Buy

(IDDM) category, or 40 per cent if bought under the Buy (Indian) category.

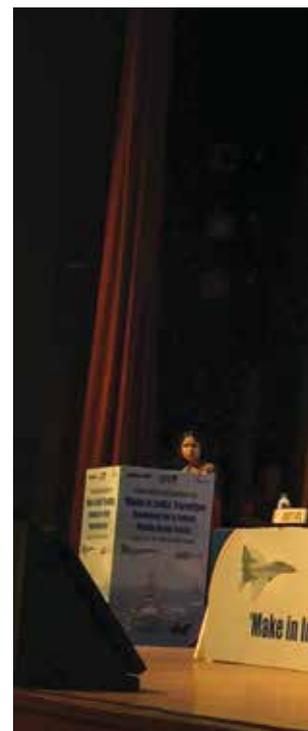
The 'Buy and Make (Indian)' category, which the third most preferred category in the hierarchy of procurement categories, is also aimed at making the Indian companies the prime contractors for import and licensed production of the foreign equipment.

The second important change is splitting of the 'Make' category into two sub-categories. The second sub-category is intended to let the Indian industry take up prototype

Defence Minister Nirmala Sitharaman in an interaction with local industries during Tamil Nadu Defence Production Quad;

Defence Industrial Corridor to come up in Uttar Pradesh alongside Tamil Nadu





development projects on their own without any government-funding and benefit from a reasonable assurance of the procurement contract being awarded to the successful developer of the prototype. Many other changes have also been carried out so that the 'Make' procedure becomes more attractive and, going by the available accounts, the industry has shown keen interest in these projects.

According to the thirty sixth report of the Standing Committee on Defence (16th Lok Sabha), out of 145 capital acquisition proposals, entailing an estimated value of Rs 3,99,796 crore, approved in principle by the Defence Acquisition Council from 2014-15 to 2016-17, as many as 103 proposals involving Rs 2,46,417 crore, were approved under the aforesaid categories. This is an encouraging development but it needs to be followed through and contracts have to be awarded.

The third significant change made in DPP 2016 to promote the Indian industry is the introduction



of the SP model. Under this model, the MoD will select Indian companies which will require to tie up with the foreign manufacturers of the equipment identified by the MoD. These companies will then participate in the tender floated by the MoD and the chosen one will have to make that equipment in India with the help of technology transfer from the original equipment manufacturer.

In the first phase, the SP

model is to be unrolled in the four strategically important segments: aircraft, helicopter, submarines and armoured fighting vehicles/main battle tank. While some steps have been taken by the MoD to identify the foreign vendors in some of these segments, the process of selecting the potential strategic partners from the Indian private sector is yet to begin.

The journey from conception of a procurement programme under the



Sabha), the capital outlay of the armed forces for the year 2018-19 is Rs 96,906 crore less than the demand projected by them. This could come in the way of several requirements being converted into specific demands. Even if the requirements are somehow converted into demands, the procurement proposals could get stymied at some stage because of paucity of funds.

The fourth, and arguably the most important, reason is the quality and pace of decision making in the MoD. Several proposals, which could spur defence production in India, have run aground because of the inability of the MoD to take timely

If the reforms have not started showing results, and may continue to have a limited impact on defence production and acquisition, it is because of these four reasons, especially the issues related to decision-making. For some strange reason, there has been little realisation that unless these fundamental issues are addressed, all other reforms will have a limited impact, be it the setting up of the Defence Technology Fund, Investor Cell or Industrial Corridors.

The reform carried out in the FDI regime best illustrates this postulate. During the last four years there has been a total additional inflow of Rs 1.21 crore despite all the liberalisation. In fact, the defence sector continues to be the second least attractive sector for the foreign investor, just ahead

aforesaid and other categories to in-principle approval and from the latter to the award of contract is arduous and many proposals fall through on the way. Broadly speaking, there are four reasons for this, which the reforms have not touched so far. One, many proposals fall through because the procedure that those proposals are required to follow have either not been thought through or have a number of loopholes. The way the SP model is playing out is a case in point.

The second reason concerns formulation of the Services Qualitative Requirements (SQRs). Over a period of eighteen months till 31.03.2012, as many as 41 Request for Proposal (RfP) of the Indian Army had fallen through because of the SQR-related issues. The reforms carried out so far do not touch this critical aspect of the procurement procedure.

The third reason is the paucity of funds. The procurement proposals cannot go through unless sufficient funds are available. According to the forty second report of the Standing Committee on Defence (16th Lok



(Clockwise from left to right) ISRO Pavilion on display;

Former Navy Chief RK Dhowan with Niti Aayog CEO Amitabh Kanth in a Naval Conference;

Kamov Ka-226T to be made in India;

Airbus C-295

decisions whenever a project hits a roadblock. A case in point is the Avro-replacement programme which envisaged import of 16 transport aircraft in a fly-away condition with another 40 being built in India. This has been hanging fire for a long time, although Airbus had tied up with the Tatas for this project and submitted the bid more than four years back.

of the coir sector. The low level of FDI is not so much on account of the lack of reforms as the fact that the foreign investor does not find a business case for making the investment in the absence of a credible and financially sustainable demand for the defence products in the domestic market.

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



Abu Dhabi Crown Prince and UAE Foreign Minister Sheikh Mohammed bin Zayed Al Nahyan calls on Prime Minister Narendra Modi during his visit to New Delhi

India, UAE Enhance Bilateral Ties to Strategic Partnership

India and UAE set a new momentum while enhancing the bilateral ties to a strategic level partnership. The trend got a major fillip when Prime Minister Modi visited UAE in August 2015 while becoming the first Indian Prime Minister to visit the country in more than three decades. **BY DEVENDRA SINGH**

THE INDIA-UAE bilateral ties have touched an all-time high. The landmark visit of Prime Minister Narendra Modi to the UAE in August 2015 and the return visit of Abu Dhabi Crown Prince Sheikh Mohammed bin Zayed Al Nahyan in February 2016 have set momentum for enhancing the bilateral relations to a strategic partnership. Modi is the first Indian leader to visit the UAE in more than three decades. During this visit, the UAE pledged to invest \$75 billion in India.

Then, the visit of Sheikh Mohammed to India as the chief guest for the Republic Day parade in January 2017, and Prime Minister Modi's second visit to the UAE as part of his Gulf tour in February this year emphasized the importance given to each other by both countries.

When Modi arrived in Abu Dhabi from Jordan on the second leg of his three-nation Gulf tour this year, the Crown Prince and other members of the royal family received him at the airport. "We warmly welcome our state guest and valued friend, the Indian Prime Minister H.E. @narendramodi to the UAE. His visit reflects our longstanding historical ties and is testament to our friendly bilateral relationship," the Crown Prince tweeted. Various buildings in Abu Dhabi were lit up in the Indian tricolor as the city was decked up to welcome Prime Minister Modi.

Natural Partners

While seeking to enhance economic engagement and deepen security cooperation with the Gulf, India has found a willing partner in the UAE, which is grappling with security concerns emanating from turmoil in West Asia and growing threat from terrorism and extremism. Both countries consider each other as natural partners.

The Economic Times reported that security and economic ties between the two countries have deepened since Modi's 2015 visit to the UAE and Sheikh Mohammed's participation as the chief guest at India's Republic Day parade. Modi broke all protocol to greet him at the airport. India and the UAE signed several bilateral agreements.

According to a report in Khaleej Times in February 2016, India and the UAE signed agreements on cyber security, infrastructure investment and insurance during Sheikh Mohammed's visit to New Delhi. Sheikh Mohammed and Modi deliberated extensively on combating the threat of terrorism, and explored ways to enhance bilateral cooperation in counter-terrorism, maritime security and defence, the newspaper reported.

Strategic Partnership

During Modi's 2015 visit, it was security where the most progress was made. Both countries agreed to elevate the relationship to a comprehensive strategic partnership. During Sheikh Mohammed's February 2016 visit to India, both sides finalised and signed a framework agreement. The deal to elevate the bilateral relations to a comprehensive strategic partnership was signed by Sheikh Mohammed and Modi. Indian ambassador to the UAE Navdeep Singh Suri praised India's relationship with the UAE as the golden era.



"There are 1,076 flights a week between India and the UAE, which is the largest operation of its kind. More than 50 per cent of Indians, who travel outside India to different destinations, such as Europe or America, use Dubai and Abu Dhabi as their transit hub"

Abu Dhabi Crown Prince Sheikh Mohammed bin Zayed Al Nahyan

UAE Foreign Minister Sheikh Mohammed bin Zayed Al Nahyan with his Indian counterpart Sushma Swaraj

"Prime Minister Narendra Modi's second visit to the UAE is an indication of the special importance we attach to the India-UAE relationship," Suri said. "We have seen major UAE investments into India, a significant increase in

defence and security cooperation, a transformation in our energy ties from a buyer-seller relationship to a strategic partnership." Suri said.

The UAE's ambassador to India, Ahmed Al-Banna, said the bilateral visits tell "us the direction that India and the UAE have in mind." He said, "The leadership has put us on a challenging and interesting track where the relationship is very important, on many sectors, and our leaders are pushing to rewrite future plans for both nations." He also emphasised the connectivity aspect of the bilateral ties.

"There are 1,076 flights a week between India and the UAE, which is the largest operation of





External Affairs Minister Sushma Swaraj with her UAE counterpart in a photo op after signing of an agreement

its kind. More than 50 per cent of Indians, who travel outside India to different destinations, such as Europe or America, use Dubai and Abu Dhabi as their transit hub," he said.

Indians make up the UAE's largest expatriate community with an estimated 2.6 million citizens in the country. Indian migrant workers sent back 14.64 billion Emirati dirhams during the second quarter of 2017-18, which translates to more than Rs 25 billion.

Turmoil in Middle East

Modi and Sheikh Mohammed have established a personal rapport and share a vision for a huge jump in economic co-operation, said Prasad Nallapati, president of the Centre for Asia-

Africa Policy Research. "The Middle East has been in turmoil, particularly since Donald Trump took over as president of the United States," Nallapati said. "Iran's growing arc of influence from Iraq to Lebanon has been a major headache for Saudi Arabia and the UAE. The two countries formed a military alliance to fight the Iran-backed Houthi rebel group in Yemen. Qatar became a new enemy, effectively demolishing the Gulf Cooperation Council (GCC). The US decision to recognise Jerusalem as the capital of Israel and move its embassy there from Tel Aviv created further complications in the region."

Dr Ebtessam Al Ketbi, president of the Emirates Policy Centre, a think-tank based in Abu Dhabi, told *Khaleej Times*

that the visit will enhance joint ventures between both nations in various sectors.

"This visit reflects how the UAE is important for India. It also indicates the UAE is an attractive model. India is a rising power in Asia and it is important for the UAE to have a strong partnership with India.

"I think this visit will see the strategic partnership between two countries flourishing in various sectors. The UAE leadership is going in the right direction by

THIS VISIT REFLECTS HOW THE UAE IS IMPORTANT FOR INDIA. IT ALSO INDICATES THE UAE IS AN ATTRACTIVE MODEL. INDIA IS A RISING POWER IN ASIA AND IT IS IMPORTANT FOR THE UAE TO HAVE A STRONG PARTNERSHIP WITH INDIA

– Dr Ebtessam Al Ketbi, president of the Emirates Policy Centre, a think-tank based in Abu Dhabi

diversifying their partnership with other countries,” Dr. Al Ketbi said.

Top Trading Partners

India and the UAE are each other’s top trading partners with annual bilateral trade of around \$50 billion in 2015 and 2016. The UAE is one of the biggest sources of foreign direct investment in India and contributes significantly to its energy security. It was the fifth-largest supplier of crude oil to India in 2015 and 2016. The latest industry estimates project an increase in bilateral trade that outstrips the official target, with direct and indirect trade touching \$100 billion by 2020.

NRI-Emirati Investors Group, a consortium of UAE-based private investors, has said it will raise \$1

billion for a fund that will finance infrastructure projects in India, the biggest local private fund-raising effort of its kind.

“This would be the largest such collective fund raising programme by a private group of investors generating as much \$1 billion for investment into big-ticket Indian projects and reflects the level of maturity of the UAE’s private sector businesses,” said Vipul, the consul general of India.

“This also reflects the fact that India remains one of the best investment destinations that offers greater and faster returns for investors while enabling our fast-growing economy. It is heartening to see the UAE’s private sector companies are shifting their focus on Indian

economy, which is now one of the fastest-growing in the world.”

Bilateral Naval Exercise

India and the UAE also agreed to conduct a bilateral naval exercise, allowing the Indian Navy for the first time to operate off the shores of Abu Dhabi. “It shows recognition that we have a shared interest in maritime security against piracy, in keeping the sea lanes open, in ensuring the freedom of navigation and perhaps also the recognition of what our forefathers knew: that our countries are neighbours separated only by water,” said Navdeep Suri.

As a part of the Comprehensive Strategic Partnership and to further strengthen defence cooperation between India and the UAE, two ships of the Indian Navy, INS Gomati (Guided Missile Frigate) and INS Kolkata (Guided Missile Destroyer) took part in the maiden Bilateral Exercise Gulf Star 1 from March 17 – 22 this year. The ships arrived at Port Zayed, Abu Dhabi on March 17, 2018 for the Harbour phase of the Exercise and participated with UAEN ships for the Sea phase from March 20, 2018.

After visiting the ships in Abu Dhabi on March 17, Ambassador Suri said, “I am delighted that the first ever bilateral exercises will soon get underway off the coast of Abu Dhabi. INS Kolkata and INS Gomati have formidable capabilities and the time that they spend with the friendly Naval Forces of UAE will establish a strong platform for us to advance our shared maritime security objectives in the Gulf and the Indian Ocean.”

Both, INS Gomati and INS Kolkata are representatives of India’s capability to construct state-of-the-art indigenous warships capable of undertaking proactive, coordinated combat operations for safeguarding India’s maritime interests. ●

INS Kolkata and INS Gomati, two of the Indian Naval Ships took part in bilateral exercise Gulf Star 1 recently



From a Buyer's Navy to Builder's Navy: Indian Navy's Transformation Towards Self-reliance

While making a steady progress over the years and a strategic future planning, the Indian Navy (IN) transformed to be a builder's Navy from a buyer's Navy, and the credit goes to various Naval Admirals and the staff along with the ship building PSUs including Goa Shipyard, GRSE, Mazagon Dock etc. **BY CMDE RANJIT B RAI (RETD)**

OVER THE years, with planning for the future and in step by step approach and with help from civil industry and shipyards invariably under Naval Admirals and staff, the Indian Navy (IN) has transformed from a 'Buyer to a Builder's Navy'. IN has also operated second hand ships including

the modern aircraft carrier INS Viraat (ex-HMS Hermes) for 29 years since commissioning in 1987 to 2016 with Sea Harriers.

The story needs to be told and is relevant for the Indian Army which has only recently set up an Army Design Bureau (ADB) on lines of Navy's Design Directorate (NDD) with naval officers, and for the Air Force

Former Defence Minister A K Antony going round the BrahMos stall, during the Defexpo-2014 held in New Delhi (File photo)

which has relied a lot on Hindustan Aircraft Ltd (HAL) as its sole supplier and the Aeronautical Design Authority (ADA) with a majority of the civil designers. On the other hand, the Navy has trained designers and used officers and sailors from its own. This is the story with recommendations derived from the Navy's journey of success.

India's history has been influenced from the seas since the arrival of foreign powers in the 15th century who went on to rule, and indirectly robbed India of its wealth and also the region's till India's Independence on 15th August, 1947 when Pandit Jawaharlal Nehru gave his inspiring 'Tryst with Destiny' speech in Parliament at midnight, that the nation and the English speaking Indian Navy harked. The foreigner's route to subjugate India was by the seas and their Navies were their vehicles. In the two world wars, the allied navies played a large role in victory for the allies and Japan's surrender to Gen Douglas MacArthur took place on USS Missouri with representatives of Japan on September 2, 1945 when more than 250 allied warships laid at anchor in Tokyo Bay with Indian representation.

The Royal Indian Navy (RIN) was

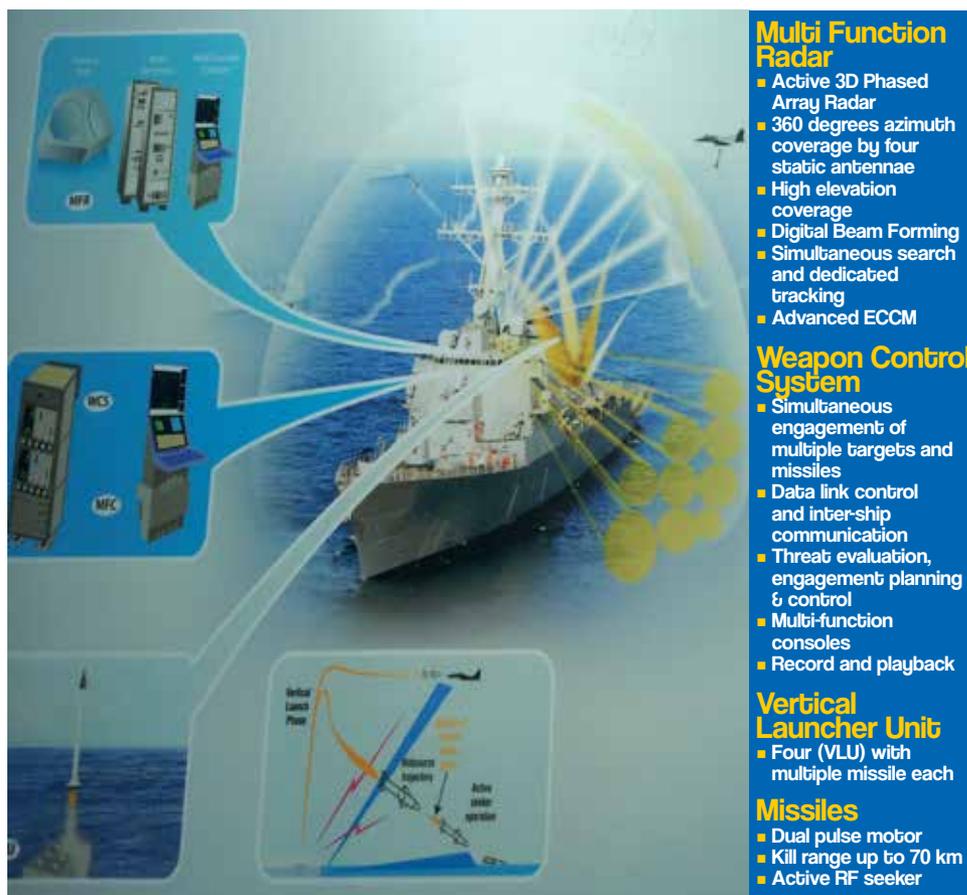


formally instituted at the then Bombay on October 2, 1934 and its ships and establishments carried the prefix HMIS (His Majesty's Indian Ship). When World War II started in September 1939, the Royal Indian Navy was a miniscule force, consisting of eight warships and about 1,500 sailors and 150 officers. Calls went out for young men to join the RIN, with attractive, "Join the Navy and See the World", posters. Officers and key sailors were sent to the UK for training. By the time the war ended, its strength had multiplied almost 15 times. In December 1945, it had 2,438 officers, 214 Petty Officers and 21,193 ratings and the bases were expanded south to Cochin, to become a hub for training officers and seamen with an air station for the Fleet Air Arm, which the the US Air Force also used.

Most officers took part in the Second World War and earned their spurs in the war, but the 1946 Naval Mutiny which started from Bombay barracks and spread on all ships gave the Navy a bad name in the eyes of the British officers, who were in command and the RIN's role was neglected in the written British history, though the Navy was a force to reckon with. But soon after 1947, the Indian Navy found it was depleted with many assets going to Pakistan.

Governor General Lord Louis Mountbatten, a Naval Admiral, scripted a naval plan for India which included three aircraft carriers and list of warships aware that India's passage to the future, and its prosperity and security in the 20th and 21st centuries will depend a lot on the Oceans around India, and that of the security of the choke points of Malacca, Hormuz and Babel Mandab would need sea policing. The ulterior motive of Britain was also to supply the Indian Navy with second hand ships, instead of monetary compensation for war reparations.

This led to the arrival of the second hand cruiser 6,500 ton cruiser INS Delhi (ex-HMS Achilles) with nine 6" guns manned by 800 soon after Independence on July 5, 1948, and three Godavari and three Rajput class



(Above) Type 15A with MF Star LR SAM;

Indian Navy 105M Offshore Patrol Vessel (OPV), ICGS Sujay to the Indian Coast Guard

destroyers with torpedoes, and the 8,000 ton cruiser INS Mysore (ex-HMS Nigeria 1958) as surface fighting units. This was followed by the Majestic class aircraft carrier INS Vikrant (ex-HMS Hercules 1961-1987) manned by 1200 with Sea-Hawk fighter jets and French ASW Breuget Alizes. This put confidence into the Navy to maintain and repair warships and employ the technology as nine other modern Type 12 Khukri /14 Brahmaputra /16 Talwar class

newly-built frigates arrived. Some few hundred officers and thousands of sailors were deputed to the UK for long durations and exposed to ship building and trials in Plymouth, Portsmouth, Belfast and Bath and stood by the ships they took over with kudos. This injected a technology base into the Indian Navy how ships are built by the 1960s. It is they who took courage at the helm of the Navy and decided that the Indian Navy must build ships in India and



(From top to below)
**Indian Navy
 Helicopter
 Amphibious
 Transport Dock
 Amphibious Warfare
 Ship Warship INS
 Jalaswa (L41);**

**INS Rajput firing a
 BrahMos missile;**

**Navy Project 28
 Third Launch;**

**INS Vikrant
 undocked**



with ships for data transfer via the space satellite with imported Orbit Technologies Rukmini terminals on ships. Much other work remained classified and DRDO scientists have joined WESEE.

For the long-term naval technology roadmap that was set up long ago (which is now in place after regular consultations other stakeholders and industry that has made the 'Make in India' thrust on an overdrive in the Indian Navy. The focus now in the roadmap is on weapons, sensors and cutting-edge technologies with certain milestones and required timelines. The 'fight' component which has been a laggard has been made a thrust area. This is the roadmap for the Army and Air Force with recommendations.

In a short span of half a century, India with no established ship design capability is today on the threshold of building its first indigenous aircraft carrier 37,500 ADS Project 71 (See picture), self designed destroyers, ASW corvettes and OPVs. A secret ATV nuclear submarine project is also sported by the Navy's 350 strong constructors in service and some now

the Indian Navy has not looked back. Later officers and sailors stood by submarines and ships in the Soviet Union and learnt about designing and building warships from hard professional taskmasters.

The Indian Navy has always taken note of President Roosevelt's saying, "A Strong Navy is the best Insurance For Peace," and the rise of the Indian Navy in qualitative and quantitative terms has seen landmark developments for India as a maritime power over the last two decades, though budgets for the Navy have waxed and waned. In this context, the Directorate of Naval Design (DND) was set up on November 17, 1956 in a small premises with Constructor officers trained abroad and in IIT Kharagpur and they went on to take on the designing of small ships first, and supported Indian shipyards to built them fitting imported engines, weapons and electronics, sonars and radars. Knowing Indian conditions the brighter technical Constructor officers used the Leander design of INS Nilgiri

built at Mazagon Docks Ltd in 1967 to increase the length and breadth to make bigger ships like the Type 15 Delhi class and the Shivaliks in service. The design directorate for surface ships is in Greater Kailash and for Submarines in RK Puram in New Delhi.

Another technology design team, earlier classified, is the Weapons Electronics Systems Engineering Establishment (WESEE) set up in a flat in New Delhi as a Navy's own R&D arm with technical naval officers who had served in ships and appreciated naval needs. It is now in RK Puram. At first, they set out to modernise India's legacy Navy ships by retrofits and fit latest technology in consultation with DND.

The WESEE-BEL HUMSA-NG sonars to hunt submarines and Indian built Command and Combat systems have proved operational successes over time as WESEE has contributed to assist Bharat Electronics Ltd and civil companies manufacture radars, communication security modems, cyber security and linked GSAT 7



working for the Engineering giant Larsen and Toubro Ltd (L&T). This remarkable achievement is a consequence of progressive development and focused endeavours. IN's bold leadership had the vision to distinguish the Navy from other services by setting the foundation for designing its own platforms, with the UK training and help from Russia's Serevonye and Krilov Institutes and now trained at IIT Delhi set up by the Navy in the 1980s.

RECOMMENDATIONS FOR THE ARMY AND INDIAN AIR FORCE

While the writer is conscious that inter service co-operation in India is more personality driven rather system driven, still the following brief recommendations are offered with the start point that each service needs to write a realistic Vision Document to ensure the nation, the services, and the industry is aware what the Service looks forward to.

- The Army and IAF will need to select technical and likeminded officers and depute them to design training institutions or manufacturing organisation in their fields to advance their skills and also support an IIT for their sub-specialisation for junior officers to form a cadre of designers. The Navy has done this.

- The selected design team officers of the Army and IAF should visit the DND (Surface and Submarine) and WESEE set ups and study the working, manning and financial models which include a large civilian component and DRDO



(From top to below)
INS Shivalik;

Indian Navy Project 15A DDG Model;

INSV Tarini Inducted: All Woman Crew Scheduled to Sail her around the Globe Commencing



deputations. The DND and WESEE should share details and lists of civilian firms they have collaborated with and officers have spent time with.

- The Army and IAF need to study how the Navy has co-operated with DRDO for sonar and many nuclear submarine projects with cross-fertilisation especially in the BrahMos and ATV nuclear submarine projects and set up such joint start ups.

- The Navy wisely adopted the NATO STD 1555 ring bar electric wiring for multiple power supplies and such standards, and the Army and IAF should direct such standards in their working.

- Other two services have to study the role played by the Directorate of Indigenisation (DOI) at Chanakya Bhavan in New Delhi, which encourages the Indian companies to reverse engineer imported, mid end products, and arranges visits of

vendors to ships to witness systems operating. This will energise the indigenisation of equipment which is now in progress with institutions such as CII, Assocham and FICCI, and Society of Indian Defence Manufacturers (SIDM) under Jayant Patil Director L&T.

- The Army and IAF have to visit a Naval PSU shipyard to see how much naval content including top naval management is inducted to steer ship building and how NHQ holds hands for success and mid course corrections which has been absent in the Arjun and LCA projects.

- As many years have passed and technology has galloped, the Army and IAF may consider inviting foreign experts in the field of choice to their design directorates for a short period.

– The author is editor of The Modern and Future Indian Navy Diary-2018 Edition ISBN 9780003289866

UAVs Becoming Organic Necessity of All Modern Armies

From Iraq to Afghanistan to modern days use, the role of Unmanned Aerial Vehicles (UAVs) has seen a paradigmatic shift as today UAVs are also providing exclusive capability to forces engaged in sub-conventional operations, especially in the global war on terrorism. **BY LT GEN BALLI PAWAR (RETD)**

IN THE past decade, Unmanned Aerial Vehicles (UAVs) have progressed from being minor players in the Intelligence and Situational Awareness (ISA) role to being a key part of combat operations as seen in Iraq and Afghanistan, with single platforms now capable of achieving the entire Find, Fix Track, Engage and Assess kill chain.

Today, UAVs are also providing exclusive capability to forces engaged in sub-conventional operations, especially in the global war on terrorism. Current technologies make UAVs more sophisticated than ever, and are expanding their role in combat operations. As range, altitude and loiter time increase, the UAVs provide beyond line of sight reconnaissance, fires and over watch. This has been amply demonstrated by the extensive and successful employment of



the US Global Hawk and Predator UAVs for all types of missions both ISR and combat during Operations Desert Storm and Enduring Freedom.

However, vast majority of roughly 1500 UAVs flying in Iraq and Afghanistan were much smaller, controlled by soldiers and marines on the ground like the 'Raven' – an essential component of ISR. Today, technologically-advanced militaries across the world have incorporated UAVs as a new critical and combat-enhancing component of their inventory. While Israel and the USA have been the pioneers in UAV development and employment, at least 14 other countries are now using/developing over 76 different types of UAVs for all types of ISR missions including combat.

Employment Philosophy

Information is an element of combat power and a combat multiplier in



(Clockwise from right to left) MQ-1 Predator, a medium-altitude, long-endurance, remotely piloted aircraft;

(Below) Israel Aerospace Industries' Heron in flight

General Atomics' MQ9 Reaper UAV



the hands of a commander. Field commanders require an organic, responsive, economically-viable, multi-source, long endurance, near real time reconnaissance capability to collect, process and report intelligence throughout the level of conflict – 24/7. The answer lies in the use of UAVs, with their inherent characteristics to provide flexibility to operate in the extended battle space, thereby enabling the ground forces to see first, understand first, act first and finish decisively. Most importantly, UAVs are not impeded by restraints imposed on manned systems where both the aircraft and crew could be lost – they are increasingly being employed for missions that were hitherto the domain of manned

aircraft. The concept of killer/hunter UAVs for strike missions is a reality in Afghanistan.

Current military UAVs perform reconnaissance as well as attack missions. Though intelligence, reconnaissance and surveillance missions still remain the predominant roles, other areas of employment include electronic attack, strike missions, suppression and/or destruction of enemy air defence, network node or communications relay and combat search and rescue. The combination of loiter time and layered employment of UAVs provides the critical capability needed to support network-centric operations. It is difficult to imagine how any future operation would be conducted without



development has been the armed rotary drone called the Sky Saker H-300 capable of operating from ships. Pakistan too has conducted operations in its Federally Administered Tribal Areas (FATA) using the Burraq UCAV. This is most likely the Chinese Caihong (CH3/CH4) UCAV assembled in Pakistan - these are also being used by Iraq in the Middle East.

India has not been left out of the global UAV push, with a major thrust of its armed forces' modernisation plans focusing on augmenting their current meagre resources - the Israeli Searcher II, Heron (MALE) and the Israeli Harop armed, self-destruct UAVs. While India's Nishant tactical UAV project (catapult launch and parachute recovery) for the army has been a failure, due to a faulty design in the recovery phase, India is in the process of developing a UAV in the Heron/Predator class of MALE UAVs called 'Rustom', a 1100-1300 kg UAV, with a maximum altitude of 35000 feet and 300 km range. It has three versions,

commanders both in the frontline and rear having their situational awareness enhanced 24/7 by near real time video feeds.

Developments in India

Successful use of UAVs and their combat-enhancing potential have generated interest of militaries across the world. China and Pakistan are adding UAVs of various capabilities to their inventory and have expressed interest in developing and procuring UAVs with enhanced capabilities, including armed versions. During the last decade, China unveiled more than 25 different models of UAVs, prominent among them being the WJ600 combat UAV capable of carrying missiles.

Another significant



Rustom1 being the tactical UAV, Rustom H to replace Heron in the long run and Rustom2 the combat version.

With Make in India thrust, the Rustom development will be done by an outside agency including the private sector – L&T, Tata's and HAL - Bharat Electronics combine are contenders for this project. However, India's most prized indigenous drone programme is the development of the Autonomous Unmanned Research Aircraft (AURA). With the AURA having accomplished its stated mission of research into future Indian UCAVs, the DRDO has embarked on the development of Ghatak, which will be high speed stealth UCAV, capable of autonomously seeking, identifying and destroying targets, with missiles, bombs and precision-guided munitions.

Reports reveal that this new combat drone will be powered by the indigenous Kaveri derivative engine (dry variant) without the after burner and will feature flying wing

WITH MAKE IN INDIA THRUST, THE RUSTOM DEVELOPMENT WILL BE DONE BY AN OUTSIDE AGENCY INCLUDING THE PRIVATE SECTOR – L&T, TATA'S AND HAL - BHARAT ELECTRONICS COMBINE ARE CONTENDERS FOR THIS PROJECT. HOWEVER, INDIA'S MOST PRIZED INDIGENOUS DRONE PROGRAMME IS THE DEVELOPMENT OF THE AURA

(Clockwise from left to right) Rustom II drone has been developed by DRDO;

A CASC CH-4 UAV stands on display during the China International Aviation & Aerospace Exhibition in Zhuhai, China;

RQ-4 Global Hawk Unmanned Aircraft from Northrop Grumman

design similar to the US 'B-2 Spirit' a stealth bomber. As per DRDO, the project is currently awaiting Government approval and this futuristic project is likely to take a decade to fructify.

Although large size UAVs have been procured by the armed forces there has been no movement on the Micro and Mini UAVs including man pack, which are essential for the tactical battle area and CI/CT operation. There is a large projected requirement of this class of UAVs by the Indian military in the coming decade – In fact the Army is looking to equip its infantry battalions with these UAVs.

Presently, a limited number of Mini/Micro UAVs have been procured by the Army's Operational Commands to meet the inescapable operational requirements, under the special powers provision of the respective Army Commanders - Tata Advanced Systems and Taneja Aerospace are said to be involved in these projects.

Reports indicate that the Indian Army is also on the lookout for Miniature UAVs (MAVs), which can evade enemy radar, are easy to handle and are also capable of carrying explosives to act as killer drones for small but high value targets. The main aim is to use them for monitoring mountainous terrain, conflict zones and congested urban areas. The MAVs would be very useful in CI/CT operations in J & K and the North East - these could

weigh as less as 2 kg and have an endurance of 30 minutes at a stretch.

With the entry of the private sector into defence manufacturing, this segment is likely to get a boost, especially with their dual usage in civil and military roles. It is heartening to learn that a number of Start Ups like Axiom Research Labs based in Bangalore, RAN India located in Delhi/NCR, Throttle Aerospace Systems in Bangalore and many others have entered the market for participating in this segment of UAV development under the Make in India Programme.

Future Trends

The increasing demand and reliance on UAVs in war and peace-keeping operations have doubled the pace of UAV related research and development in recent years. Achieving information superiority, minimizing collateral damage, fighting effectively in urban areas against widely dispersed forces, striking autonomously and precisely are areas where UAVs will be increasingly indispensable.

Three major thrusts in UAV development are growth in size of strategic UAVs for better endurance and payload (solar power), reduction in size of tactical UAVs, weaponisation of UAVs to offer lethal capability in combat missions and autonomy - commonly defined as ability of the machine to take decisions without human intervention. The promise of an autonomous, highly survivable and absolutely fearless UAV will usher in a new paradigm in which the ultimate consideration is no longer the value of pilots' lives, but the mission and cost effectiveness of UAVs.

The continued development of strategic and tactical UAVs





follows the line of employing UAVs as multi-role multi-mission platforms. UAVs will see progressive developments towards both extreme ends of size spectrum. Strategic UAVs will see growth in size for better endurance, reliability and payload capacity, while the mini and micro UAVs will grow smaller, lighter and more expendable. The tactical close range platforms will become more versatile with multi-role multi-mission capability. Passive and low signature sensors are essential to boost stealth and survivability of UAVs. Noteworthy advances include Hyper-Spectral imaging, Laser radar, synthetic aperture radar and moving target indicator.

The development of larger size UAVs (fixed wing and rotary) in the cargo carriage role is already underway, with the lead being taken by US companies such as Lockheed Martin and Boeing. Some of these systems like Lockheed Martin's unmanned K-MAX helicopter have been successfully deployed in Afghanistan to augment Marine



Corps ground and air logistics operations. Also, Sikorsky in cooperation with the US Army has successfully demonstrated optionally piloted flight of a 'Black Hawk' helicopter – this is a significant development towards not only providing autonomous cargo delivery capability but also

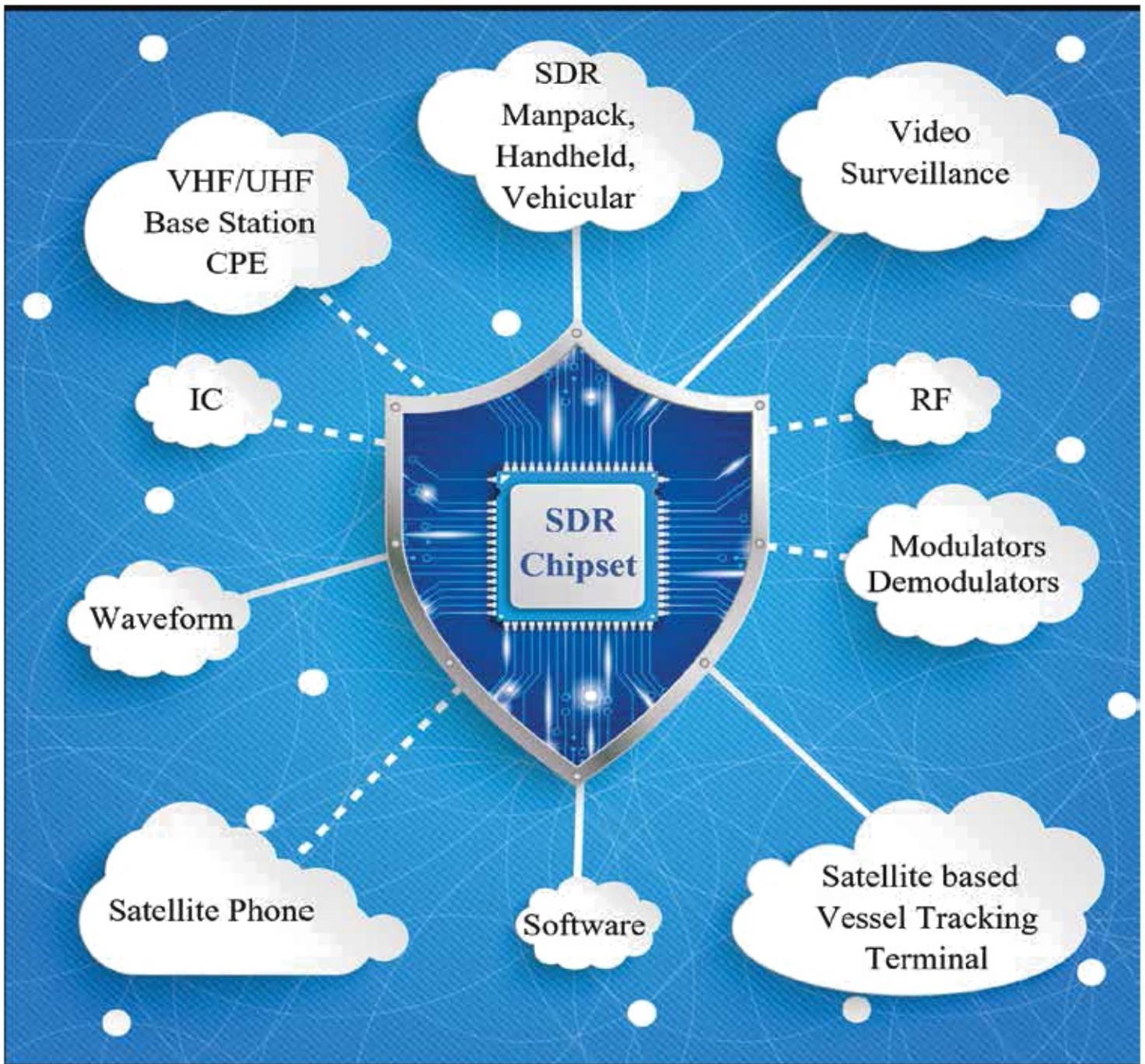
gives the commander flexibility of launching crewed or un-crewed operations depending on the situation.

As per reports, the US is developing a Carrier based Drone to provide sea based support in the Pacific – Northrop Grumman's prototype X-47B has already been tested for deck landings. World over militaries are looking at technologies to develop UAVs with endurance capabilities not in hours and months but in years - the American VULTURE (Very High Altitude Ultra Endurance Theatre Unmanned Reconnaissance System) program of DARPA is one such project. The DRDO is also scouting for partners for developing a solar powered HALE-UAV.

Conclusion

Technology is driving the military application of UAVs into remarkable areas, with the possibilities seemingly endless. A crucial piece of technology that is required to take UAVs to the next level is a robust 'sense and avoid' system allowing unmanned planes to fly safely in a congested airspace. UAVs are a critical combat multiplier that is rapidly becoming an organic necessity for all modern armies.

Future UAVs may be able to perform a variety of tasks moving beyond their present roles in intelligence, surveillance, reconnaissance and strikes to re-supply, combat search and rescue, aerial refueling and air to air combat (currently a difficult proposition). The US Department of Defence's 'Unmanned Systems Integrated Roadmap 2013-2038', foresees UAVs having a more important place in combat. The future combat arena may well see both the manned aircraft and the UAVs/UCAVs in complementary roles enhancing the overall combat potential of the force. ●



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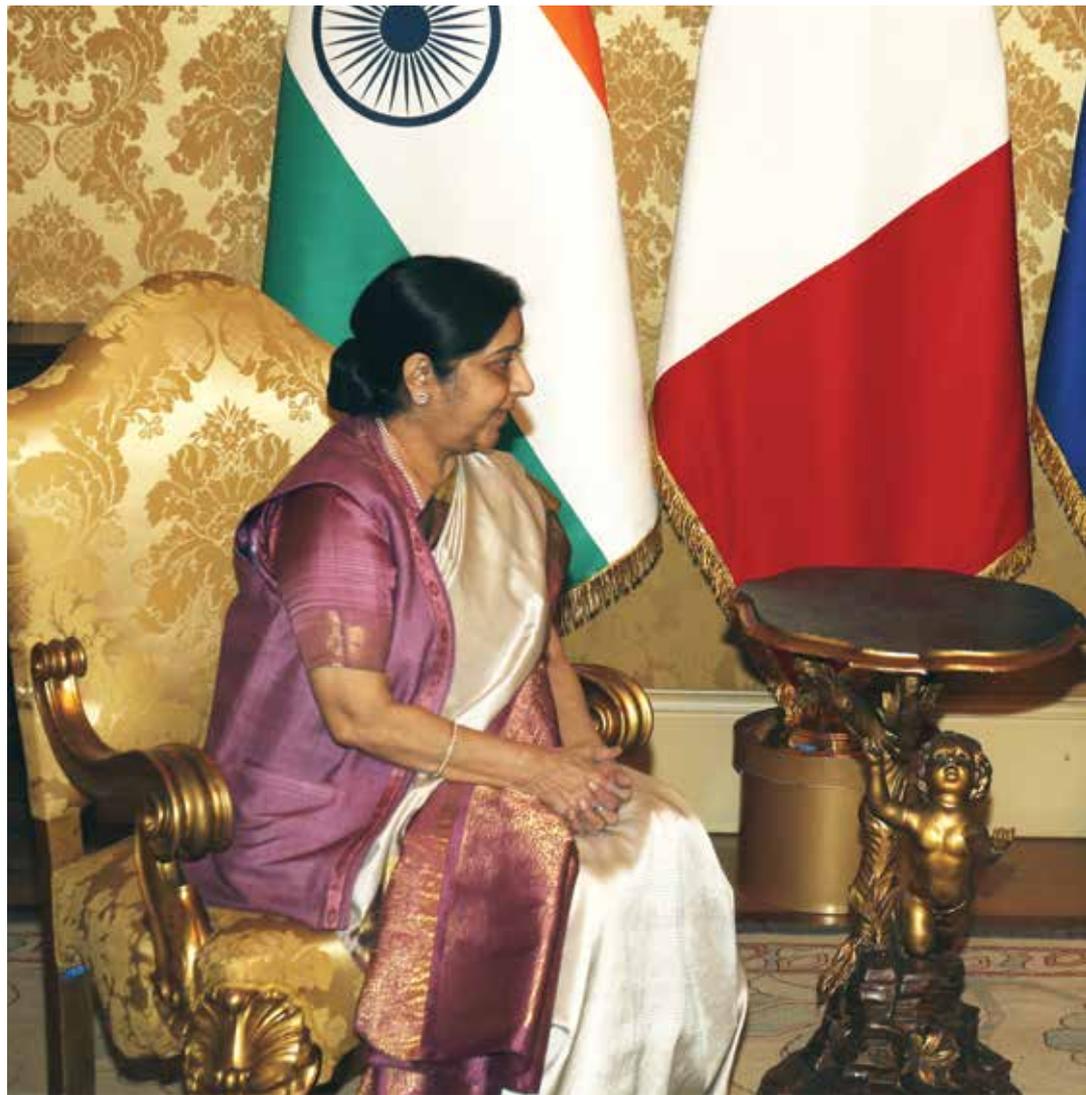
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External Affairs Minister Sushma Swaraj's visit comes at a time when India and Belgium are celebrating 70 years of the establishment of their diplomatic relationship

Brussels. External Affairs Minister (EAM) Sushma Swaraj visited Belgium from June 20 – 22. This is the first high-level visit to Belgium since the visit of the Prime Minister in March 2016 for the India-EU Summit. India and Belgium are celebrating the completion of 70 years since the establishment of their diplomatic relations.

On June 20, the EAM called on Jean Claude Juncker, President of the European Commission. During the meeting the leaders discussed



First High Level Visit in 2 Years: Affairs Minister Sushma Swaraj

India-EU bilateral relations, and the progress made since the 14th India-EU Summit of October 2017.

EAM Swaraj conveyed the high importance India attaches to her cordial friendship and strategic partnership with the European Union based on shared principles and values of democracy, freedom, rule of law and respect for human rights and territorial integrity of States.

Swaraj also called on Antonio

Tajani, President of the EU Parliament. They discussed the active and vibrant parliamentary interaction between both the countries and conveyed that India is looking forward to the visit of President Tajani. The EAM also conveyed her appreciation of the positive report on the India-EU relations adopted by the European Parliament on September 13.

The next day on June 21, the EAM along with Geoffrey Charles

Van Orden, President of the Delegation for Relations with India led the International Day of Yoga celebrations at the European Parliament. Renowned Yoga Guru Sri Sri Ravi Shankar was the 'Special Guest' on the occasion. Over 200 yoga practitioners including a number of European Members of Parliament, officials of the European Commission and members of the Indian community attended the yoga celebrations. In her address, the EAM



interacted with the members of the Indian community and dignitaries representing a cross-section of the leading professionals and officials of the European Union and Belgium. In her address, the EAM spoke about the India-Belgium relations, India-EU relations, importance of the international day of yoga. She also praised the diaspora for their achievements and in equal measure expressed her appreciation of the host country for embracing the diversity brought by the Indian diaspora.

On June 22, the EAM participated at the high-level event 'Climate, Peace and Security: Time for Action' organised by the European External Action Service (EEAS). The EAM delivered the introductory speech on the theme, 'Indispensable Multilateralism: A shared responsibility to prepare' in which she highlighted that India is committed to contributing effectively to the efforts of forging a common and united action in Climate Change initiatives, emphasising the critical importance of global partnership in maintaining an unsustainable lifestyles.

In the afternoon, she had a bilateral meeting with Federica

Mogherini, the High Representative of the European Union for Foreign Affairs and Security Policy/ Vice-President of the European Commission to review the entire gamut of the India-EU relations. They took stock of the on-going cooperation in counter terrorism, cyber security, and non-proliferation. The leaders also discussed the geopolitical situation in the Middle East, Indian Ocean region, reviewed the ongoing progress on BTIA, and the follow-up on the conclusions of the 14th India-EU Summit.

Later in the evening, the EAM had a bilateral meeting with Didier Reynders, Deputy Prime Minister and Minister of Foreign Affairs of Belgium. She congratulated Belgium on becoming a non-permanent member of the United Nations Security Council. The two sides reviewed the ongoing bilateral relations and also discussed matters relating to UNSC reforms, development cooperation, counter terrorism and other regional issues. The visit of EAM to Brussels at the bilateral level with Belgium and with the European Union was highly productive. The visit continues the momentum of high-level exchanges.

External Visits Belgium

spoke about the importance of yoga for peace in the world.

Later, Pavel Telička, Vice-President of the European Union Parliament, hosted an interaction for the EAM with select Members of the European Parliament. During the interaction EAM called for greater Parliamentary exchanges.

She attended an event hosted by Indian Ambassador to Belgium Gaitri Kumar in the prestigious BOZAR – Centre of Fine Arts where she

External Affairs Minister Sushma Swaraj with Prime Minister of Italy Giuseppe Conte in Rome (June 18, 2018)

External Affairs Minister meets Enzo Moavero Milanesi, Foreign Minister of Italy in Rome (June 18, 2018)



Defence Ties Remain Strongest Pillar of India-Russia Strategic Partnership

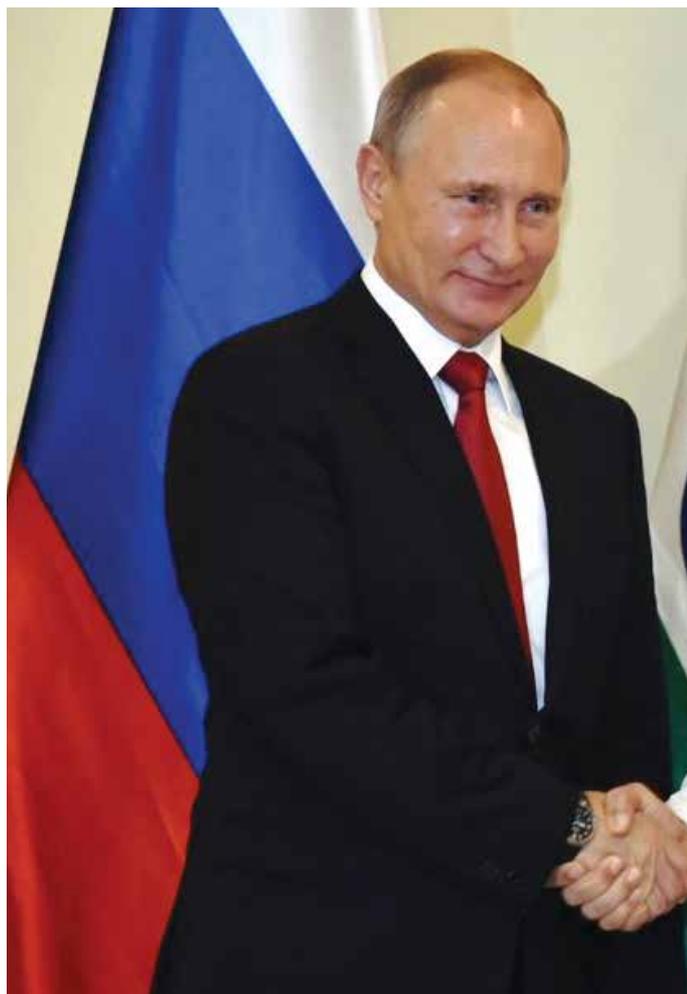
The bilateral relations between India and Russia have evolved into a privileged strategic partnership at the time when the two countries are marking almost seven decades of their diplomatic ties. The defence in no uncertain terms remained the strongest pillar of this relationship **BY VINAY SHUKLA**

DURING 70 years of diplomatic ties between New Delhi and Moscow, their bilateral relations have evolved into a "privileged" strategic partnership covering all spheres of the human activity - from space to seismology, but defence relationship remains its strongest pillar albeit with some hiccups, which coincided with break-up of the mighty Soviet Union, fragmentation of its highly integrated Military-Industrial Complex (MIC).

Over the past two decades, Russia remained the main and trusted source of cutting-edge military technology and

platforms for the three services of the Indian Armed Forces. India was the first country in the world with which Russia inked in 1995

a five-year programme of military-technical cooperation, which stands extended till 2020 and its nodal body - the India-Russia





Inter-Governmental Commission on Military-Technical Cooperation (IRIGC-MTC) is co-chaired by the defence ministers of the two countries, who annually meet alternatively in India and Russia.

There are two Working Groups and seven Sub-Groups under the IRIGC-MTC, which review and discuss an array of military technical issues related to needs of all the three services of the Indian Armed Forces. In 2008, a high level committee called the High Level Monitoring Committee (HLMC) was set up with Defence Secretary from the Ministry of Defence of India and Director of Federal Service for Military Technical Cooperation (FSMTC) from the Russian Federation as its co-chairs to promptly resolve

(Top) Prime Minister Narendra Modi with Russian President Vladimir Putin on the sidelines of BRICS Summit in Goa in 2016;

(Left) Kamov Ka-226T in the Making in India

contentious issues requiring high level intervention.

Although the major weapons and acquisition programmes with a considerable content of “Make in India”, like licensed production of T-90S main battle tanks, Sukhoi Su-30MKI multi-role fighters are in the public domain, but a considerable part of defence cooperation, mainly along the DRDO route is shrouded in the veil of secrecy for obvious reasons. Development of nuclear submarine Arihant, indigenous aircraft carrier Vikrant developed under highly secretive ATV and ADS projects are some of the examples of the India-Russia defence cooperation. As one of the former Indian ambassadors in Moscow giving the example

of BrahMos cruise missile aptly compared bilateral defence cooperation with iceberg, “you see its tip with all media hype and scandals, but actual work goes on quietly unseen until a project fructifies.”

BrahMos JV agreement signed with Russia in February 1998 is the trend-setter in “Make in India”, was a well-guarded secret till it was successfully launched in 2001 and in the same year it was displayed at Moscow International Aerospace Show (MAKS). Since then, there has been no looking back. BrahMos Aerospace JV in which DRDO and Russia’s NPO Mashinostroyeniya have 50.5-49.5 per cent equity respectively has become a benchmark for not only absorbing cutting-edge defence technology but also further developing it.

Beginning from mid-1990s after Soviet collapse India and Russia began to transform their arms trade from “buyer-seller” relationship to joint research, development and production of which supersonic BrahMos cruise missile is a text book example.

Frankly speaking, the Su-30MKI was the harbinger of this trend, when engineers of the Indian Air Force and Sukhoi jointly rubbed shoulders to develop a multirole air superiority fighter on the basis of Su-27 trainer jet. The end product was tailored to meet IAF’s most stringent requirement of that time and vast potential for its future modernisation.

Su-30 MKI is a unique case in bilateral cooperation, when the IAF got it much earlier than the Russian Air Force, which is now widely using Su-30SM in Syria campaign. The experience and work culture accumulated during MKI project

had prompted India and Russia to sign the agreement for the joint development of the fifth generation fighter aircraft under FGFA project, which for various objective and subjective reasons is in a limbo. However, in spite of media reports about India shelving the FGFA deal, Indian Ambassador Pankaj Saran in his latest interview to Russia's TASS news agency said that talks on FGFA are still going on.

"I can only say that the talks are going on, as a result of which there is better understanding of each other's priorities and plans for the future," Ambassador Saran, who has been appointed as Deputy National Security Advisor, said on FGFA.

The delay in delivery of the much-needed aircraft carrier

Admiral Gorshkov beyond reasonable limits and whopping cost escalation of refurbished warship by almost three times the original price tag had become a major irritant in bilateral India -Russia relations and had raised the issue of Russia's ability of being a reliable defence partner. However, after its commissioning in November 2013, the Indian officials claimed that INS Vikramaditya was worth the money India paid for it.

Albeit the Gorshkov saga cast a long and dark shadow on the defence cooperation with Russia compounded with reports of unsatisfactory performance of carrier-based MiG-29K fighters, lack of spares and unsatisfactory after sales services.

In this backdrop expensive

Indian Air Force Su-30 MKI;

India in talks with Russia to buy S-400 Air Defence System

defence deals including Boeing's C-17A strategic transport aircraft and P-8I Maritime Patrol Aircraft made the United States India's main arms supplier. However, India still has over 60 per cent inventory of Soviet or Russian origin and in terms of volume and not money, Moscow will remain its main arms supplier with several



big ticket deals in the pipeline including four improved Talwar class frigates, joint venture for the production of 200 Kamov Ka-226T multirole utility helicopters for armed forces and lease of another nuclear submarine and finally five units of S-400 air defence system. However, the shadow of American CAATSA is looming large on these deals in which S-400 missiles deal is the main stumbling block.

Countering America's Adversaries Through Sanctions Act (CAATSA) was adopted mainly to punish Russia, North Korea and Iran, but its secondary section 231 adopted in August 2017 provides for sanctions for significant transactions with defence and intelligence bodies of the government of Russia, putting any arms deal with Russia in jeopardy. The US has openly warned India that S-400 deal with Russia will attract sanctions.

The Indo-Russian inter-governmental agreement on the acquisition of long range S-400 ADMS (NATO reporting name - SA-21 Growler) was signed in October 2016 at the Goa summit.

During his recent informal meeting in Sochi, Prime Minister Narendra Modi is reported to have assured his Russian host President Vladimir Putin that India will not be deterred by CAATSA.

"Military-Technical cooperation between India and Russia was discussed during the meeting between the leaders. We are committed to all our agreements in this sphere, including purchase of S-400. India has a long history of military-technical cooperation with Russia based on trust and mutual benefit. There is no change in the approach of India to our partnership in this field," Ambassador Pankaj Saran told Russian media after Sochi summit. When asked whether the S-400 deal will be signed at the upcoming



Indian Army T-90 Tank in a live demonstration

S-400 IS A MULTI-LAYER LONG-RANGE AIR DEFENCE SYSTEM CAPABLE OF SIMULTANEOUSLY DESTROYING SEVERAL AIRBORNE TARGETS LIKE BALLISTIC MISSILE WARHEADS, STEALTH AIRCRAFT, DRONES AND CRUISE MISSILES, DEPENDING ON ITS CONFIGURATION.

annual summit in October this year, he said: "I would not like to fix any time-frame. I can only say that we have achieved significant progress in the negotiations."

Defending its trusted and time-tested defence relationship with Moscow, New Delhi is giving the argument that big ticket deals were made before adoption of CAATSA, so it cannot be applied backdated.

Meanwhile, India is reported to be considering several options to bypass CAATSA by switching over to payments in Indian rupees or alternate currencies including Singapore dollars. There is a strong feeling that the waivers mooted by some US officials including Secretary of Defence Jim Mattis will come with riders jeopardising India's strategic autonomy.

S-400 Triumph (Triumph)

So what is so big about S-400 that US is against it. S-400 is a multi-layer long-range air defence system capable of simultaneously destroying several airborne targets like ballistic missile warheads,

stealth aircraft, drones and cruise missiles, depending on its configuration. The US stealth F-22 Raptor and F-35 Lightning will be within its reach.

It would be a game-changer in the region. When deployed in the forward areas it will be able to keep 24x7 watch on Pakistani airspace and airbases right up to its western borders and deep inside the Chinese air space in Tibet. Designed and produced by Russia's Almaz-Antey Concern S-400 system can be customised for full integration in the integrated aerospace defence of the customer country.

China is so far the only country to get S-400 Triumph but unlike India, Beijing will not get very long-range 40N6 SAMs with the range of 400 kilometres as China is not a member of MTCR (missile technology control regime) while India is.

Although India will be paying more for 5 S-400 systems, but the deal would include longest-range 40N6 SAMs and transfer of technology for their manufacture under "Make in India" programme, experts believe.



MKU Emerges as Leader in Indian Defence Sector

MKU Ltd, a Kanpur-based defence company emerging as shining example in Indian Defence segment through pioneer leadership in personal and platform protection, besides Night Vision Technology. MKU's latest patented technology MoST and 6th Generation Armour Technology to build up to 40 per cent lighter and thinner armour panels to protect the helicopter from small handguns, assault rifles, armour piercing ammunitions, fragments and heavy machine guns, is ready which is commendable. In an interview to **Raksha Anirveda**, MKU MD Neeraj Gupta unveiled on the progress of variety of latest technology products produced by his company. Some excerpts...

Q *What's your take on Ease of Doing Business (EODB) policy of the Govt of India? Is it actually workable on ground? How far you benefited from it?*

MKU: It is a step in the right direction. Some progress has been made and India has climbed 40 steps in the last two years. However, this has been mostly due to the changes in insolvency laws and implementation of GST. A lot remains to be done on the ground especially in manufacturing.

Q *Your company MKU Ltd, has progressively been indigenously manufacturing armoured helmets, jackets, over-vests, shields etc. How far do you feel the policy has been eased to promote Make in India?*

MKU: In personal protection the government has been encouraging 'Make in India' and the procurement is being done from Indian manufacturers.

Q *Recently your company got Transfer of Technology (ToT) from DRDO for the manufacturing of Bullet Proof Jackets (BPJs). Please elaborate on the development.*

MKU: Yes we are proud to have received the TOT from DRDO for BPJs. It will help us to increase our range of solutions and offerings especially for the Indian Army. We also plan to use this for further R&D to develop newer solutions.

Q *Please explain about the latest technologies you are using in the manufacturing of the equipment? What is 6th Generation Armour Technology?*

MKU: R&D in defence is a continuous process. With the development of new technologies, materials and threats, new solutions have to be found to meet the challenges. Working with new technologies and materials helps us improve on the existing solutions in terms of weight, bulk, protection etc. 6th Gen Technology is a current technology level in this evolution process.

Q *Could you please elaborate on solutions for personal protection, platform protection and night vision devices?*

MKU: MKU caters to the global market for defence and aerospace. Consequently, it is exposed to a large variety of threats and requirements. Over the years it has developed a large database of solutions both in Personal and Platform protection space to meet most of the commonly faced threats globally. We have invested in setting up a modern facility for the

manufacture of Electro Optical Devices based on both the II Tube and TI technologies. We continue to invest in improving our manufacturing capabilities to remain at the forefront globally.

Q *As your company works on producing protection devices, are state governments also your customer in the backdrop that MHA is striving for internal security?*



BETWEEN THE CHOICES OF PERSONAL PROTECTION AND PLATFORM PROTECTION, THE GOVERNMENT HAS BEEN ENCOURAGING 'MAKE IN INDIA' IN THE PERSONAL PROTECTION ARENA AND THE PROCUREMENT IS BEING DONE FROM INDIAN MANUFACTURERS.

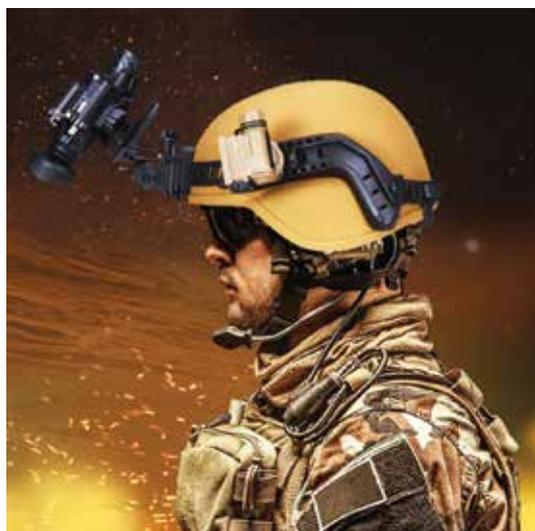




MULTIPLE ACCESSORY CONNECTOR SYSTEM (MACS)

MAXIMUM COMPATIBILITY

The all new Multiple Accessory Connector System (MACS) from MKU is a proprietary integrated, all-in-one mounting system for use on MUKUT range of ballistic helmets to mount multiple devices including NVD, Torches, Cameras, Masks and Communication Headsets. Tough and rugged, yet light weight and flexible it fits seamlessly on MUKUT Helmets, even with gloved hands.



MKU: Yes, the State Police forces and CAPFs are our major customers. MKU is participating and looking forward to active participation in Procurement of NVDs and Thermal Imagers by CAPFs.

MKU is uniquely placed in this business. It has the IPR of the Products and also the world class infrastructure for manufacturing and quality assurance under one roof.

How do you feel your company is contributory in providing internal security?

MKU: As mentioned earlier as a leading manufacturer we continue to invest in technology and upgrading our facilities. We will continue to provide the security forces with the best possible equipment which will enhance their capability to perform in all theatres and situations. We believe

in 'empowering our forces' with our products which are designed to meet various threats faced by these brave personnel.

MKU has been in the business of protecting people and all three platforms of land, air and naval for the last three decades. What have been your achievements so far?

MKU: Globally, we are proud of the fact that over 230 forces use and trust our products. Today we are considered a leading name internationally in protection. In India we have provided personal protection equipment for special forces and many CAPFs & SPFs. We have provided protection to many of the FPBs in service on our coastal borders. We are very proud for being the recipient of the prestigious Indian Army contract for Bullet Proof Helmets. We are especially proud that through our products we have been able to save precious lives.

Do you see a boost to Make in India/ Indigenisation following the recent go ahead of procurement proposals for Army, Navy, Air Force by Cabinet Committee on Security (CCS) headed by Defence Minister Nirmala Sitharaman?

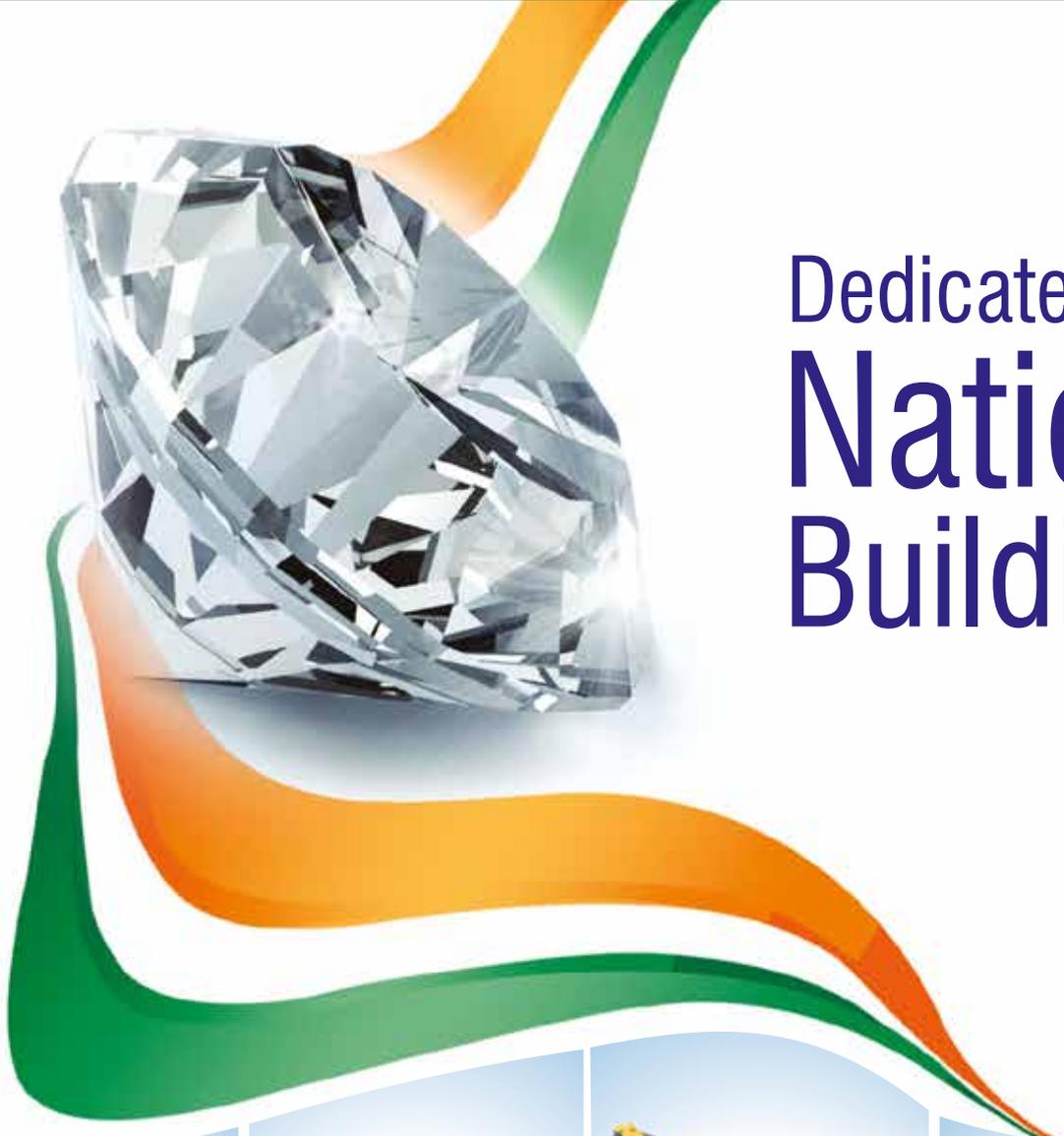
MKU: It will be a boost to Make in India / Indigenisation when the orders actually fructify. Barring a few the other orders are yet to be received by the industry. MKU is fully committed to harness the IDDM benefit through local manufacturing and development.

How did you find DefExpo 2018 in terms of defence and aerospace business?

MKU: The participation from the Global OEMs and the international customers could have been better. Perhaps the change in venue and the associated issues were the reason.

Your final comment, if any?

MKU: Defence sector has the potential to become a major source of revenue for the nation. It can be a big earner of foreign exchange. The government is already seized of the matter and perhaps need to fast track the implementation of the various policy initiatives. This will help kick start the process. The private defence industry must be treated differently and considered a national resource much like the DPSUs. The flow of orders to the industry must become regular and more transparent. After all, orders are the lifeline.



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India, Guatemala Agree to Support Each Other for Non-permanent Membership of UNSC

In a push to complimentary relations between the two countries, India and the Central American country of Guatemala agreed to support each other for the Non-Permanent Membership of the UNSC.

New Delhi. Agreeing to push the 'complementary' and 'not competitive' nature of bilateral relations to a new level for mutual benefit from the emerging opportunities in both the countries, India and Guatemala on May 8 agreed to support each other's candidature for Non-Permanent Membership in the United Nations Security Council (UNSC).

Guatemala will support India's candidature for UNSC membership for 2021-22 while New Delhi will do so for 2031-32 for Guatemala City.

This decision was one of the several outcomes of the extensive talks Vice-President M Venkaiah Naidu held with the President, Vice-President and Parliament Speaker of Guatemala in the capital Guatemala City on May 7.

Kick starting India's high level outreach to the Latin American countries, Naidu held discussions on a wide range of issues spread over two years with top leaders of Guatemala. The Vice-President's visit is highest level from either side since establishment of diplomatic ties between the two countries in 1972.

Presenting the context of his first overseas visit as the Vice-President, Naidu told Guatemalan leaders that "India is keen about enhancing its engagement with Latin America and looks at Guatemala, the most populous and biggest economy in Central America, as the gateway. My visit to Guatemala is a clear indication of this thinking in New Delhi. Going

Vice President M Venkaiah Naidu calls on Guatemala President Jimmy Morales

by trade patterns and consumption needs, we are complementary in nature and not competitors and need to take our relations to a new high taking advantage of emerging opportunities in both countries for mutual benefit".

Guatemalan President Jimmy Morales said his country could benefit from the "successful economic story





Vice President M Venkaiah Naidu interacting Indian Community in Guatemala

of India” and stressed on the need for improving bilateral engagement in various fields. Referring to India’s soft power, he said he was aware of popular TV serial Kaun Banega Karodpati and films like The Slum Dog Millionaire and The Life of Pi. He also referred to huge popularity of Indian made two wheelers given their quality and after sale service in Guatemala beating the popular competitors.

After talks with Naidu and before leaving for Costa Rica on an official visit, he directed his deputy for detailed talks with the visiting dignitary for exploring new avenues of cooperation with India.

Vice-President Naidu later held detailed discussions with Guatemalan Vice-President Dr Jateth Cabrera Franco and Speaker of Parliament Alvaro Arzu Escobar.

Leaders of both countries agreed that India and Guatemala are faced with similar challenges including governance issues, terrorism in different forms, poverty and economic disparities and democracy is the best form of governance to address them. Dr Franco noted that

contrary to the perception their government was making determined efforts to check corruption and his country was facing a different kind of terrorism in the form of criminal gangs.

Guatemalan Speaker Escobar said, “India’s vibrant democracy is a role model in harmonizing vast diversities and offers a lot to learn and India’s economic success is equally inspiring”. The Vice-President suggested setting up a Parliamentary Friendship Group to promote interaction among MPs of both sides.

During talks, the Indian side agreed to the Guatemala’s request for supplying solar panels to its



“India’s vibrant democracy is a role model in harmonising vast diversities and offers a lot to learn and India’s economic success is equally inspiring”

Guatemalan Speaker Mr Escobar

airports. After discussions and in the presence of both the Vice-Presidents, both the sides signed a Memorandum of Understanding for training of diplomats and a Letter of Intent for training Guatemalan English Teachers in India. These agreements will be valid for three years and will be extended thereafter, if required.

In the discussion, Naidu said, “In the integrating world order, all the countries need to work together for mutual benefit and for this reason, India is keen about enhancing its engagement with Latin America. India is now making rapid strides with a stable government and able leadership with focus

on Reforms and Performance for Transformation. India and the Latin American countries could benefit hugely from increased cooperation for enhanced trade and investments”.

At the banquet hosted for the visiting delegation, Guatemalan Vice-President Dr. Franco invited India to send a delegation to the Conference of Ibero America to be held in Guatemala City in November this year which is to be attended by all the Latin American countries besides Spain and Portugal. This is the first time India got such an invitation for the conference held once in three years. The Vice-President invited Guatemala to join the International Solar Alliance stating it has found wide appeal with 61 countries already joining it.

Minister of State for Tribal Affairs Jaswant Singh Bhabor and Members of Parliament Anil Desai (RS-Shiv Sena), Chhaya Verma (RS-Congress), Tiruchi Siva (RS-DMK) and Kamlesh Paswan (LS-BJP) besides Preeti Saran, Secretary in the Ministry of External Affairs and senior officials participated in the delegation-level discussions.

Boeing, Embraer to Establish Strategic Aerospace Partnership to Accelerate Global Aerospace Growth

The US Defence major Boeing tying up with the Brazilian Aerospace giant Embraer to accelerate global aerospace growth

Chicago/São Paulo. Boeing and Embraer announced on July 5 that they have signed a Memorandum of Understanding to establish a strategic partnership that positions both companies to accelerate growth in global aerospace markets. The non-binding agreement proposes formation of a joint venture comprising the commercial aircraft and services business of Embraer that would strategically align with Boeing's commercial development, production, marketing and lifecycle services operations. Under the terms of the agreement, Boeing will hold an 80 per cent ownership stake in the joint venture and Embraer will own the remaining 20 per cent stake.

"By forging this strategic partnership, we will be ideally positioned to generate significant value for both companies' customers, employees and

shareholders – and for Brazil and the United States," said Dennis Muilenburg, Boeing's Chairman, President and Chief Executive Officer. "This important partnership clearly aligns with Boeing's long-term strategy of investing in organic growth and returning value to shareholders, complemented by strategic arrangements that enhance and accelerate our growth plans," Muilenburg said.

"The agreement with Boeing will create the most important strategic partnership in the aerospace industry, strengthening both companies' leadership in the global market," said Paulo Cesar de Souza e Silva, Embraer Chief Executive Officer and President.

"The business combination with Boeing is expected to create a virtuous cycle for the Brazilian aerospace industry, increasing its sales potential, production, creating jobs and income, investments and exports, and

THE STRATEGIC PARTNERSHIP WILL BRING TOGETHER MORE THAN 150 YEARS OF COMBINED LEADERSHIP IN AEROSPACE AND LEVERAGE THE TWO COMPANIES' HIGHLY COMPLEMENTARY COMMERCIAL PRODUCT LINES



in doing so, adding more value to customers, shareholders and employees."

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The transaction values 100 per cent of Embraer's commercial aircraft operations at \$4.75 billion, and contemplates a value of \$3.8 billion for Boeing's 80 per cent ownership stake in the joint venture. The proposed partnership is expected to be accretive to Boeing's earnings per share beginning in 2020 and to generate estimated annual pre-tax cost synergies of approximately \$150 million by year three.

The strategic partnership will bring together more than 150 years of combined leadership in aerospace and leverage the two companies' highly complementary commercial product lines. The partnership is a natural evolution of a long-standing history of collaboration between Boeing and Embraer over more than 20 years.

On finalization, the commercial aviation joint venture will be led by Brazil-based management, including



a President and Chief Executive Officer. Boeing will have operational and management control of the new company, which will report directly to Muilenburg. The joint venture will become one of Boeing's centres of excellence for end-to-end design, manufacturing, and support of commercial passenger aircraft, and will be fully integrated into Boeing's broader production and supply chain.

Boeing and the joint venture would be positioned to offer a comprehensive, highly complementary commercial airplane portfolio that ranges from 70 seats to more than 450 seats and freighters, offering best-in-class products and services to better serve the global customer base.

In addition, both companies will create another joint venture to promote and develop new markets and applications for defence products and services, especially the KC-390 multi-mission aircraft, based on jointly-identified opportunities.

"Joint investments in the global marketing of the KC-390, as well

as a series of specific agreements in the fields of engineering, research and development and the supply chain, will enhance mutual benefits and further enhance the competitiveness of Boeing and Embraer," said Nelson Salgado, Embraer's Executive Vice President, Financial and Investor Relations.

Para deleted as it was a repeat Finalisation of the financial and operational details of the strategic partnership and negotiation of definitive transaction agreements are expected to continue in the



"By forging this strategic partnership, we will be ideally positioned to generate significant value for both companies' customers, employees and shareholders – and for Brazil and the United States"

Dennis Muilenburg
Boeing's Chairman, President and Chief Executive Officer

coming months. Upon execution of these agreements, the transaction would then be subject to shareholder and regulatory approvals, including approval from the Government of Brazil, as well as other customary closing conditions. Assuming the approvals are received in a timely manner, the transaction is expected to close by the end of 2019, 12-18 months after execution of the definitive agreements.

"This strategic partnership is a natural evolution of the long-standing history of collaboration between Boeing and Embraer on a range of aerospace initiatives over almost three decades," said Greg Smith, Boeing Chief Financial Officer and Executive Vice President of Enterprise Strategy & Performance.

"It is aligned with Boeing's enterprise strategy of pursuing strategic investment opportunities where they demonstrate real value and accelerate our organic growth plans. This partnership will strengthen the vertical capabilities of Boeing and enhance value for our customers through the full lifecycle of industry-leading products and services."

Boeing and Embraer will benefit from a broader scale, resources and footprint, including global supply chain, sales and marketing, and services network, which will enable them to capture benefits from best-in-class efficiencies across the organisations. Additionally, the strategic partnership will provide opportunities to share best practices in manufacturing and across development programmes.

The transaction will have no impact on Boeing and Embraer financial guidance for 2018 or Boeing's cash deployment strategy and commitment to returning approximately 100 per cent of free cash flow to shareholders. ●

India-Pakistan Relations: War is No Solution

Although there are a lot of issues of conflict between India and Pakistan but Kashmir problem is at the core of sour relations between the two countries. In this article **JAI KUMAR VERMA**, New Delhi based strategic analyst and a Pakistan watcher tried to give an insightful way forward to cement the ties between the two conflicting nations

SINCE THE days of partition, Pakistan, which was created in the name of Islam, has nourished an inherent hatred towards India.

The Pakistani Army, enjoying immense benefits in running the government in its country, propagated with ulterior motive that India a much bigger country in size and population has not accepted the partition and would try to annex Pakistan. Not only this, the Pakistani Army presented itself as the saviour of the country.

That apart, Punjab, which was a dominant province usurped in all powers and started exploiting all other nationalities.

The saner elements in both the countries, which are small in number, made several attempts to inculcate cordial relations between India and Pakistan and hence Shimla

Summit, Agra Summit and Lahore Summit were held. However, the summits and numerous meetings between officials of both the countries simply averted the war but conflicts and encounters continued.

BSF Jawans guarding on India-Pakistan border in Jammu and Kashmir



In 2003, ceasefire agreement was signed and Delhi-Lahore Bus Service and the train service between both the nations named Samjhauta Express also started but Pakistan continued training, assisting and infiltration of



terrorists in India. In 2001, Pakistani terrorists attacked Indian Parliament, while in 2007 bombs were exploded in Samjhauta Express and in 2008 Pakistani terrorists of Lashker-e-Taiba attacked Mumbai in which about 166 people were killed and more than 600 got injured.

The Pakistan army-controlled intelligence agency Inter Services Intelligence (ISI) has waged a low intensity war against India especially in Jammu & Kashmir. In 2016, the Pakistan-sponsored terrorists attacked Pathankot Air base and Army base at Uri in which about twenty five soldiers were martyred. The Indian security forces to take revenge carried out surgical strike on September 29, 2016 entered in Pakistan Occupied Kashmir (PoK) and attacked at seven launching pads and killed about forty Pakistani terrorists, their guides and their trainers who were from the Pakistan Army.



India-Pakistan Border Security Force jawans at the Wagha Border during a beating retreat ceremony; Union Home Minister Rajnath Singh with Pakistan DGMO at a DGMO-level talks

Main Irritants

There are several irritants between New Delhi and Islamabad; nonetheless the prime dilemma is suspicion at all levels. Following are the main causes of animosity

between the two neighbours:

JUNAGADH ISSUE

Junagadh had 80 per cent Hindus but its ruler was a Muslim. He migrated to Pakistan and signed the instrument of accession in

favour of the India's arch-rival country. As Junagadh was not contiguous to Pakistan, the accession was neither legal nor practically possible.

KASHMIR CONFLICT

Unfortunately during the partition there was lot of bloodshed, and although ruler of Kashmir signed the instrument of accession in favour of India, Pakistan refused to accept it. Since then both the counties fought three full wars and one undeclared war in Kargil. Besides these major wars there were several skirmishes, unprovoked firings and armed altercations mainly because of Kashmir.

Islamabad claims that Kashmir is unfinished agenda hence it has created diverse terrorist outfits

including Lashkar-e-Taiba, Jaish-e-Mohammad, Hizb-ul-Mujahideen, Lashkar-e-Omar, Al Badr, Lashkar-e-Jabbar, Tehrik-ul-Mujahideen, Harkat-ul-Mujahideen with ulterior motive of carrying out terrorist activities in J&K.

Besides these outfits, the ISI continuously infiltrates Madrassa-educated, semi-literate, disenchanted Pakistani Muslim youths for creating disturbances in the Valley. Unfortunately, the Pakistan Army and terrorist leaders including Hafiz Saeed were able to convince the illiterate masses that they would snatch Kashmir from India.

CREATION OF BANGLADESH

In 1971, residents of the then

East Pakistan revolted and Punjabi dominated Army instead of giving them their legitimate rights, resorted to barbaric atrocities which ultimately resulted in the independence and creation of a new nation with the name of Bangladesh. However, Islamabad instead of realising its blunder blamed India for its bifurcation. Now large number of fanatic Pakistanis want to take revenge by dissecting J&K from India.

CHINA PAKISTAN ECONOMIC CORRIDOR (CPEC)

The China Pakistan Economic Corridor (CPEC) which is a significant part of Belt and Road Initiative (BRI) passes from Pakistan-occupied Kashmir (PoK)

(Clockwise from left) Bangladesh Prime Minister Sheikh Hasina with Prime Minister Modi during the latter's visit to New Delhi;

Afghanistan President Ashraf Ghani with PM Modi;

The Indus Water Treaty is a bone of contention between India and Pakistan;

Army jawans in action during a J&K terrorist attack



as well as from Gilgit and Baltistan, which are integral parts of India. New Delhi has raised objections to the construction of CPEC. However, China promised Pakistan that it will invest more than \$50 billion in CPEC. The Pakistani authorities tried to convince the masses that CPEC will end the country's economic problem nevertheless it is erroneous and CPEC will prove a debt trap for Pakistan.

WATER DISPUTES

The Indus Water Treaty (IWT), which is unduly in favour of Pakistan, administers the rivers which flow from India to Pakistan. Although no war is fought on water so far but in future it will be a big issue as there is acute shortage of water in Pakistan, and India is also suffering from water crisis.

INDIA-AFGHANISTAN RELATIONS

Pakistan wants to achieve strategic depth in Afghanistan and alleges that India assists several secessionist outfits active in Balochistan, Khyber Pakhtunkhwa and other places through Afghanistan. Pakistan wants to establish pro-Pakistan and anti-India government in Afghanistan and when the relations between India and Afghanistan become cordial ISI launches terrorist operations both in India and Afghanistan.

PAKISTAN ACCORDED SHELTER TO INDIAN FUGITIVES

Pakistan has given shelter to more than 50 Indian fugitives including Dawood Ibrahim, Anees Ibrahim and Chota Shakeel etc. It is also not taking any legal action against terrorists like the mastermind behind the Mumbai terror attacks in 2008 Hafiz Saeed and others who are involved in terrorist activities in India.

DIFFERENCE IN SYSTEM

India is a secular democratic country



Army jawans celebrating the Tiger Hill victory during Kargil war

while Pakistan is an orthodox Islamic country where the army is a de-facto ruler. Islamic extremism is so much ingrained in Pakistan that terrorist leaders openly lecture that they will destroy India and capture Kashmir.

Way Forward

Pakistan was carved out from India hence both the countries share history, culture, traditions, language and if the two nations live amicably and work together they can render great service to the mankind as sizable part of their population live below the poverty line. There are close geographical, linguistic, matrimonial and sporting ties between both the countries. Not only this, strong diasporas of both the countries have cordial relations abroad and they should play a positive role in strengthening friendly relations between India and Pakistan.

India accorded Most Favoured Nation (MFN) status to Pakistan in 1996 but the latter has not reciprocated so far. India wants

to cultivate cordial relations with Pakistan but the latter on the behest of another neighbour China carries out terrorist activities in India. China wants to hamper India's economic growth as Beijing feels that India has the potential to challenge China in the region as well as in international arena. Pakistan should inculcate cordial relations with both India and China so that the country can achieve economic growth.

There are too many common points between India and Pakistan hence people-to-people contact must be enhanced so that common people will understand that the people of other countries want to live in peace. Pakistan should accord MFN status to India and the trade between both the countries must be enhanced. Border trade should be increased but security agencies must keep a strict vigil so that trade cannot be used to finance the terrorists. It may be noted here that in the recent past India's premier National Investigation Agency (NIA) had interrogated a few unscrupulous

PAKISTAN CLAIMS THAT KASHMIR IS UNFINISHED AGENDA, AND THEREFORE IT HAS CREATED A NUMBER OF TERRORIST OUTFITS LIKE LASHKAR-E-TAIBA, JAISH-E-MOHAMMAD, HIZB-UL-MUJAHIDEEN WHICH ARE INSTRUMENTAL IN CREATING DISTURBANCES IN J&K



traders who were financing Kashmiri secessionists.

There are also lots of contradictions about the partition of India. Both countries should reconcile the facts so that the misunderstandings are resolved. Besides, they more or less play same games hence there should be more tournaments and exchange of teams in order to establish friendly ties between them. NGOs of both the countries can join hands and can fight social evils and improve educational standard. The local populace in both the countries should understand that war will be an economic disaster hence it must be avoided at all cost.

Both countries must curtail defence expenditure and put that money for economic development and elevation of the masses. However, it is feasible only if the two nations disregard the massive

suspicion against each other.

Track II diplomacy is also useful in starting negotiations. Several times the relations between India and Pakistan touch rock-bottom and both sides adopt very stringent postures and refuse to talk. India maintains that terrorism and negotiations cannot go together.

At one time, India-Pakistan border also became very tense, at that time a group of 14 people led by former Secretary in the Ministry of External Affairs, former cabinet Secretary and a former naval chief met a Pakistani delegation led by former minister

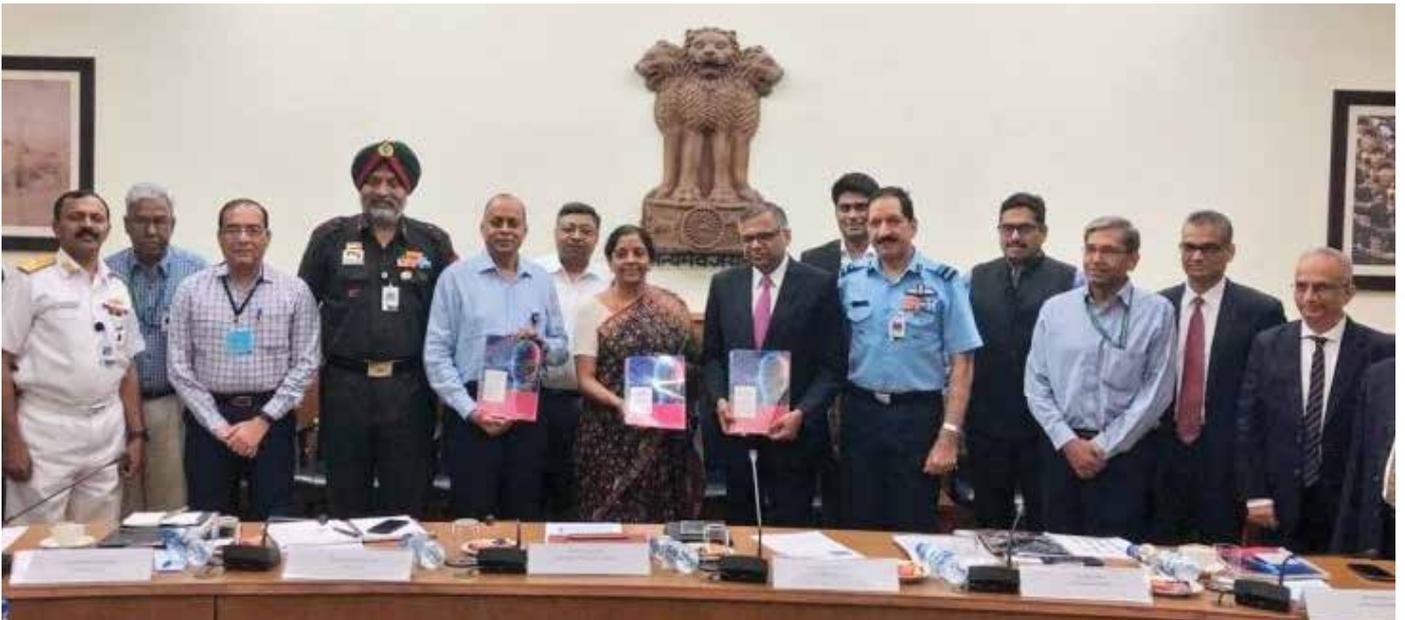
Hobel Taj during Mumbai terror attacks

TRACK II DIPLOMACY CAN BREAK THE ICE AND BOTH PARTIES MAY AGREE TO NEGOTIATE BUT THE DIFFERENCES HAVE TO BE RESOLVED BY BOTH THE GOVERNMENTS AND PAKISTAN HAS TO LEAVE THE PATH OF SPONSORING TERRORISM IN INDIA

and foreign secretary at a hotel in Islamabad and the ground for starting negotiations was made. Track II diplomacy can break the ice and both parties may agree to negotiate but the differences have to be resolved by both the governments and Pakistan has to leave the path of sponsoring terrorism in India.

Pakistan is suffering from multifarious problems including unbridled corruption, exploitation of all the nationalities by Punjabis, population explosion, water scarcity, dwindling economic condition, increasing terrorism and extremism just to name a few. The rulers of Pakistan instead of raising anti-India bogey to divert the attention of masses should try to solve the problems of their countrymen and discontinue sponsoring terrorism in India and Afghanistan.

—The author is a Delhi-based strategic analyst and a retired senior intelligence officer. The views in the article are solely of the author



New Delhi. A Task Force constituted, to study the whole gamut of issues surrounding strategic implications of Artificial Intelligence (AI) in national security perspective, by Defence Minister Nirmala Sitharaman handed over its Final Report with recommendations on June 30.

The multi-stakeholder Task Force represented by members from the Government, Services, Academia, Industry Professionals and Start-ups was constituted in February 2018 under the Chairmanship of N Chandrasekharan, Chairman, Tata Sons.

The Task Force in its report has, inter alia, Studied the level of AI/ML development in India in general and specific in the context of defence needs.

Made recommendations of making India a significant power of AI in defence specifically in the area of aviation, naval, land systems, cyber, nuclear, and biological warfare; Made recommendations for policy and institutional interventions that are required to regulate and encourage a robust AI based technologies for defence

AI Task Force Submits Report to Defence Minister

The Artificial Intelligence (AI) task force constituted by Defence Minister Nirmala Sitharaman recently submitted a report in which it tried to find that how AI is useful in the area of defence and national security of the country

THE TASK FORCE MADE RECOMMENDATIONS OF MAKING INDIA A SIGNIFICANT POWER OF AI IN DEFENCE SPECIFICALLY IN THE AREA OF AVIATION, NAVAL, LAND SYSTEMS, CYBER, NUCLEAR, AND BIOLOGICAL WARFARE

sector in the country.

Considering that most AI work is happening in private sector, made recommendations to work with start-ups/commercial industry in the field of use of AI for defence purposes.

As part of its deliberations, the Task Force had an intensive deliberations with all stakeholder representatives, including officers from Army, Navy, Airforce, Coast Guard, representatives of all Defence PSUs, namely BEL, HAL, BEML, BDL, MIDHANI, MDL, GRSE, GSL and HSL and OFB.

Senior representatives from these organizations participated in the day long workshop to deliberate in-depth the various use-cases which are relevant from their respective needs. These

discussions had led the Task Force to understand the potential military and civilian applications in AI domain.

Artificial Intelligence (AI) has the potential to have transformative impact on national security. It is also seen that AI is essentially a dual use technology. While it can fuel technology driven economic growth, it also has potential to provide military superiority.

India has strong IT industry and huge talent pool of engineers which are advantages which need to be leveraged. Ministry of Defence has already initiated the process of preparing Indian defence forces in their use of AI and how these capabilities can be increasingly developed within the country. ●

Ensuring Secure Amarnath Pilgrimage should be Government's Top Priority

Though suggesting abrogation of Article 370, and changing name of Jammu and Kashmir may be among various important measures the Government should take to improve situation in the state during the Governor's rule, the immediate priority should be to ensure the smooth and secure pilgrimage to Amarnath **COL ANIL BHAT (RETD)**

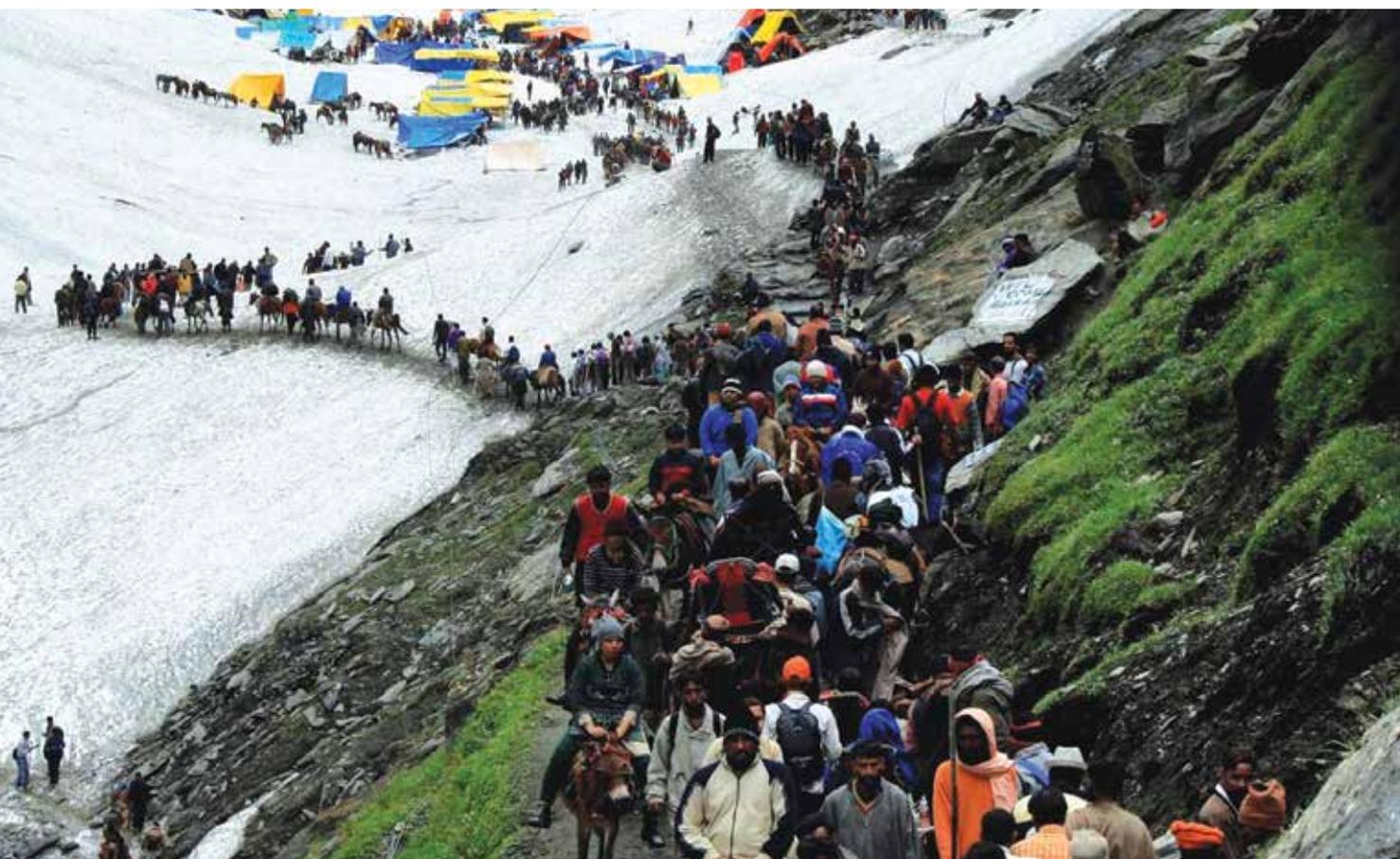
THE OVER two months Sino-India stand-off at Doklam finally got resolved, raising hopes that by October 2017, the two nations would have created a record of completing 50 years of bullet-less management of the long Line of Actual Control (LAC). But for a country which wants to trade tremendously with India, this decades long management to

maintain peace and tranquility has been punctuated too frequently, continuously, by transgressions on some pretext or the other, by China's Peoples Liberation Army (PLA). While PLA air force has been complementing many of the land transgressions, PLA navy has stepped up its presence with proximity in the Indian Ocean Region. PLA's bluster during the stand-off was: "Moving a mountain (is) easier than shaking PLA."



At long last, after proving its high threshold for tolerating all kinds of anti-national activities in Jammu and Kashmir (J&K), the BJP government imposed Governor's rule. Over many years and much more since 2016, Kashmir Valley was sundered with countless heightened acts of terrorism, radicalization, destruction of schools, selective atrocious killings of good/patriotic Kashmiris, victimization of army/security forces (SFs) etc, not to mention many decades of misgovernance by successive governments.

While the decision to impose Governor's rule is a result of political will, much higher degrees of it will be required to take more hard decisions and ensuring their implementation. Because that is the only way to retrieve the seriously infected/contaminated part of the Kashmir Valley, which not only affects the entire State but also the



country's security.

Undoubtedly, while the immediate priority is ensuring a smooth and secure Amarnath pilgrimage, given the terrorist threat and the weather, alongside, tourism will have to be covered similarly. Even on July 8, 2018, a Sunday, the pilgrimage had to be suspended owing to separatists glorifying the death anniversary of a hardcore terrorist leader.

The large community of minor traders for whom tourism provides sustenance has suffered greatly and the BJP government must seriously consider some relief measures for them.

Education, which has since long been majorly targeted by Pakistan through the Valley-based separatists and which was dealt a body blow with the destruction of almost forty schools, will need an urgent and sustained boost.

Ruining education in the Valley



(Top) Pilgrims on way to Amarnath Yatra;

(Below) BSF jawans in action in a terrorist encounter operation

was also linked to the process of radicalisation. The aim of Pakistan's military and mullahs is to destroy education on one hand and on the other to indoctrinate and incite people, particularly youth. While in earlier years radicalization was

carried out through separatist leaders and clerics in mosques and religious/political gatherings, info-technology and social media gave it a massive boost.

None of the elected governments in J&K prevented the spread of

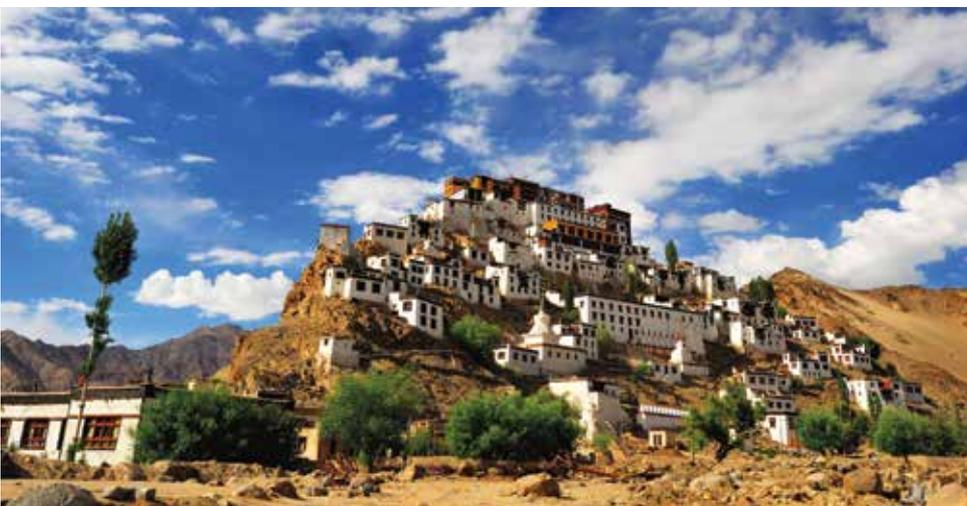
anti-India sentiment and activities. Pakistani and even ISIS flags, pro-Pakistani/anti-India slogans were tolerated or ignored. In fact, both the National Conference and People's Democratic Party pandered to Pakistan/pro-Pakistan elements, forgetting how the Valley had been exploited by Pakistan during the late-1980s onward phase. Thanks to the Indian Army's vigil on the Line of Control (LoC) and terrorism was reduced to the extent that tourism began to flourish once again, it became too much for Pakistan's directors of anti-India operations. New tactics like paid stone-pelting were developed to raise them to the level of hectoring the Army and SFs during their operations. PDP went even further by filing FIRs against Army and SF personnel

for doing their duty while being stoned and even petrol-bombed.

After the abductions and brutal murders of Kashmiri Army personnel like Lt Umar Fayaz, many Kashmiri J&K police personnel and finally Rifleman Aurangzed and Editor of Rising Kashmir, Shujaat Bukhari, that too during the Ramzan ceasefire totally disregarded by separatists and terrorists, the BJP decided to pull out of the alliance and promulgate Governor's rule. One of the reasons for all these murders and for many other problems in the Valley are that over the past decades and particularly in the last few years, truth/facts/history became major casualties. Kashmiris have not only been killed by Pakistani terrorists but also by Pak-supported Kashmiri terrorists

Sansad Bhawan
(Parliament of India);

Ladakh's Thikse
Monastery



and recently even radicalized youth.

While addressing the major challenges during this eighth spell of Governor's rule, decision makers will be well advised to revisit the State's history, geography and demography and review some basic facts about the State, which should be factored in. For seven decades political leaders from New Delhi have endlessly been parroting that J&K is India's 'atoot ang' (unbreakable part), the hard decisions required to run this State so that it remains an unbreakable part have been avoided by both Congress governments at the Centre and of course all J&K State governments.

By the end of 1980s, at least 5,00,000 Kashmiri Pandits/Saraswat Brahmins, the original inhabitants of the land named after the sage, Kashyap, were threatened/intimidated by Pakistan-paid Kashmiri separatists/their network/followers, many were killed and finally over 4,00,000 were forced to flee, leaving behind their belongings and properties.

Of the 22 districts in J&K, there are only 5 districts where separatists hold sway and organize anti-India operations-Srinagar, Anantnag, Baramullah, Kulgam and Pulwama. These are where stone pelting, hoisting of Pakistani and ISIS flags and anti India demonstrations are held. Interestingly these five districts are far away from the LoC. The other 17 districts, including some along the LoC, are fully pro India. So separatist's writ runs in just 15 per cent of the population which is Sunni Muslim dominated. Majority of the people in J&K do not speak Kashmiri as their mother tongue. They speak Dogri, Gujjari, Punjabi, Ladhaki, Pahari etc. Only 33 per cent people in Kashmir speak Kashmiri and this group has controlled the narrative from Hurriyat to terrorists and from NC and PDP and thereby, bureaucracy, business and agriculture. This Sunni dominated 33 per cent is opposed to

India although population of all other Muslims in J&K is 69 per cent.

The State of J&K, which includes Ladakh (excluding Pakistan Occupied Kashmir, which is legally India's/part of J&K) has a square area of 101380 sq kms, of which 26 per cent is Jammu, 15 per cent is Kashmir and 59 per cent is Ladakh. Considering this fact, the State should really have been named Ladakh, Jammu, Kashmir. It is worth considering to do so even now.

Of the total area of the State, 85,000 sq Km, which is 85 per cent of it, has a non Muslim majority. Of the total population of 1.25 crores (12.5 million), Kashmir's population is 69,00,000, of which 55,00,000 speak Kashmiri. The remainder 13,00,000 speak non Kashmiri languages.

Jammu, with a population of 53,00,000 comprises people speaking Dogri, Punjabi and Hindi. 3,00,000 people of Ladakh speak the Ladakhi language. There are 7,50,000 people settled in the State, who have not been granted the State's citizenship.

More than fourteen major religious/ethnic groups amounting to 85 per cent of the population of J&K, are totally pro India. These include Shias, Dogras (Rajputs, Brahmins and Mahajans), Kashmiri Pandits, Sikhs, Buddhists (Ladakhis), Gujjars, Bakarwals, Paharis, Baltis, Christians and some more.

Shias (12 per cent), Gujjar Muslims (14 per cent), Pahadi Muslims (8 per cent), Buddhists, Pandits, Sufis, Christians and Jammu Hindus/ Dogras (approximate 45 per cent) are



Women in Ladakhi traditional dress code

totally opposed to separatism and Pakistan. Poonch and Kargil have above 90 per cent Muslim population. There has never been an anti India or separatist protest in these districts.

Separatists also control a section of the media in J&K, which carries/contributes to anti-Indian propaganda/sentiment and also tries to create the impression that all of J&K is against India. It is high time a long overdue course-correction is done in J&K. If the Constitution of India stipulates that the provisions related to Article 370 for J&K are of "purely temporary nature", then all the more reason that for the vital cause of India's integrity and security, it is abrogated.

Some of many other steps required are:

- The narrative in the Valley has to be changed. As tried out in recent months by Army/SFs, use social media to involve the parents/close relative/friends of radicalized youth/those being motivated to join Pakistani or Kashmiri terrorist groups, to appeal to them to return. Make use of social media to revisit history. Make Kashmiris aware of what Pakistan is doing in Pak

Occupied Kashmir, Balochistan etc.

- Simultaneously, social media needs to be closely monitored not only in J&K but the rest of the country, to prevent the vast spread of leftists/apologists from derailing the debate.

- Disable the network organizing anti-India/Army/SF operations/stone-pelting and revoke FIRs against Army/SFs personnel.

- Education must be fully resumed and school-burners must be punished/prevented from any further attempts.

- All government departments must function properly.

- Adopt Indian Army's Sadbhavna (civic assistance programme) methods to win hearts and minds.

- No matter what all is done by Army/SFs, till the separatists leaders and their minions are not literally separated from the Valley, terrorism will continue unabated. For lasting peace, legal action must be taken against them and they should be put in jails outside J&K.

With too much at stake, it is time to cross the Rubicon-the Jhelum in this case.

—The author, an independent strategic analyst, is Editor, WordSword Features

IT IS HIGH TIME A LONG OVERDUE COURSE-CORRECTION IS DONE IN J&K. IF THE CONSTITUTION OF INDIA STIPULATES THAT THE PROVISIONS RELATED TO ARTICLE 370 FOR J&K ARE OF "PURELY TEMPORARY NATURE", THEN ALL THE MORE REASON THAT FOR THE VITAL CAUSE OF INDIA'S INTEGRITY AND SECURITY, IT IS ABROGATED

EUROSATORY-2018

With emphasis on Modern Technologies

The bi-annual event Eurosatory attracted attention for visitors to view modern technologies as many armies are undergoing modernisation with rapid forces and technologies like UAVs, guns, newly developed armoured vehicles, missiles, and rocket launchers. India too was in the market for anti-tank launchers, small arms, UAVs, and a new Main Battle Tank and armoured vehicles. **BY CMDE RANJIT B RAI (RETD)**

Paris. The world's total military expenditure has been rising steadily with no peace dividend in sight, and rose to \$1.739 trillion in 2017, according to figures from the Stockholm International Peace Research Institute (SIPRI).

This figure has further increased in 2018 led by the US with a record budget of \$700 billion this year while China announced a \$175 billion defence budget. In comparison India announced Rs 2.95 lakh crore defence budget (around \$46 billion with dollar variation) and the two larger European budgets of the UK and France hover around \$50 billion. Russia and the West Asia like Saudi Arabia and the UAE, and ASEAN and Japan's defence budgets around \$40 billion are on the rise though more emphasis is on maritime spends for expansion, yet the land forces are larger in numbers in most nations

including India and recipients of large budgets. European budgets are static hoping to support each other and dependant on the NATO where the US is a big contributor.

Many militaries including Western are also currently engaged in operations in the West Asia and even India along the India-Pakistan border with large expenditure on ammunition, which requires topping up and on the lookout for modern technologies. Spending on defensive and offensive cyber warfare is on the rise. Post the Doklam incursion by China, the Indian Army has been given a fillip with new Korean, BAE and Ordnance Factories Dhanush 155mm guns and small arms, Heron UAVs and nine Apache attack helicopters are on order with modernisation and a new Corps for the North Eastern border at Ramgarh with beefing up of the Indo-China border. There is a shortage of equipment for the new Corps having cannibalised other

units, with no attempt to remove deadwood.

It was with this background that the bi-annual Eurosatory- 2018, which is a military exhibition which is claimed as being the largest exhibition of land





IMAGE CREDIT: AVIATION & DEFENCE UNIVERSE

and air-land defence and security in the world was held from June 11-15 at the Parc des Expositions de Paris-Nord Villepinte Exhibition Centre, north of Paris under tight security conditions. The show attracted attention for visitors to view modern technologies as many armies are undergoing modernisation with rapid forces with modern software hopping communication radio sets, UAVs, planning new tanks or upgrading their inventory of tanks, guns, armoured vehicles, missiles, and rocket launchers. India too is in the market for anti-tank launchers, small arms, UAVs, and a new Main Battle Tank and armoured vehicles.

Eurosatory this year covered more than last 2016 show's 167,217 sqm of indoor with a new hall and an esplanade next to the car park and outdoor exhibition space with some 1,300 exhibitors from 57 countries and international professional visitors of the armed and security forces from 103 countries and delegations from 94 countries. Some 700 journalists

THE HIGHLIGHT FOR INDIA WAS THAT EIGHT SMSES JOINED A FICCI DELEGATION TO ATTEND EUROSATORY AND MEETINGS WERE ARRANGED FOR THEM TO MEET PROSPECTIVE BUSINESS PARTNERS, AND THOSE WHO ARE ALREADY COLLABORATING WITH THEM



(Right) A compact gun anti tank missile mounting for Armoured Vehicles

covered the show including some from Indian defence magazines. Also a representative from Indian Ministry of Defence (MoD) was reportedly present there.

The highlight for India was that eight SMSEs joined a FICCI delegation to attend Eurosatory and meetings were arranged for them to meet prospective business partners, and those who are already

collaborating with them. The three big companies involved in defence production in India included India's largest cash rich missile supplier to the three armed forces BrahMos Aerospace Ltd, MKU and Mahindra Defence, who showcased their products. They were listed below along with eight of these companies in the FICCI delegation and did not take stalls but were accorded special



MAHINDRA DEFENCE SYSTEM ASSOCIATED WITH BAE AND MKU LEADING MANUFACTURER OF LIGHT WEIGHT ARMOUR AND ELECTRO OPTICAL WITH SUPPLIES TO 100 MILITARIES IN THE WORLD WERE AT THE SHOW TO GARNER BUSINESS

business facilities. Indian Chief of Mission in Paris (France) Manish Prabhat met the Indian delegates. The lowest price for a small stall was quoted at Rs 35,000.

The large Indian companies at the show were BrahMos which displayed the missiles for the Army, Navy and the Su-30MKI which is due to complete trials and the associated mobile autonomous launcher (MAL), which attracted much attention. The supersonic missile has potential and inquiries for exports and BrahMos displays at shows abroad but has not made a sale, possibly as it is not the OEM. Mahindra Defence System associated with BAE and MKU leading manufacturer of light weight armour and electro optical with supplies to 100 militaries in the world were at the show to garner business.

The SMSEs from India included Asiatic Composites a growing field, Axiscades Engineering Technologies with software expertise, Celliber Ltd, DECAGON-Defence Protection System, Future Automation Pvt Ltd Hyderabad, a company which makes fuzes and 40 mm grenades shells and cartridges for 23 and 30 mm and components for ammunition, Integrated Fire Protection pvt Ltd, Integrated Solutions, Rangsons

Schuster Technologies, Starwire Ltd, Texmaco Defence Systems and Tonbo Imaging. Many Indian small scale companies have bagged small orders but the procurement procedures are not supportive for long term business.

Varied industries from the Defence and Security domains exhibited their products and expertise, and newer products and international requirements and innovative products were on display and experts of the Defence and Security worlds met to further business and network. The large conferences attracted attention and Eurosatory is called an army showcase in Paris.

For the first time, institutional Live Demonstrations called Eurosatory Live were conducted by the French Army, French Police, Special Operations Command, National Gendarmerie Intervention Group, Research and Intervention Brigade, and the Paris Fire Brigade with anti-terrorism and military policing in view for the audiences. New combat and armoured vehicles attracted attention.

Launchers are seeing improvements and even India has yet to decide on the pending order for Spike from Israel or the Javelin anti-tank launchers

from the US on display at shows. MBDA, an International developer and manufacturer of missiles with headquarter in France, continues with the development of Enforcer, a new one-man portable shoulder-launched on-shot guided weapon system. The Enforcer will be offered to the German army, where it could complement the Wirkmittel 90 infantry weapon which has an effective range of 1,200 metres, offering an additional munition for the system. Israel a large supplier of radars, UAVs, communication sets and aviation solutions to India had stalls as a lead supplier for high-end technology to the world militaries.

In a development aided by software four dimensional (4D) radars can now provide surveillance and tracking solutions to ground based air defence weapon systems called TMRL 4D Radar which was on display. Rheinmetall Defence, which was banned in India but old orders continued, unveiled the new tracked armoured KF41 Lynx & defence products. Safran which does big business with India was at the show along with all French companies. Arnold Defense, the American-based

A plethora of small arms displayed at Eurosatory

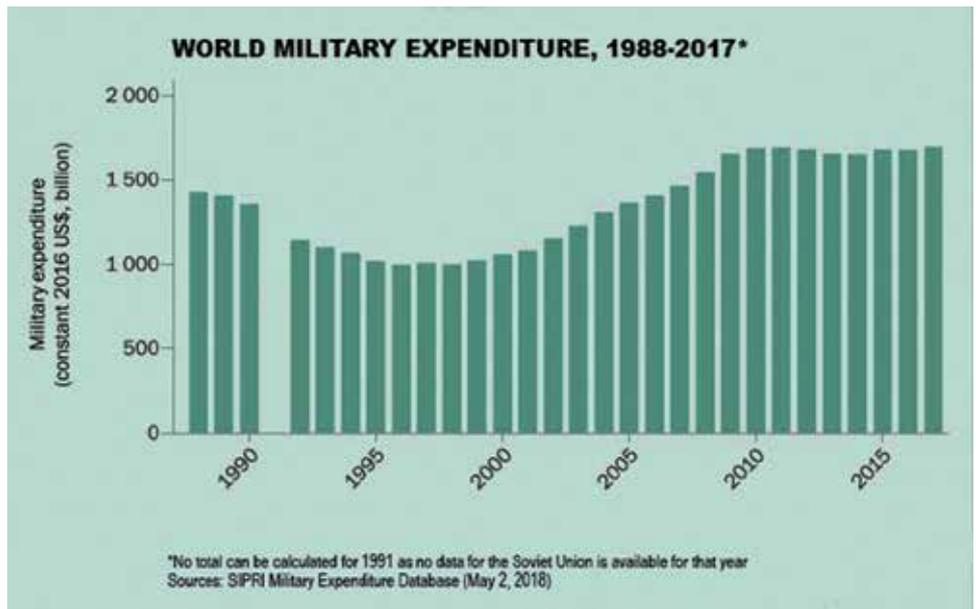
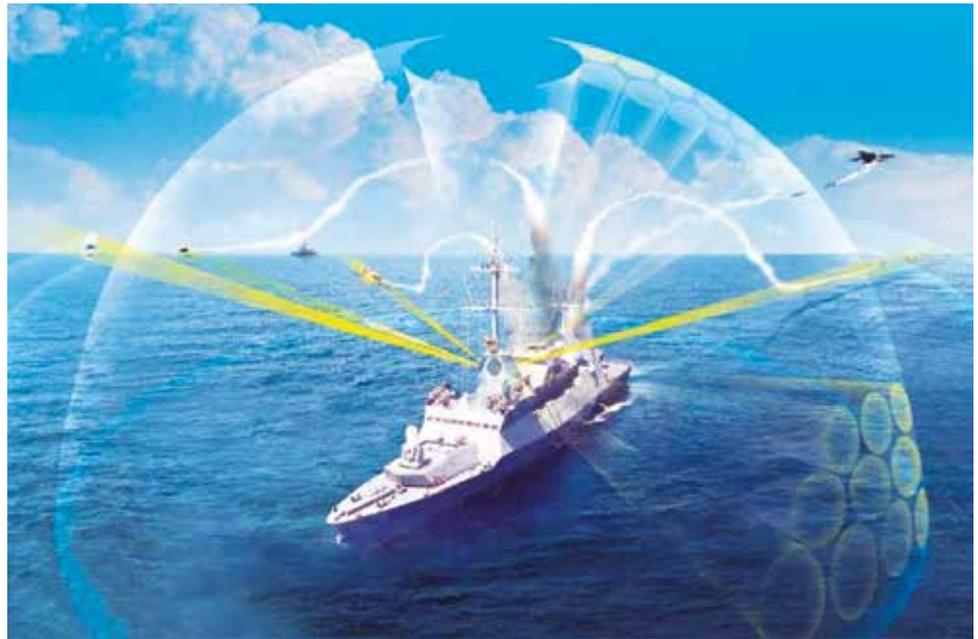


international defence manufacturer and supplier of 2.75-inch rocket launchers, announced successful test firing results of their "FLETCHER" land-based, 2.75-inch/70mm Weapon System at the Eurosatory. CBRN issues were discussed with the participation of French and foreign Ops Officers, exhibitors from the D&S domains, state representatives, experts and VIPs. This event showed existing technology clusters and live demonstration, dedicated to the CBRN issues.

This year the display of Germany's Krauss-Maffei Wegmann and France's Nexter Defense Systems (KNDS) jointly pitched a cross between a Leopard 2A7 chassis and a AMX-56 Leclerc turret at this big show. Officially dubbed the European Main Battle Tank, or EMBT, the vehicle is meant to showcase that German and French companies can work together on the path towards an envisioned Main Ground Combat System pursued by both nations, which is slated to see the light of day in the mid-2030s.

Additionally, the developers believe that this "Frankentank" meets a real-life demand, and they hope a paying customer might take the idea and run with it. For now, the EMBT is a demonstrator project funded by the two companies' joint venture, KNDS comprising a modified fuselage, a 7-axle chassis, a Leopard-2A7V propulsion unit and a twin, lighter version of the Leclerc's turret with an ammunition autoloader and a 120mm CN1120-26 smoothbore cannon. To date, the French Army has acquired 406 Leclercs of which 320 of them make up four armoured regiments each with 80 Leclercs.

It would be relevant to mention under the supervision and guidance of the DRDO's Avadi-based Combat Vehicles Research & Development Establishment (CVRDE), and with the help of the MoD's Directorate General of Quality Assurance (DGQA) and the IA's Corps of Electronics & Mechanical Engineers (EME), a number of key



decisions have been taken to achieve a weight reduction of 8 tonnes in the existing design of the 68-tonne Arjun Mk.1A MBTs, 118 of which are now in delivery. For starters, the baseline hull of the definitive Arjun Mk.2 will no longer be built with imported low-carbon, nickel-chromium-molybdenum rolled homogeneous armour (RHA) steel, but with lighter high-nitrogen steel (HNS) whose production technology has been mastered by the DRDO's Hyderabad-based Defence Metallurgical Research

Laboratory (DMRL) and has been transferred to civilian company. An area of concern is that not many service officers are deputed to such shows abroad unless a Minister accepts the invitation as exposure to new technologies is the key for modernisation of militaries. A mere report from a Defence Attache gets binned.

— Cmde Retd Ranjit B Rai is an author and editor of *The Modern and Future Indian Navy Diary-2018 Edition* ISBN 9780003289866. The 2019 edition will be issued in September 2019 at Euronaval in Paris



India's Defence Relations and Cooperation with Africa

The relations between India and Africa seems to be robust, courtesy trade relations. It can be substantiated from the fact that the current bilateral trade between India and Africa stands at \$62.66 billion. **BY ABHISHEK MISHRA**

AFRICA'S CENTRALITY in India's foreign policy initiatives has consolidated over the years, primarily driven by economic interests and quest for international recognition. African countries are fast emerging as one of the most sought after destinations for fostering bilateral cooperation and investment partnerships.

The synergy that exists between India and Africa can be gauged from the robust trends in trade relations. At present in 2017-2018, bilateral trade between India and Africa stands at \$62.66 billion. However, there is a substantial imbalance in the import-export relationship with Africa. The trade balance is in favour of African countries due to India's high demand for energy resources, crude oil and petroleum. Exports from



“We may be on different time zones. Our ancestors may have been separated in history. Our nationalities may be different and our support may be for different cricket teams. But our common heritage makes sure we remain connected in hearts and minds”

Prime Minister Narendra Modi

(Right) African leaders dressed in brightly coloured 'Kurba pyjama with Bandi' and 'safa' during India-Africa Forum Summit held in New Delhi;

(Below) President Ram Nath Kovind being received by Prime Minister of Djibouti Mr Abdoukader Kamil Mohamed on his arrival at Djibouti - Ambouli International Airport

biggest diplomatic success as 41 African Heads of State and Government participated. In July 2016, Modi visited African countries as a part of his four nations (Mozambique, South Africa, Tanzania and Kenya) tour. Moreover, since assuming office in July, 2017, all three of President Ram Nath Kovind's foreign visits have been to African countries such as Djibouti, Ethiopia, Mauritius, Madagascar, Swaziland (eSwatini), Equatorial Guinea and Zambia.

India's Arms Imports:

India continues to be world's largest arms importer primarily due to its poor defence industrial

base. From 2013-2017, India accounted for 12 per cent of global arms imports, followed by Saudi Arabia, Egypt, UAE, China, Australia, Algeria, Iraq, Pakistan and Indonesia. India's largest arms supplier is Russia, followed by the US and Israel. In the last decade and a half, India has cumulatively spent over \$75 billion in arms deal.

Officially, the amount allocated for 2018-2019 Indian defence budget is INR 2,79,305 crore. However, this amount does not take pensions into account amounting to INR 1,08,853 crore, and INR 16,000 crore spent by the Ministry of Defence (MoD) itself, thus amounting to total INR 4,04,365 crore.

India as an Arms Exporter:

Although the Indian government supports the export of defence products, it has not pursued it with high intensity, primarily due to its belief that arms export can indirectly fuel conflicts. However, India's desire to play the role of a global leader has led India to shed its traditional cloak and pursue

Africa have been largely dominated by raw materials such as crude oil, gold, raw cotton and precious stones. Indian exports to Africa, especially to sub-Saharan countries, consist of high-end consumer goods such as automobiles, pharmaceuticals and telecom equipment. Moreover, India's investment partnership with Africa is also consolidating over the years. India is the fifth largest investor in Africa with cumulative investment of \$54 billion from 1996-2016.

Apart from bilateral trade and investments, high-level visits embody India and Africa's unique partnership. Since coming to power in 2014, Narendra Modi's government has undertaken multitude of visits to 23 African countries, at the President, Vice-President and Prime Ministerial level. The third India Africa Forum Summit (IAFS), held in New Delhi in October 2015, represented India's





defence exports aggressively.

Arms trade is a part of defence diplomacy, and defence exports are crucial instruments of state influence, earning goodwill and revenue. Of late, India has started on its potentials as a manufacturer of defence equipment. India could well be a destination for defence production. The ambitious 'Make in India' project in defence production, launched in September 2014, seeks to make India self-reliant in defence production and this is one area where opportunities for trade in small arms with several African countries may become a reality.

Changes in India's Defence Export Policy

There are various documents which

govern defence procurement and manufacturing in India. They are:

- The 2011 Defence Production Policy (DPP) which aimed to achieve 'self-reliance' through indigenisation of defence production sector and greater participation of private Indian firms
- Defence Procurement Procedure 2013
- Technology Capacity and Perspective Roadmap (TPCR) 2013,
- Strategy for Defence Export (SDE) 2014, under Make in India initiative
- Defence Procurement Procedure 2016

Govt. of India has also recently announced the Defence Production Policy 2018 which seeks to promote domestic production by public sector,



Prime Minister Narendra Modi waves after Commissioning of Offshore Patrol Vessel Barracuda in Port Louis,

private sector and MSMEs.

Under these aforementioned documents, an array of steps has been taken by Govt. of India to boost India's export potential such as:

- Issue end-user certificate
- Allow Defence Public Sector Undertakings (DPSUs) to export maximum 10 per cent of annual productions
- The issuance of No Objection Certificate (NOC) is now a time-bound and web-based process
- Under 2014 Strategy for Defence Export (SDE), 2 bodies were created; Defence Export Steering Committee (DESC) which is a senior level functional institution, and Export Promotion Body (EPB) which is an advisory body and coordinates defence schemes and markets defence equipments in

specific countries.

By setting an ambitious target of reaching \$2 billion in defence exports by 2019, India has signalled its desire of pursuing arms production and export, especially under the 'Make in India' initiative with more intent. However, there are a number of challenges confronting Indian arms exports.

There are limited numbers of indigenous military platforms for export. "Even in the case of Indian-built equipment (T90 tank, Su-30 fighter aircraft) the Intellectual Property Rights belong to foreign firms", thus making it difficult for New Delhi to export without due approval from the supplier firm and country. Even platforms which are co-produced by India and other countries (like BrahMos) face similar problem. Therefore, the main challenge for India is to find a way to produce indigenous equipment's with high sales value abroad. Project deadlines need to be adhered to strictly if India wants to localise and modernise defence technology from foreign firms.



Mauritius Coast Guard Ship (MCGS) Barracuda

India-Africa Bilateral Arms Trade:

Over the years, India has placed considerable emphasis on improving defence cooperation with the African countries. India has been periodically providing Mauritius with reconnaissance assets including an interceptor patrol boat (2001), three Dornier Do-228 maritime surveillance aircraft (in 2004 and 2010), a Dhruv Helicopter (2009), and three new Island aircraft engines in 2013. In December 2014, India exported its indigenous off-shore patrol vessel (OPV) 'CGS Barracuda' to Mauritius and has helped to install an Automated Identification System (AIS) and Coastal Surveillance Radar System.

BY SETTING AN AMBITIOUS TARGET OF REACHING \$2 BILLION IN DEFENCE EXPORTS BY 2019, INDIA HAS SIGNALLED ITS DESIRE OF PURSUING ARMS PRODUCTION AND EXPORT, ESPECIALLY UNDER THE 'MAKE IN INDIA' INITIATIVE WITH MORE INTENT

India has three helicopters (one Cheetah and two Chetak) to Namibia. In 2005, India gave Seychelles Coast Guard a fast track vessel, INS 'Tarmugli', two seaward defence boat (SDB) MK-5 patrol vessels, one Do-228 aircraft and two Chetak helicopters in 2010. Moreover, Indian military vehicle manufacturing companies such as Tata Motors and Ashok Leyland have delivered 1200 vehicles to at least 6 African armies in 2015.

From African side, as per SIPRI arms transfer database (2000-2017), South Africa exported 75 Casspir mine resistant ambush-protected vehicles (MPVs) and had a licence agreement with an Indian company for the production of components and final assembly in India for 300 Casspir-6 MPV-1 versions.

India and African countries have also collaborated to develop various listening posts, especially in the Western Indian Ocean region. In 2015, PM Modi signed MoUs to develop infrastructure on Agalega Island in Mauritius, and on Assumption Island in Seychelles. This will add to India's existing listening post in Madagascar, commissioned in 2007.

Africa as India's Next Destination for Defence Export:

Africa and India are not only age old partners but have civilizational links, shared common historical experiences, convergences on global issues, and similar climatic conditions as well. Although military and defence ties between India and African countries are neither well entrenched nor definitive, these ties are in the making. A considerable progress has been achieved because this is a new area of cooperation between the two regions. The question of military and defence ties requires





slow building, and India and Africa are on the right track.

Only a few African countries such as South Africa, Egypt, Algeria, Morocco and Nigeria have the requisite capacity to manufacture arms and ammunition. However, a number of other countries such as Kenya, Ghana, Ethiopia, Tanzania, Sudan, Namibia and Zimbabwe are increasingly producing military hardware and equipment.

The future of African arms market and its military expenditure will be contingent on certain key factors such as; external and internal threat perceptions, international cooperation in peacekeeping, anti-terrorism efforts, and numerous regional conflicts plaguing the continent. However, recent trends in African arms imports provide a gloomy picture. According to SIPRI, "African arms imports dropped by 22 per cent, but Algeria, Morocco and Nigeria continued to order large quantities of weapons and equipment." Most of the

hardware's supplied went to Algeria (52 per cent of African arms imports), Morocco (12 per cent and Nigeria (5.1 per cent Although major arms play an important role in military operations in Africa, due to lack of resources, procurement typically involves small numbers of relatively low-end weapons.

It is also well known that the African defence market is dominated by Chinese weaponry. However, over the years, African countries have shown willingness to diversify their import basket. This provides India, an emerging player in the continent, with a crucial opportunity.

To capitalise on this opportunity,



Indian women
peace-keepers in
Liberia

THE AFRICAN DEFENCE MARKET IS DOMINATED BY CHINESE WEAPONRY. OVER THE YEARS AFRICAN NATIONS SHOWN WILLINGNESS TO DIVERSIFY IMPORT BASKET. THIS PROVIDES INDIA, AN EMERGING PLAYER IN THE CONTINENT, WITH A CRUCIAL OPPORTUNITY

Government of India has taken various steps to increase investor confidence by creating investment facilitation offices, reducing licensing and regulatory requirements of defence sector, implementing single window clearance schemes, and launching eBiz portals. Although Indian private defence companies have previously supplied military grade light trucks to various African armies, India is yet to sell any significant weapons system in the region. However, there has been an increasing presence of African delegations at India's defence and weapons exhibitions such as Defence Expo and Aero India. This indicates African countries' desire to expand, diversify and find alternative partners for their arms imports.

With a competitive cost advantage of skilled, disciplined manpower, along with regional and global supply chains, and comparatively cheaper products, India's defence exports to Africa can catapult in the years ahead.

— The writer is a Research Assistant at ORF and PhD in African Studies, University of Delhi

India, Seychelles Need to Work Together as Partners in Strengthening Regional Architecture of Indian Ocean

New Delhi. President Ram Nath Kovind has said that India and Seychelles need to work together as partners in strengthening the regional architecture of the strategic Indian Ocean. He was speaking while receiving Danny Antoine Rollen Faure, the President of the Republic of Seychelles at the Rashtrapati Bhavan in New Delhi June 26. Welcoming President Danny Faure to India, the President said that India recognises the leadership role of Seychelles in Small Island Developing States (SIDS), Indian Ocean Rim Association (IORA) and on climate change and maritime security issues. Seychelles has also emerged as the top African country in the Human Development Index.

It has consistently figured among the top five ranking countries in Africa for overall governance. He complimented the Government of Seychelles for these extraordinary achievements. The President said that India and Seychelles have a very special relationship, built on the foundation of mutual trust, enormous goodwill and shared values.

The two countries are happy to share the same geostrategic vision of maintaining peace, security and stability in the Indian Ocean. Our countries need to work together as partners in strengthening the regional architecture of the Indian Ocean, Mr



President Ram Nath Kovind with the visiting Seychelles President Danny Faure;

President Kovind with his Seychelles counterpart in a delegation level meeting

“INDIA HAS A ROBUST DEFENCE, SECURITY AND STRATEGIC COOPERATION WITH SEYCHELLES. INDIA-SEYCHELLES STRATEGIC CONVERGENCE HAS REINFORCED THE RESOLVE TO SECURE THEIR OCEANIC SPACE, IN THE REGION AND BEYOND”

— President Ram Nath Kovind

Kovind observed.

The President said that the vast natural resources provide limitless opportunities for the growth and prosperity of our future generations. Our common goal should be to harness the full potential of the ocean based Blue Economy in sustainable manner. He stated that India is happy that Seychelles is partnering it in the International Solar Alliance initiative as a founding member. India looks forward to working with Seychelles to develop solar energy projects in Seychelles. The President assured the Seychelles President of India’s continued commitment for extending

development assistance to Seychelles in all the areas which the Government of Seychelles considers critical and of direct benefit to its people.

Subsequently, in his banquet speech, President Kovind said that close bonds of friendship between India and Seychelles have stood the test of time. For the past four decades, since the independence of Seychelles, our countries have been working together as partners in tackling common challenges, addressing critical issues, and strengthening regional and global cooperation frameworks.

The President said that India has a robust defence, security and strategic cooperation with Seychelles. India-Seychelles strategic convergence has reinforced the resolve to secure their oceanic space, in the region and beyond.

India views the Indian Ocean and the Pacific as a contiguous construct sharing similar economic opportunities and security challenges. Our vision is for a free, open, peaceful, prosperous and inclusive Indo-Pacific region, based on a rules-based order and respect for sovereignty and territorial integrity, he noted.





Boeing Partners with HAL and Mahindra for F/A-18 Super Hornet Make in India

In yet another major boost to Make in India, American Defence giant Boeing has collaborated with PSU HAL and private player Mahindra Defence for producing F/A-18 Super Hornet in India

Chennai. Boeing has announced a partnership with Hindustan Aeronautics Limited (HAL) and Mahindra Defence Systems (MDS) for manufacturing the F/A-18 Super Hornet in India for its armed forces and pursuing the joint development of future technologies.

The partnership will transform India's aerospace and defence ecosystem, further building on its 'Make in India' success.

"Boeing is excited to team up with India's only company that manufactures combat fighters, HAL, and India's only company that manufactures utility and

surveillance aircrafts, Mahindra. This partnership brings the best of Indian public and private enterprises together in partnership with the world's largest aerospace company, Boeing, to accelerate a contemporary 21st century ecosystem for aerospace & defence manufacturing in India," said Pratyush Kumar, president, Boeing India, after partnership was announced on 12th April 2018.

"Our partnership with HAL and Mahindra will enable us to optimize the full potential of India's public



and private sector to deliver next-generation F/A-18 fighter capabilities. Together we can deliver an affordable, combat-proven fighter platform for India, while adding growth momentum to the Indian aerospace ecosystem with manufacturing, skill development, innovation and engineering and job creation.”

“Hindustan Aeronautics Limited has always been at the forefront of aerospace development in India’s aerospace sector,” said T Suvarna Raju, chairman and managing director, Hindustan Aeronautics Limited. “This partnership with Boeing and Mahindra Defence Systems will create an opportunity to develop capabilities of the aerospace industry and strengthen indigenous platforms in India thereby contributing to the Make-in-India activities.”

Future production with Indian partners will involve maximizing indigenous content and producing the F/A-18 in India for its armed forces to create a 21st century aerospace ecosystem.

“We are excited about the opportunities that this partnership with Boeing and HAL will provide for us to contribute further to ‘Make in India’ for defence,” said S.P. Shukla, Group President, Aerospace & Defence, Mahindra Group, and Chairman, Mahindra Defence Systems. “As one of the largest private sector defence companies, we look forward to supporting the modernization effort of our armed forces and achieving economies of scale in the aerospace and defence sector.”

The Super Hornet Make in India proposal is to build an entirely new and state-of-the-art production facility that can be utilized for other programs like India’s Advanced Medium Combat Aircraft (AMCA) programme.

This partnership is intended to bring Boeing, HAL and MDS’ global scale and supply chain, its best-in-industry precision manufacturing processes, as well as the unrivaled experience designing and optimizing aerospace



Top Left Page: Pratyush Kumar, president, Boeing India, T. Suvarna Raju, Chairman and Managing Director, Hindustan Aeronautics Limited, and S.P. Shukla, Chairman, Mahindra Defence Systems; **bottom left to right:** Dan Gillian, Vice President, F/A-18 Program, Boeing, D.K. Venkatesh, Director, Hindustan Aeronautics Limited, and N. Raviswaran, Head, Strategic Partnerships, Mahindra Defence Systems, at the signing ceremony of the partnership for the Make in India F/A-18 Super Hornet fighter, at DefExpo in Chennai.

production facilities to both expand India’s aerospace ecosystem and help realize the Make in India vision.

The plan addresses the infrastructure, personnel training, and operational tools and techniques required to produce a next gen fighter aircraft right here in India. In addition, Boeing will work closely with India industry to ensure they have the very latest technologies, applying lessons learned from the current Super Hornet production line. As the most advanced and least expensive aircraft per flight hour of its kind, the F/A-18 Super Hornet will deliver on India’s need for a carrier and land based multi-role fighter. The Super Hornet does not only have a low acquisition cost, but it costs

less per flight hour to operate than any other tactical aircraft in US forces inventory. And with a plan for constant innovation, the F/A-18 Super Hornet will outpace threats, bolster defence capabilities and make India stronger for decades to come.

The F/A-18 Super Hornet has a long life ahead, with the US Navy making significant investments in the latest evolution, the Block III. Key features of the U.S. Navy Block III Super Hornet include enhanced network capability, longer range and low-drag with conformal fuel tanks, long-range detection with Infrared Search & Track, enhanced situational awareness with a new Advanced Cockpit System, improved signature reduction and a 9,000+ hour life. ●



GSL and Naval Group Strengthens Cooperation in Field of Simulators

Simulators manufacturing is one of the emerging field in the area of the defence these days, following which the defence PSU Goa Shipyard has tied up with Naval Group to produce the same

Chennai. GSL, a premier Defence PSU Shipyard, along with Naval Group, leader in French Naval Defense industry, have signed a 'Letter of Intent' on April 12, 2018 to expand their collaboration in the field of design and production of all shore based simulators for Scorpene Submarine project and also for other future advanced simulator requirements of the Indian Navy.

A Successful Industrial Cooperation in India

In line with 'Make In India', these simulators are planned to have significant indigenous content. The two companies had also signed Memorandums of Understanding (MoU) (latest one in October 17 for simulators for submarine's Combat Management System (CMS)). The two entities had also collaborated earlier on

GSL CMD Rear Admiral Shekhar Mital with Naval Group Director of the International Trade Department François Dupont

future projects including advanced simulators for Integrated Platform Management System (IPMS) and Submarine Escape Training Tower (SETT). With this renewed collaboration with Naval Group, GSL will be able to offer complete suite of simulators, including 3D simulators for the different future platforms of (including submarine program) for Indian Navy.

During the occasion, Rear Admiral Shekhar Mital, Chairman and Managing Director of GSL said, "Moving ahead with the Vision of 'Make In India' and bringing state of art technologies to India, we have expanded the scope of futuristic diversification on the strength of our old partner M/s Naval Group, France and will now be making series of simulators for Scorpene Submarines of Indian Navy. This is in addition to the array of Land Based Simulators such as Damage Control Simulator, Fire Fighting Simulator and Nuclear Biological & Chemical Simulator that GSL has designed and supplied to the Indian Navy in the past."

Sharing the joy of this partnership, François Dupont, the Director of the International Trade Department of Naval Group added, "Naval Group's commitment to 'Make in India' is reinstated through this value added partnership while offering latest generation advanced simulators which will benefit the future trainings of Indian Navy's ambitious and autonomous crews." Advanced and High Tech Simulators for world navies Naval Group considers training as key aspect of shipbuilding and operations of naval assets. In line with this, Naval Group develops its own simulators. The objective is to meet in a practical and pragmatic way the needs of crews in operations. The use of simulators enables navies to prepare their crews for the most extreme situations. Naval Group supplies a tactical simulator, an exact reproduction of the control



“Moving ahead with the Vision of Make In India and bringing state of art technologies

to India, we have expanded the scope of futuristic diversification on the strength of our old partner M/s Naval Group, France and will now be making series of simulators for Scorpene Submarines of Indian Navy”

Rear Admiral Shekhar Mital
Chairman and Managing Director of GSL

room of the Scorpène submarine, and a diving safety simulator driven by a moving platform. Naval Group also proposes solutions for crew training on ship operation (FREMM frigates, force projection and command ships, Gowind corvettes, etc.) without immobilising the ships. In parallel, for operations, the tactical simulator is capable of reproducing the interaction of more than 100 operator stations for some twenty different ships.

Commitment to the 3D Simulator

Ship Inside Naval Group’s 3D simulator named Ship Inside is aimed to new crew members, instructors and naval base maintenance staff. This product is intended for familiarization of crew with new ship (working space, living spaces, systems, equipment and weapons).

When the ship is unavailable (building or under maintenance periods), this immersive and interactive software of visualisation allows each crew member to have a first contact with its future onboard environment. Each crew will be able to locate itself physically and functionally within the platform and its equipment thanks to the 3D simulator.

Key USPs of this product is its interactive simulation, usable virtual reality devices for immersive experience, adaptability to any systems, based on COTs hardware, and multi-configuration training. It is adapted for both submarines and surface ships.

Defence Minister Visits BrahMos Pavilion at DefExpo



Defence Minister Nirmala Sitharaman visiting BrahMos pavilion at DefExpo

Chennai. Defence Minister Nirmala Sitharaman on April 13 visited BrahMos Aerospace pavilion at the DefExpo held on the outskirts here of the state capital of Tamil Nadu. She was also briefed about the latest developments with regard to the Indo-Russian Joint Venture programme. The Minister saw the various configurations of the BrahMos Weapon System which was on display at the pavilion. She was also apprised of the missile’s formidable capabilities by BrahMos CEO & MD Dr Sudhir K Mishra. The Defence Minister was accompanied by DRDO Chairman Dr S Christopher and Scientific Adviser to the Defence Minister Dr G Sathesh Reddy. BrahMos Aerospace exhibited the Land-based, Ship-based and the recently tested advanced Air-launched BrahMos supersonic cruise missile variants at the DefExpo. Through its involvement with a large number of MSMEs in defence sector, the India-Russia JV has steadily shown the spirit of Make In India and also established a strong Missile Complex in the country.

Si2 Microsystems, Rosoboronexport Sign MoU

Chennai. A Bangalore-based defence manufacturing company Si2 Microsystems Pvt Ltd has signed a Memorandum of Understanding (MoU) of cooperation with JSC Rosoboronexport for technical collaboration and marketing of integrated perimeter security solutions for the Indian market. In the backdrop of Fidayeen attacks, the Indian security establishment are investing heavily in security of their assets and establishments in the insurgency infested regions. Besides, the Indian Air Force also renewed its perimeter security needs in the aftermath of the Pathankot Air Base attacks. Alexander V Shcherbinin, Chief of Marketing Department of JSC Rosoboronexport, and Sanjay Soni, President Si2 Microsystems, soon after signing the MoU said in a joint statement that both parties are looking forward to closer collaboration in perimeter security and other related areas in future. Si2 Microsystems Pvt Ltd was established in 1996, and is a leading manufacturer of systems and sub systems for Indian and International customers in both commercial and defence space.

Chief of Naval Staff Launches BEL's 3D ASR

CHENNAI. Adm Sunil Lanba, Chief of Naval Staff, launched the 3D Air Surveillance Radar of Navratna Defence PSU Bharat Electronics Limited (BEL) at its stall at DEFEXPO 2018 today in the presence of Mr M V Gowtama, Chairman & Managing Director, BEL, and other senior officers.

3D Air Surveillance Radar

3D C/D Band Air Surveillance Radar is a Multi-Function Active Phased Array Radar with Solid state Transceiver for Land and Naval applications. The Radar provides 3 dimensional target data along with Doppler data. The Radar employs multi-beam in elevation, mono pulse in azimuth, Digital Pulse compression, Pulse Doppler and



many Advanced and contemporary Technologies, with very elegant and modular architecture. These technologies enable detection of very low RCS targets from complex

land and sea clutter and jamming environment. 3D Air Surveillance Radar antenna is compact and can be accommodated on wheeled vehicles and small ships. ●



J D Patil, Whole Time Director and Senior Executive Vice President (L&T Defence) with Bharat Electronics Limited Chairman and Managing Director MV Gowtama

MoU. BEL and L&T have agreed to explore and address defence products / systems for the Indian Defence Services as well as export opportunities.

BEL has expertise in design, development, engineering, manufacture of Radar & Weapon Systems, NCS and Communications systems, Electronic Warfare & Avionics, Naval Systems, Electro-optics products, Tank Electronics & Gun Systems, Satcom systems, Strategic Components and Civilian products, while L&T has expertise in design, engineering and manufacture of Defence systems, Platforms and Weapon delivery, Armoured platforms and Fire control systems, Military Communication, Naval Equipment, Warships & Submarines.

The MoU sets to define the roles and responsibilities of both the Companies to co-operate and work in partnership mode for select programmes and thus give a boost to indigenous defence production. This collaboration will support the Make in India mission. ●

BEL, L&T Sign MoU

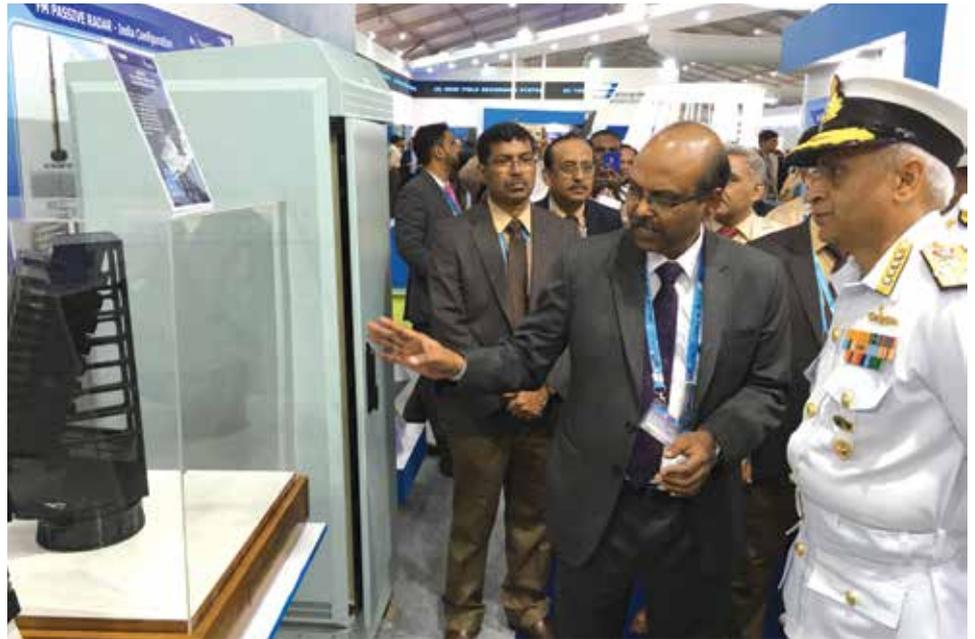
Chennai. Navratna Defence PSU Bharat Electronics Limited (BEL) and Larsen & Toubro signed an MoU at Defexpo in Chennai sharing their expertise in design, development, engineering and manufacturing to develop and produce products and systems to meet the requirement

of the defence services as well as for export markets. BEL CMD M V Gowtama and senior officials from both the organizations were present on the occasion. Mrs Anandi Ramalingam, Director (Marketing), BEL, and Mr J D Patil, Whole Time Director and Senior Executive Vice President (L&T Defence) signed the

Chennai At DefExpo 2018 being held at Chennai, Bharat Electronics Limited (BEL) and Mahindra Defence Systems Limited committed to a long-term partnership through a MoU, to jointly address emerging opportunities in the domestic market under the policy initiatives of the Government of India, like Make in India and the Export Promotion Policy of the Ministry of Defence to target the export market.

BEL has the expertise in design, development, engineering, manufacture of Radar & Weapon Systems, NCS and Communications systems, Electronics Warfare & Avionics, Naval Systems, Electro-optics products, Tank Electronics & Gun Systems, Satcom systems, Strategic Components and select Civilian products, while Mahindra Defence has the expertise in manufacture, maintenance of Defence equipment, Light Military Vehicle, Armoured Vehicles, Aerospace / Aviation Platforms, Simulators, Electronics, Airborne Equipment, Naval Equipment and materials for Defence sector.

Mr S P Shukla, Group President, Aerospace & Defence Sector, Mahindra Group and Chairman, Mahindra Defence, said, "Both BEL and Mahindra Defence are world-class engineering companies. To give one example, together we have capabilities in mobility, survivability,



BEL Signs MoU with Mahindra Defence Systems

BEL has the expertise in design, development, engineering, manufacture of Radar & Weapon Systems, NCS and Communications systems, Electronics Warfare & Avionics, Naval Systems

(Top) Navy Chief Admiral Sunil Lanba visiting the BEL pavilion at the DefExpo; **(Below)** BEL CMD Gowtama along with other dignitaries after the signing of MoU between BEL and Mahindra Defence

lethality, electronics and communications, making us ideal partners for new development as well as for upgrade of in service combat vehicles. This partnership can be grown not only to meet the requirements of the Indian Armed Forces but also

to target exports to other friendly countries."

Mr Gowtama, CMD, BEL, said, "We are pleased to come together. We are keen to bring to the table our in-house expertise as well as technical know-how to the current and future design of new generation defence systems and products. We are confident that the two of us will work together to contribute to indigenous defence production."

Mrs Anandi Ramalingam, Director (Marketing), BEL, and Mr N Raveeswaran, Head, Strategic Business Partnerships, Aerospace and Defence, Mahindra Defence, signed the MoU documents in the presence of Mr M V Gowtama, CMD, BEL, and Mr S P Shukla, Group President, Mahindra Group.





Rosoboronexport Demonstrates Modern Army and Navy Equipment

Chennai. Rosoboronexport, Rostec's member, has been put in charge of organizing Russia's joint display at Defexpo India-2018, an international exhibition of Army, Navy and state security equipment and systems to take place in Chennai, Tamil Nadu, India, on April 11-14, 2018. Deputy Director Vladimir Drozhzhov of the Russian Federal Service for Military and Technical Cooperation has been named the head of the Russian delegation at the exhibition, while the Rosoboronexport team will be led by the company's Deputy Director General Igor Sevastyanov.

"Defexpo India is one of the most important events of the year for Rosoboronexport from the marketing point of view. We count

on it to discuss future opportunities and implementation of several crucial joint projects covering 200-plus essential aspects in military and technical cooperation between the countries. The event's focus is of particular interest to us, since Russia accounts for a major chunk of India's arms market catering to the needs of the country's Army and Navy," notes Igor Sevastianov. Set up at Pavilion 1, the Russian joint exposition includes Rosoboronexport's 230-plus pieces of military equipment exported by the enterprise.

Of all this diversity, facing the most promising future in India and South-East Asia are the T-90S and T-90MS tanks, TOS-1A heavy flame-thrower, Kornet-E and Kornet-EM AT missile systems, as well as Kalashnikov's most recent assault rifles. Besides, foreign customers

A PHOTO BOOK ON "RUSSIA-INDIA: MILESTONES IN MILITARY-TECHNICAL COOPERATION" WAS IN PRESENTATION DURING DEFEXPO

have already showed interest in air defense systems. This gives one sufficient grounds to expect regional militaries to pay attention among other things to the Pantsir-S1 gun and missile AD system and Tor-M2E SAM system.

In the Navy sector, Rosoboronexport's stakes are on the Project 11356 frigate, Project 11661-based frigates and patrol craft, Alexandrit-E-class coastal minesweeper of Project 12701, Project 21301 rescue craft, as well as Project 636 large diesel-electric and Amur 1650 diesel-electric submarines. Rosoboronexport's specialists will make presentations and reports on "Terrorism Countermeasures and Law Enforcement" and "Cybersecurity: Systems and Solutions." Provided there is interest, these two will be followed by presentations on armor and artillery systems, small arms and close combat equipment, special weapons and gear.

Yet another noteworthy event scheduled at Rosoboronexport's booth is presentation of the photo book "Russia-India: Milestones in Military-Technical Cooperation," sponsored by the enterprise. ●

DefExpo saw many MoU signing and the agreement among Adani Defence-Punj Lloyd-Rave Gears was one of them to make aerospace gears. This is yet another significant step by these private players towards achieving the government's mission of Make in India

Chennai. Punj Lloyd, Rave Gears (USA) and Adani Group announced an intention to collaborate for the design, manufacture and assembly of high precision gears and transmission systems for rotary platforms at DefExpo 2018.

The collaboration intends to manufacture gears and gear assemblies mainly for rotary platforms, currently under production in India for HAL, and for future programmes like the Naval Utility Helicopters and Naval Multi Role Helicopters. The collaboration will use the manufacturing base in India for exports to global OEMs, both in the military and civil aerospace domain. The three companies aim at increasing self-reliance at the Tier-I level, which will be critical for system integration of platforms in India. The collaboration furthers the indigenisation agenda under Make in India program and will bring state of the art technology to the country.

"Punj Lloyd has been at the forefront of building industrial capabilities in defence manufacturing in the country



Adani Defence-Punj Lloyd-Rave Gears to Make Aerospace Gears

Ashok Wadhawan, President Manufacturing Business at Punj Lloyd, Nick Patel, CEO of Rave Gears and Ashish Rajvanshi, Head of Adani Defence & Aerospace during DefExpo

across various domains, from small arms to artillery guns. This collaboration will enable India to achieve indigenisation in one of the most critical components in rotary platforms," commented Ashok Wadhawan, President Manufacturing Business at Punj Lloyd.

"We are a major supplier of high-precision gear to all major

OEMs in the United States like Boeing, Sikorsky, Bell Helicopters etc. We aim to create a base for design and manufacturing transmission assemblies not just for Indian requirements but to create a manufacturing base for the global markets," added Nick Patel, CEO of Rave Gears. Ashish Rajvanshi, Head of Adani Defence & Aerospace shared, "The collaboration is

"THE COLLABORATION IS ANOTHER STEP IN ADANI GROUP'S VISION OF CREATING A VIBRANT DEFENCE MANUFACTURING ECOSYSTEM BY BRINGING WORLD-CLASS CAPABILITIES TO THE COUNTRY"

– Ashish Rajvanshi, Head of Adani Defence & Aerospace

another step in Adani Group's vision of creating a vibrant defence manufacturing ecosystem by bringing world-class capabilities to the country. •



Chennai. Chief of Army Staff (COAS) General Bipin Rawat launched eight new products of Navratna Defence PSU Bharat Electronics Limited (BEL) at DEFEXPO 2018 in Chennai.

The products launched by General Bipin Rawat are:

100 Mbps Radio

The 100 Mbps Radio Relay Equipment provides reliable and secure telecommunication link in a hostile Electronic Warfare (EW) environment. It is full duplex communication equipment, designed to operate as a multi-channel radio through line-of-sight radio path, for military use. Various kinds of data interface is provided. The equipment is modular in construction for ease of maintenance and repair.

Army Chief Gen Rawat Launches BEL's 8 New Products

As scheduled Army Chief General Bipin Rawat launched eight products of Indian Defence PSU Bharat Electronics Limited at BEL pavilion during the DefExpo

Secure Military Wireless Local Area Network

Secure Military Wireless LAN (SMWLAN) provides secure Wi-Fi end connectivity to clients in Tactical environment. SMWLAN is designed with customized technology aimed to operate at customized frequency within military band, with hardware based gradable

Army Chief General Bipin Rawat trying his hands with a BEL product during the launch

secrecy. It can support Data, Voice and Video communication in Infrastructure, Ad hoc and Repeater modes. It is designed to meet highest SAG grading.

Long Range Surveillance System

Long Range Surveillance System is a state-of-the-art Long Range Reconnaissance, Observation & Surveillance System

MULTI-FUNCTION HAND HELD THERMAL IMAGER IS AN EQUIPMENT USED FOR LONG RANGE TARGET LOCATION AND SURVEILLANCE AND CAPABLE OF GIVING RANGE, AZIMUTH & ELEVATION AND ALSO COORDINATES OF THE TARGET. THIS IS VERY USEFUL FOR ARMY AND NAVY FOR EFFECTIVE ENGAGEMENT OF TARGETS

jointly developed by IRDE and Bharat Electronics Ltd. The system is capable of day and night operation and in adverse battle field conditions. The system will be extremely useful for Border surveillance and intruder detection. The system is capable of long range detection and identification of targets, their co-ordinates can be passed onto Battery for firing.

Multi-Function Hand Held Thermal Imager

Multi-Function Hand Held Thermal Imager is a cooled TI based fully integrated day/night sight with in-built eye safe Laser Range Finder, Digital Magnetic Compass, Colour CCD and GPS. This equipment is used for long range target location and surveillance and is capable of giving range, azimuth & elevation and also coordinates of the target. This is very useful for Army and Navy for effective engagement of targets.

Light Weight Composite Shelter

BEL Composite Shelter is designed and manufactured using advanced composite technologies having the lowest tare weight in its class with equally good payload carrying capability. The shelter is suitable for use as light-weight system carrier for various defence applications, especially for mountainous and high altitude deployment.

Chemical Agent Monitor

CAM is a rugged handheld

Chemical Agent Monitor used mainly to detect, monitor and identify Chemical Warfare Agents in the battlefield and provide audio and visual alarm of a chemical attack. It is capable of detecting all Chemical Warfare Agents (Nerve, Blister, Blood and Choking agents), Toxic Industrial Chemical (TICs) and Toxic Industrial Materials (TIMs), simultaneously.

Multi-Purpose Reflex Weapon Sight

Multi-Purpose Reflex Weapon Sight is an indigenously designed reflex sight which is a parallax free, compact, light-weight and rugged weapon sight for instant target acquisition. A highly precise reticule, superimposed on the target scene, acts as an aim point for accurate firing. Firer has the advantage of keeping both eyes open during firing with Multi-Purpose Reflex Weapon Sight.

Mine Field Recording System

Mine Field Recording System (MFRS) is employed for mine laying and demining activities. The system plots and records the co-ordinates of any desired point on ground at which the equipment is taken. It has the capability of backing up the data and to record the details like Location both in terms of Latitude-Longitude, details of Mines including type, Self neutralization period/ self-destruction period, memo and notes, etc. ■

BEL's Drone Guard System to Support Security Agencies



New Delhi. Indian Defence Public Sector Unit (DPSU) Bharat Electronics Ltd (BEL) has developed indigenous Drone Guard System to counter the drones launched by adversaries for spying and causing damage to military establishments and strategic civic locations.

It may be noted here that nowadays drones are familiar flying objects. As with any other technology, drones are also used and misused. These flying objects are threats to military, energy, space and nuclear or any such strategic establishments.

BEL's Drone Guard System (DGS), which was on display during the DefExpo 2018 in Chennai, has been configured to detect, track and neutralise the intruding drones. The Drone Guard System utilises RF spectrum to detect the drone and EO-IR sensor to track the drone continuously. The neutraliser is initiated to scan and identify the target's communication frequencies and generate RF jamming signal to neutralise the target.

The System is capable of bringing down the drone by hampering its communication link as well as blinding its GPS source. It can be operated in semi-automatic / manual mode through user friendly GUIs. This portable and agile system can also be configured to be vehicle mounted as per the User's requirement. ■

Boeing Expands Aerospace Engineering Footprint in India

Inaugurates New Digital Innovation Centre

The US defence company Boeing is making collaborations with different firms to expand its business in India and establishing the aerospace engineering footprint is one of them. And this way it is opening Boeing India Engineering and Technology Centre (BIETC) in Bengaluru.

New Delhi. Boeing on June 15 inaugurated the newest phase of the Boeing India Engineering and Technology Centre (BIETC) in Bengaluru.

Spread across 150,000 sq. ft. and eight floors, the new facility will double Boeing's existing footprint of 160,000 sq. ft. and will accommodate another 1,000 new employees, who will work on cutting-edge technologies that will drive aerospace innovation from India, for India and the world.

While the new facility will incorporate software technologies into design, manufacturing and service offerings, Boeing will

continue to scale up its aerospace, R&D and engineering activities in its existing facilities, which are also pursuing a journey of growth.

BIETC is recruiting and scaling up exponentially. The centre has increased its employee count from just 100 when it was inaugurated in early 2017, to over 1,000. And, as the centre grows over the next few years, it will develop into a team of over 2,500 employees in specialised fields of IT, engineering and R&D. From an IT perspective, key focus would be on cutting-edge areas such as Product Lifecycle Management, Enterprise Resource Planning, Internet of Things, Blockchain, Data Analytics and Software Design for aerospace.

Marc Allen, President, Boeing International and Ted Colbert, Boeing's Chief information officer and Senior Vice President of Information Technology & Data Analytics inaugurating the newest phase of the BIETC in Bengaluru



"We are excited about Boeing's ever expanding footprint in India. The new engineering facility at BIETC reflects an agile and driven Boeing in India, one that inspires people to collaborate and accelerate step-change innovation"

Pratyush Kumar
President, Boeing India





systems design and providing support for lab and flight testing for aircraft.

“We see India as a hotbed for path-breaking software solutions that can redefine the way the world designs, operates and manages airplanes,” said Ted Colbert, Boeing’s chief information officer and senior vice-president of Information Technology & Data Analytics, while inaugurating the new facility.

“The IT talent and capabilities available in India will be an enabler for Boeing’s success across the world.”

The new facility would contain an integrated lab for Internet of Things (IoT), Analytics and Mobility, a 3DX lab to develop 3D experiences, a Systems Integration Lab and a Proof of Concepts Lab. Over 25 Collaboration Areas in the facility will further enable teams to work together to develop, scale and deliver aerospace innovations with agility. They will also enable driving strategic initiatives like Digital Transformation.

“We are excited about Boeing’s ever-expanding footprint in India. The new engineering facility at BIETC reflects an agile and driven Boeing in India, one that inspires people to collaborate and accelerate step-change innovation,” said Pratyush Kumar, president, Boeing India.

“This centre brings together engineers from the fields of aerospace, computer science and mathematics, who will collaborate to achieve next-gen breakthroughs for aircraft design, manufacturing and maintenance.”

In addition to developing engineering capabilities, Boeing is also actively involved in developing skills across the aviation sector by partnering with leading Indian vocational training institutes, industrial training institutes and Indian partners, to train workers for the aerospace industry. ●



Pratyush Kumar,
President, Boeing India



US Clears Direct Commercial Sale of 6 AH-64E Apache Helicopters to India

Finally the US has cleared the direct commercial sale of six AH-64E Apache helicopters to India which was long due. The potential sale is required to be concluded under prescribed law

Washington. The State Department of the United States has made a determination approving a possible Foreign Military Sale (FMS) to India of items in support of a proposed direct commercial sale of six AH-64E Apache helicopters for an estimated cost of \$930 million, a press statement from the Defense Security Cooperation Agency (DSCA) said.

The Defense Security Cooperation Agency (DSCA) delivered the required certification notifying Congress of this possible sale June 12.

The Government of India has requested to buy the following items in support of a proposed direct commercial sale of six AH-64E Apache helicopters: 14 T700-GE-701D engines; four AN/APG-78 Fire Control Radars; four Radar Electronic Units (REU) Block III; four AN/APR-

48B Modernised Radar Frequency Interferometers (M-RFI's); 180 AGM-114L-3 Hellfire Longbow missiles; 90 AGM-114R-3 Hellfire II missiles; 200 Stinger Block I-92H missiles; seven Modernized Target Acquisition Designation Sight/Pilot Night Vision Sensors (MTADS-PNVS); and 14 Embedded GPS Inertial Navigation Systems (EGI).

Also included are rockets, training and dummy missiles, 30mm cannons and ammunition, transponders, simulators, communication equipment, spare and repair parts, tools and test equipment, support equipment, repair and return support, personnel training and training equipment, publications and technical documentation, US Government and contractor engineering and logistics support services, and other related elements of logistic and programme support. The total estimated

programme cost is \$930 million.

This proposed sale will contribute to the foreign policy and national security of the United States by helping to strengthen the US-Indian strategic relationship and to improve the security of an important partner which continues to be an important force for political stability, peace, and economic progress in South Asia.

The proposed sale is in conjunction with and in support of a proposed direct commercial sale of six AH-64E Apache helicopters, and will strengthen India's ability to defend its homeland and deter regional threats. This support for the AH-64E will provide an increase in India's defensive capability to counter ground-armored threats and modernise its armed forces. India will have no difficulty absorbing the helicopters and support equipment into its armed forces.

The proposed sale of this equipment and support will not alter the basic military balance in the region.

The prime contractors will be Lockheed Martin Corporation, Orlando, FL; General Electric Company, Cincinnati, OH; Lockheed Martin Mission Systems and Sensors, Owego, NY; Longbow Limited Liability Corporation, Orlando, FL; and Raytheon Company, Tucson, AZ. There are no known offset agreements proposed in connection with this potential sale.

Implementation of this proposed sale will require US Government or contractor representatives to travel to India for a period of one week at a time to conduct a detailed discussion of the various aspects of the hybrid programme with Government of India representatives. Additional travel will be required for equipment de-processing/fielding, system checkout and new equipment training and Contractor Furnished Service Representatives (CFSR) for a period of 30 months.

There will be no adverse impact on US defense readiness as a result of this proposed sale.

This notice of a potential sale is required by law and does not mean the sale has been concluded. ●

THIS SUPPORT FOR THE AH-64E WILL PROVIDE AN INCREASE IN INDIA'S DEFENSIVE CAPABILITY TO COUNTER GROUND-ARMORED THREATS AND MODERNISE ITS ARMED FORCES

Russian Helicopters Overhauled 6 Helicopters of the Indian BSF



Novosibirsk. Russian Helicopters Holding Company (part of Rostec State Corporation) delivered six Mi-17-1V helicopters to the Border Security Force (BSF) of the Republic of India. The helicopters were overhauled at Novosibirsk Aircraft Repair Plant (NARP).

“NARP performs activities associated with the repair and overhaul of Mi-8/17 type helicopters for the whole range of foreign operators, however, the contract with the Border Security Force has been implemented for the first time. During the acceptance the customer’s delegation got familiarised with the results of performed activities and technologies applied at the enterprise. The plant has been highly praised by the Indian military specialists and now further cooperation is being discussed,” – stated Igor Chechikov, Deputy Director General for After-Sales Support Services of Russian Helicopters Holding Company.

The specialists of NARP carried out a complete cycle of activities related to the overhaul of the Indian helicopters. In the short term the batch of Mi-17-1V will get off to the permanent home base, where the final acceptance report will be signed after check flight procedure.

“Currently the Border Security Force is an independent military unit in the Ministry of Home Affairs of India with the sole command and it is considered as the largest border security force in the world, that is why this cooperation means high quality evaluation of our activities and huge experience,” – noted Alexey Belikh, Managing Director of JSC “NARP”. •

Defence Minister Inaugurates BEL Representative Office in Vietnam



Defence Minister Nirmala Sitharaman inaugurating the first Representative Office of BEL in Vietnam by handing over the symbolic key to Mr Gowtama M V, CMD, BEL, during the Vietnam-India Defence Industry Business Meeting held at Hotel Melia, Hanoi. Mr P Harish, Ambassador of India to the Socialist Republic of Vietnam, Dr Ajay Kumar, Secretary (Defence Production), and other senior officials are also seen

Hanoi. Defence Minister Nirmala Sitharaman June 13 inaugurated the first Representative Office of Navratna Defence PSU Bharat Electronics Limited (BEL) in Hanoi, Vietnam.

Ms Sitharaman handed over the symbolic key of the Representative Office of BEL at Vietnam (VIRO) to MV Gowtama, Chairman & Managing Director, BEL, during the Vietnam-India Defence Industry Business Meeting held at Vietnam’s capital in the presence of Indian Ambassador to the Socialist Republic of Vietnam P Harish, Secretary (Defence Production) Dr Ajay Kumar and other senior officials of India and Vietnam Defence forces.

VIRO is located in close proximity to the Embassy of India, Vietnam, on the 10th Floor of TNR Tower, Hanoi.

BEL, India’s leading Defence electronics company, is fast expanding its global presence, putting its best foot forward to give a thrust to exports worldwide, especially South East Asian countries such as the Republic of Union of Myanmar, Indonesia, Malaysia, Thailand and Philippines. Spotting a niche market in Vietnam, BEL has now set up its first Representative Office at Vietnam for addressing export business opportunities and to provide unstinted product support and services to users in the region.

The Representative Office will aim to promote BEL’s exports in areas such as Weapon Systems, Radar Systems, Naval Systems, Military Communication Systems, Electronic Warfare Systems, Combat Management System and Coastal Surveillance System. •

BEL Signs MoU with Saab, Sweden

Bangalore. Navratna Defence PSU Bharat Electronics Ltd (BEL) has signed a Memorandum of Understanding (MoU) with Saab, Sweden, recently for jointly marketing the L-Band 3D Air Surveillance Radar, RAWL-03, co-developed by BEL and Saab.

BEL has joined hands with Saab, Sweden and USA, to market the Long Range Air Surveillance Radar, a cost-effective L Band three dimensional (3D) radar, for early detection and tracking of air and surface targets, thereby enabling engagement of fire control systems to neutralise the same. RAWL-03 will be offered in both ship-borne and land-based configurations. The system is based on the state-of-the-art GaN TR Module technology and incorporates the latest Signal Processing techniques.

Saab serves the global market with world-leading products, services and solutions in military defence and civil security. Saab has operations and employees in all continents around the world. Through innovative, collaborative and pragmatic thinking, Saab develops, adopts and improves new technology to meet customers' changing needs.

BEL, India's leading Defence electronics Company, is engaged in the design, manufacture and supply of state-of-the-art Radars like Weapon Locating Radar and Battle Field Surveillance Radar, Communication Systems, C4I systems, Naval Systems, Electronic Warfare Systems, Missile Systems, Night Vision Devices and other Electro Optic Systems, Tank Electronics and Gun/Weapon System Upgrades, Coastal Surveillance System, etc, for the armed forces. •



(Left-Right) Urban Lennheimer, Vice President and Head of Business Unit (Surface Radar Solutions), Saab; Kiran V, General Manager (International Marketing), BEL; and David Kovarik, Vice President (Sales and Product Management), Saab; signing the MoU on behalf of Saab and BEL for jointly marketing the L-Band 3D Air Surveillance Radar, RAWL-03.



(Left-Right) The Saab team poses for a photo with (standing fourth from left) Kiran V, General Manager (International Marketing), BEL, after signing of the MoU between Saab and BEL for jointly marketing the L-Band 3D Air Surveillance Radar, RAWL-03. They are Asa Axelsson, Urban Lennheimer, Vice President and Head of Business Unit (Surface Radar Solutions), Ted Ackerstierna, Lars Tossman, David Kovarik, Vice President (Sales and Product Management), Daniel Forsberg, Anna Lindbom, Johan Wretman, Manod Jinnuri, Jose Mera and Santhosh Kumar.

BDL bags export order worth USD 14.33 Million



Visakhapatnam. Bharat Dynamics Limited (BDL), a Government of India Enterprise under Ministry of Defence has bagged an export order worth USD 14.33 Million for export of Light Weight Torpedoes to a friendly country. With this, the Company has achieved sixty-five percent of export target set for the financial year 2018 – 19.

BDL has a dedicated Unit at Visakhapatnam exclusively for

manufacture of underwater weapons where the export order will be executed.

BDL is expanding its footprint globally by offering Akash Weapon System, Anti-Tank Guided Missiles, Torpedoes and Counter Measure Dispensing System to friendly foreign countries.

BDL became a listed Company with its debut in Bombay Stock Exchange and National Stock Exchange in March 2018. •

Women in Aviation International (India Chapter), Lockheed Martin India Mark Girls in Aviation Day

Imphal/New Delhi. Women in Aviation International, India Chapter and Lockheed Martin Corporation in association with Airport Authority of India (AAI) June 13 celebrated Girls in Aviation Day at Imphal Airport. With the vision to encourage girls to take up STEM subjects and explore career opportunities in related industries, the initiative is aimed at showcasing opportunities in the aviation and aerospace sectors.

Lockheed Martin is investing in developing the next generation of future scientists and engineers in India. This initiative also aligns with the Government of India's Skills India initiative.

As part of the programme, Women in Aviation International (India Chapter) invited 50 students from various schools for a tour of Imphal Airport. Visiting students were given an opportunity to explore, learn, and discover the various aspects of aviation and aerospace such as air traffic controller, airline dispatch, pilot, aviation maintenance technician, aeronautical engineer or aviation management. In addition, the girl students were given a tour of the ATC Tower, Airside, Terminal Building and AOCC and all their queries and questions were answered by the officials working in the respective departments.

Speaking on the occasion, Radha Bhatia, President, Women in Aviation International (India Chapter) said, "This is the third year that the WAI India Chapter is celebrating 'Girls in Aviation Day' and we are delighted to host the same at Imphal. This day is celebrated for the young girls to encourage them to choose aviation as a viable career opportunity. World over India has the maximum number of female pilots but there are many other avenues that are still unknown. With this celebration our aim is to see girls from the state of Manipur explore exciting careers available to them as engineers, air traffic controllers and dozens of other jobs within the aviation."

"We will continue our endeavour to introduce young girls to role models and



Phil Shaw, Chief Executive, Lockheed Martin India with Ms. Najma Heptulla, Governor of Manipur at Girls in Aviation Day at Imphal



educate them in a fun and supportive atmosphere. We are very fortunate to be able to partner with Lockheed Martin India and Airport Authority of India for this event. Their efforts in leading youth into STEM careers is truly commendable." added Ms Bhatia.

Speaking about Lockheed Martin's commitment to this initiative, Phil Shaw, Chief Executive, Lockheed Martin India Private Limited said, "The next generation of engineers, technologists, aviators and scientists will be crucial to Lockheed Martin's future and we want to do everything we can to encourage people to consider these careers. That's why we're delighted to once again partner

with WAI (India Chapter) and AAI to encourage girls to take an interest in STEM subjects from an early age. Our support for Girls in Aviation is part of a much larger Lockheed Martin commitment to STEM and innovation initiatives in India."

Post the airport tour, the students were given a small presentation about the industry and its intricacies. Also, an impromptu quiz competition added to the delight of the students who also won small tokens as prizes. Students also received an opportunity to interact with Ms. Najma Heptulla, Governor of Manipur, chief guest for the event and Mr S.K. Panigrahi, Airport Director, Imphal Airport.

AASSC Launches Skill Development Programmes Across India in Aerospace & Aviation Sectors

Bengaluru. The Aerospace and Aviation Sector Skill Council (AASSC) disclosed at its Board Meeting held in Bengaluru on June 7 that it has developed Qualifications Packs for 70 Job Roles spread across five subsectors through extensive industry engagement.

Using these Qualifications Packs as template, skill development programmes are being launched across India. One of the biggest such programme is the launch of Aviation Multi Skill Development Centre at Chandigarh where five batches have already passed-out. The Centre has plans to train around 2400 candidates over the next three years.

The strength of Board members will be enhanced to 26 member from present 21 to include MSME representation to meet the future challenges, says T Suvarna Raju, Chairman, AASSC and CMD of HAL.

To ensure availability of



qualified trainers and assessors, AASSC has run programmes along with Department for International Development (DFID), UK and many more such schemes are in the pipeline. Development of Transnational Standards for Aerospace Design job roles is underway with the support of DFID, UK.

HAL CMD T Suvarna Raju along with other dignitaries in an MSME representation meet

The Ministry of Skill Development and Entrepreneurship (MSDE) has decided that India will be represented in the 'Aircraft Maintenance' skill in the World Skills competition scheduled to be held in August 2019 at Kazan, Russia.

The AASSC has been entrusted with the responsibility of conducting



the regional level selections for the trade at Bengaluru and the national level selections at Greater Noida. The candidate selected at the nationals will represent India at World Skills competitions 2019 at Kazan, Russia. The AASSC with the support from NSDC will train the candidates from July 2018 till the world Skills competition in August 2019 and these candidates will also take part in the BRICS skills completion in South Africa.

The other highlights of the AASSC activities include training for 44 Aerospace Engine Welders for GE Aviation, skill development project under CSR initiative of GKN Aerospace, certification of Recognition of Prior Learning (RPL) for Indian Navy personnel and training for Airline Cabin Crew by Assam Skill Development Mission. There are many such programmes which are being planned along with other state skill missions as well. The AASSC is exploring the possibilities of launching Aerospace & Aviation Skill Development programmes through Universities and AICTE. The AASSC is working actively with industry, NSDC and the Government to roll-out NAPS in the sector.

The promoters of AASSC are Hindustan Aeronautics Ltd (HAL), Bangalore Chamber of Industry & Commerce (BCIC), and Society for Indian Aerospace Technologies & Industries (SIATI).

The AASSC is one of the several skill councils set up under "Skill India" initiative by the Government of India under National Skill Development Corporation (NSDC). The aim of AASSC is to ensure that there is supply of adequately skilled workforce to meet the demand of the industry. The scope of sector is vast and covers industry segments such as Aerospace Design & Development, Manufacturing & Assembly, Airlines, Airports, and MRO (Maintenance Repair & Overhauling).

India Gifts HAL Do -228 Aircraft to Seychelles

Aircraft to Fly on Seychelles Independence Day



External Affairs Minister Sushma Swaraj, Seychelles President Danny Faure with other dignitaries at the Do-228 handover ceremony

New Delhi/Bengaluru. External Affairs Minister Sushma Swaraj handed over HAL Do- 228 aircraft to Republic of Seychelles President Danny Faure at a ceremony in New Delhi on June 26. With this new development, maritime surveillance of the island nation of Seychelles received the much needed boost.

Appreciating India's support, Mr. Faure described the 'momentous occasion' as historical day and said the inclusion of HAL Do-228 aircraft would bolster the coastal surveillance of Seychelles and provide strategic depth to policing its extensive Exclusive Economic Zone (EEZ). The aircraft has come at the right time and would be flown on the forthcoming 42nd Independence Day of Seychelles on June 29, signifying the strong relations between the two countries.

Describing the event yet another milestone in furthering bilateral defence cooperation between India and Seychelles, Ms Swaraj said, "The handing over of HAL Do 228 to Seychelles reflects the firm commitment and continued engagement of the Government of India in further developing, consolidating and expanding the comprehensive

multifaceted cooperation between India and Seychelles". Ms Swaraj also handed over airworthiness certificate of the aircraft to the President of Seychelles. Minister of State for External Affairs General (Dr) V K Singh (Retd), who was present on the occasion, handed over the symbolic key to the President of Seychelles.

"We have provided hands-on training to the pilots and technical staff from Seychelles. We are committed to extend full-fledged support to the teams involved with its maintenance and operations of the aircraft"

Hindustan Aeronautics Ltd CMD T Suvarna Raju, in his welcome address, hailed the event as 'proud moment' for HAL as the aircraft has been delivered ahead of schedule and accepted by the Seychelles Air Force. "We have provided hands-on training to the pilots and technical staff from Seychelles. We are committed to extend full-fledged support to the teams involved with its maintenance and operations of the aircraft", he added. Vice Admiral G Ashok Kumar, DCNS, Senior officials from Seychelles, MEA, MOD and HAL were present on the occasion.

MoS Defence Visits Republic of Nauru



two great leaders – President Waqa in Nauru and Prime Minister Modi in India”.

Nauru would be hosting the 49th Pacific Islands Forum Leaders Meeting in September 2018 and Dr Bhamre conveyed that India will be offering 22 Mahindra SUVs and two Tata buses worth \$706,000 to Nauru as per their request for this meeting.

The Minister visited Nauru’s Rehabilitation Corporation, Nauru Port Authority to see the port facilities and Nauru Police Force Headquarters. India earlier supported Nauru with police uniforms for the Nauru Police Force on the occasion of the 50th Anniversary of the Independence of Nauru on January 31 this year.

New Delhi. Minister of State (MoS) Defence Dr. Subhash Bhamre visited Republic of Nauru. He was on a three-day official visit to the Republic from May 16-18. He attended the 50th anniversary celebrations of its Constitution Day on May 17 as the Chief Guest.

On his maiden visit to the country, Dr Bhamre was introduced to the Nauruan Cabinet by the President Mr Baron Divavesi Waqa followed by a detailed meeting chaired by the President. During this meeting, wide-ranging discussions were held covering the entire gamut of bilateral relationship and specific subjects concerning the respective ministries of the government of Nauru were discussed to further enhance and deepen the existing excellent bilateral relations between the two countries.

The two sides discussed projects relating to Climate Change,

Renewable Energy, Health, Education, Capacity Building, Infrastructure etc.

President Waqa hosted a State Banquet in commemoration of Nauru’s Constitution Day. Dr Bhamre, in his speech, hailed the wise and farsighted leadership of President Waqa and called India and Nauru as “friends, who have transcended the geographical barriers of great distances and have come together to jointly face the common challenges”.

The MoS Defence later presented a copy of the Indian Constitution to President Waqa with compliments of Prime Minister Narendra Modi. President Waqa thanked and conveyed his gratitude and warm personal regards to the Prime Minister. Dr Bhamre declared that “two countries intend to take this cooperation and these bonds of friendship to even greater heights under the able stewardship of our



The MoS Defence interacted with the small Indian community in Nauru over Lunch. Dr Bhamre assured Government of India’s steadfast commitment to Indian citizens and persons of Indian origin wherever they are in the world. ●

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Economic Diplomacy is a Priority for the Country, Says President Kovind

New Delhi. President Ram Nath Kovind said that in today's hyper-connected world, diplomacy has become an essential component of domestic action. There is an international connect to every aspect of our country's growth and development, be it clean energy, Digital India, Skill India, Make in India, or building high-speed rail networks. "As such, economic diplomacy is a priority for us," he observed.

President Kovind was addressing officer-trainees of the Indian Foreign Service (2017 batch) who called on him at Rashtrapati Bhavan in New Delhi June 6. The President said that they are joining the Indian Foreign



Service at an exciting time. India is expanding its global footprint. "We are securing our interests in every part of the world. We are also taking the lead on critical issues affecting global peace, security and progress, be it fighting terrorism

or enhancing efforts to combat climate change. Our aspirations place new responsibilities on the IFS, and he said he was confident that the officer-trainees would make the best of the opportunity."

President Kovind said: "The job for the Indian Foreign Service Officers is clearly laid out. They have to maintain robust relations with all our friends

and partners to fashion a secure and prosperous environment and meet our developmental aspirations. They have to engage, contest and reconstruct global governance structures that adequately reflect and accommodate our interests." •

Union Home Minister Exhorts BPR&D to Train Policemen in Soft Skills

New Delhi. Union Home Minister Rajnath Singh at a meeting in New Delhi June 12 exhorted the Bureau of Police Research and Development (BPR&D) to work towards imparting training in soft skills to all the policemen in the country.

He also urged for identification at district level of exceptional police officials who could be the role models for others. Mr Singh stressed on imparting training skills to prevent cyber crimes and meet the challenges of changing crime scenario.

The Home Minister was given a presentation by Dr AP Maheshwari, Director General, BPR&D on the ongoing activities and future projects of the organisation. He reviewed the progress of establishing Central Detective Training Institutes (CDTI) at Jaipur and Chandigarh. A decision



has been taken to set up the Centre for Correctional Administration at the recently inaugurated Central Academy for Police Training (CAPT) at Bhopal. Separate Centres for training in Prosecution and Traffic Technologies will also be set up at CAPT, Bhopal.

The Home Minister appreciated that BPR&D has set up a web-

Union Home Minister Rajnath Singh chairing a meeting to review the progress of BPR&D and NCRB in New Delhi. Minister of State for Home Affairs Hansraj Gangaram Ahir, Union Home Secretary Rajiv Gauba and the Additional Secretary, MHA Rajni Sekhri Sibal are also seen

portal named e-USTAAD where all the training manuals, presentations and course material has been made available for users. A mobile app is also being developed on these lines.

Minister of State for Home Affairs Hansraj Gangaram Ahir, Union Home Secretary Rajiv Gauba and senior officials of MHA and BPR&D were present at the meeting. •

Defence Electronics and beyond



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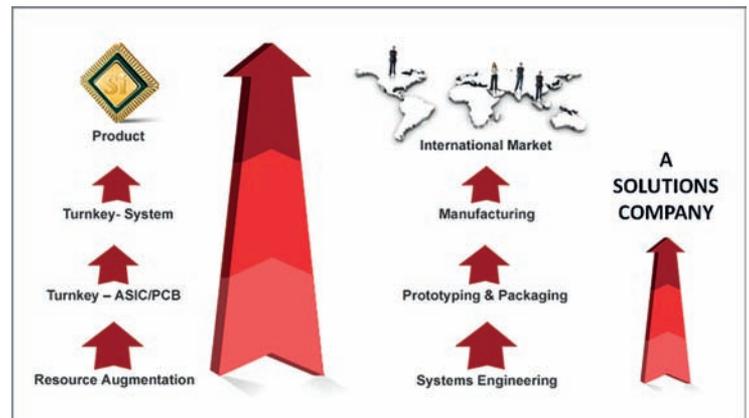
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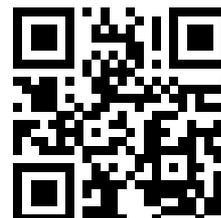
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