FIRST CH-47F (I) CHINOOKS FOR IAF ARRIVE IN GUJARAT PAGE 3

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# Forces free to retaliate against Pulwama killings: Prime Minister Modi

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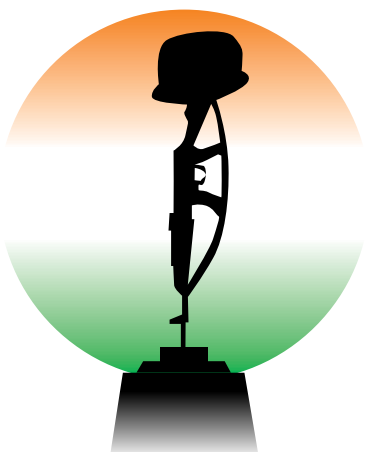

We at SP's offer our humble prayers for the bravest soldiers of our motherland, martyred in Pulwama


## India and the China-Pakistan Economic Corridor PAGE 10



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## First CH-47F (I) Chinooks for the Indian Air Force Arrive in Gujarat

Boeing, on February 10, announced the arrival of the first four CH-47F (I) Chinooks for the Indian Air Force at the Mundra Port in Gujarat.

The CH-47F (I) Chinook will be ferried to Chandigarh, where it will be formally inducted in the Indian Air Force later this year.

The CH-47 Chinook is an advanced multi-mission helicopter that will provide the Indian armed forces with unmatched strategic airlift capability across the full spectrum of combat and humanitarian missions. The Indian Air Force currently has 15 Chinook helicopters on order.

The ahead-of-schedule arrival of the Chinooks validates Boeing's commitment to delivering on its promise of modernising India's defence forces. Through its current partnerships with Indian Air Force and Indian Navy, Boeing has ensured high rate of mission readiness and increased operational capabilities.

Providing the mainstay of India's civil aviation sector for more than 75 years, Boeing's performance driven aircraft are also playing an important role in mission-readiness for the Indian Air Force and Indian Navy. Boeing is focused on delivering value to Indian customers with advanced technologies and is committed to creating sustainable value in the Indian aerospace sector – developing local suppliers, and shaping academic and research collaborations with Indian institutions. Boeing has strengthened its supply chain with over 160 partners in India, and a JV to manufacture fuselages for Apache helicopters. Annual sourcing from India stands at $1 billion. Boeing currently employs 2,200 people in India, and more than 7,000 people work with its supply chain partners. Boeing's employee efforts and India country-wide engagement serves communities and citizenship programs to inspire change and make an impact on more than 2,00,000 lives. SP

PHOTOGRAPH: Boeing


**Cover:**
*After the suicide terrorist attack at Pulwama in Kashmir in which 38 CRPF troopers were killed, Prime Minister Narendra Modi asserted that the security forces have been given permission to choose the timing, place and nature of their response.*

*Cover images: PIB, Anoop Kamath*

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# Arming India is Arming a Force for Stability and Peace

The February 14 terrorist attack at Pulwama in Kashmir provides a dramatic context to India arming up to give itself the capability to inflict punishment on its adversaries who are waging unconventional war on its soil, and deter such horrific aggression in future. The ghastly killing of 38 central police troopers by a suicide bomber during a logistical movement of the troops is one of the worst terrorist attacks in Kashmir. Jaish-e-Mohammad, a UN-proscribed terrorist organisation based in Pakistan claimed responsibility for the attack. Public outrage following the slaughter of troops by a terrorist organisation allowed by Pakistan to operate from its soil for attacks against India has put huge pressure on the political leadership to respond militarily to avenge the killings and use force to put an end to the mayhem. It is ironical – and opportune – that military tensions be rife and India's vulnerabilities exposed just as the global arms bazaar begins congregating at Aero India in Bengaluru to hawk its wares.

Eminent contributors to this special Aero India edition of *SP's M.A.I.* scan the intimidating security environment around India. Former Army Chief General V.P. Malik (Retd), who led Indian troops to victory in the Kargil War in 1999, analyses the geopolitical and strategic impact of the $65 billion China-Pakistan Economic Corridor (CPEC), the centrepiece of Beijing's Belt and Road initiative which also marks its biggest investment in any foreign country. China, incidentally, is using its veto in the UN Security Council to shield Maulana Masood Azhar – the leader of the terrorist organisation responsible for the Pulwama attack who roams free in Pakistan – from the consequences of being declared a UN-proscribed terrorist. General Malik also assesses the impact of CPEC on India's interests in the region.

Another distinguished military commentator, Lt General P.C. Katoch (Retd) writes on India's military build-up in the Andaman and Nicobar Islands, its outpost in South Asia which overlooks the world's busiest shipping lane, in the context of the PLA Navy rapid naval expansion into the Indian Ocean region. This write-up on India's new military frontiers gives an insight into the monumental effort and resources which go into defending India and its far flung territories.

Lt General Naresh Chand (Retd) examines the environment of combat drones, as India gets set to acquire this capability which observers reckon will be a game changer.

There is a sense of anticipation in India's security establishment over the reported imminence of the induction of the missile-firing Heron TP drone. This will stand out in what is poised to be a landmark year for military inductions for India, and the scaling up of its military capability.

The first lot of the Chinook heavy lift helicopters under procurement for the IAF have arrived in India. The Apaches are scheduled for induction later this year. Both these assets will lend weight and muscle to India's war fighting capabilities along Himalayan boundaries. When analysts ponder over the possibility of war, they reckon that the highest probability of military conflict breaking out is along India's vast mountainous frontiers, which are also disputed boundaries.

The arrival of the first of the Rafale fighters later this year will also be a significant landmark for the IAF, even as political contest over the deal rages. Among the procurements India is expected to finalise in 2019 is the $2 billion FMS deal for 24 MH-60R multi-role naval helicopters, which will be a shot in the arm for the Indian Navy's air fleet. Many expect the first contracts for India's indigenous Light Combat Helicopter (LCH) to be signed soon, perhaps even at Aero India 2019.

There are very few markets with the business opportunity, military threats and political drama of the scale seen in India. We wish you a good air show, and leave you with the thought that arming India is arming a force for stability and peace in this highly volatile region.

Happy reading! Do visit us at Aero India 2019 in Hall E and Booth Number E 1.5.

**Jayant Baranwal**
Publisher & Editor-in-Chief

Prime Minister Narendra Modi paying homage to the martyred CRPF Jawans at Palam airport in New Delhi on February 15, 2019

# Forces free to retaliate against Pulwama killings: Modi

*International community condemns attack but China doesn't budge on shielding Pak-based terrorist leader*

[ By **Vishal Thapar** ]

As pressure on India mounted after Thursday's (February 15) suicide terrorist attack at Pulwama in Kashmir in which 38 Central Reserve Police Force (CRPF) troopers were killed, Prime Minister Narendra Modi on Friday asserted the security forces have been given permission to choose the timing, place and nature of their response. Modi said every Indian is angry and he wanted to assure the 130 crore people of India that he sacrifices of CRPF soldiers will "not go in vain". The Prime Minister made made these comments while laying the foundation stone of a defence industrial corridor at Jhansi in Uttar Pradesh.

The Prime Minister cancelled all political meetings in the wake of the Pulwama terrorist killings and chaired Cabinet Committee on Security meeting with his top ministers and the security establishment to review the situation after the incident. India revoked the Most Favoured Nation (MFN) status to Pakistan, summoned Pakistan's envoy to issue a strong demarche, and recalled its own high commissioner to Islamabad to New Delhi for consultations.

After the Pakistan-based terrorist group Jaish-e-Mohammad (JeM) claimed responsibility for the attack, India on Thursday demanded that Pakistan stop supporting terrorists and terror groups operating from its territory and dismantle the infrastructure operated by terrorist outfits to launch attacks in other countries."We strongly reiterate our appeal to all members of the international community to support the proposal to list terrorists, including JeM Chief Masood Azhar, as a designated terrorist under the 1267 Sanctions Committee of the UN Security Council and to ban terrorist organisations operating from territories controlled by Pakistan," a statement issued by the Ministry of External Affairs read.

Condemnation of the terrorist attack poured in from the international community, but Pakistan continued to be denial, and its principal supporter China did not relent in its efforts to shield UN sanctions against Maulana Masood Azhar.

Pakistan termed the Pulwama attack "a matter of grave con-

PHOTOGRAPHS: PIB

(Left) Defence Minister Nirmala Sitharaman laying wreath on the mortal remains of the martyred CRPF Jawans;
(right) Home Minister Rajnath Singh shouldering the coffin of a martyred CRPF Jawan, at the Regional Training Centre, in Srinagar on February 15, 2019

cern" but rejected accusations that it was responsible for the attack, demanding a probe. India charged Pakistan with giving Masood Azhar "full freedom to operate and expand his terror infrastructure in territories under the control of Pakistan and to carry out attacks in India and elsewhere with impunity" and demanded that "Pakistan stop supporting terrorists and terror groups operating from their territory and dismantle the infrastructure operated by terrorist outfits to launch attacks in other countries".

China condemned the incident but did not respond to India's appeal to declare Jaish-e-Mohammad leader Masood Azhar a UN-designated terrorist. It stuck to its old position, where it blocked such a designation by using its Security Council veto. "As for the issue of listing, I could tell you that the 1267 Committee of Security Council has a clear stipulation on the listing and procedure of the terrorist organisations. JeM has been included in the Security Council terrorism sanctions list. China will continue to handle the relevant sanctions issue in a constructive and responsible manner," a Chinese Foreign Office spokesman said.

The United States condemned the Pulwama attack in the "strongest terms". "The United States is resolutely committed to working with the Indian government to combat terrorism in all its forms. The UN designated, Pakistan-based terrorist group Jaish-e-Muhammad has claimed responsibility for this heinous act. We call on all countries to uphold their responsibilities pursuant to UN Security Council resolutions to deny safe haven and support for terrorists," a US spokesman stated.

Russia stressed the need to combat such "inhuman acts" with decisive and collective response without any double standards.

"We denounce terrorism in all its forms and manifestations and reiterate the need to combat these inhuman acts with decisive and collective response without any double standards," a Russian Embassy statement said.

French Ambassador to India Alexandre Ziegler said France most firmly condemns the heinous attack. "France has always been and always will be by India's side in the fight against terrorism in all its forms," he said.

Germany too strongly condemned the attack, saying stands by its strategic partner India.

Canada also offered support. "Canada remains steadfast in its support of the global fight against terrorism. We stand in solidarity with the government and the people of India in the fight to prevent radicalization and defeat terrorism in all its forms," its foreign minister Chrystia Freeland said.

Australia, Turkey and Czech Republic also condemned the horrific terror attack.

India's neighbours Nepal, Bangladesh, Bhutan, Sri Lanka and Maldives also expressed solidarity and vowed to combat the menace of terrorism jointly.

"I strongly condemn the deadly terrorist attack in Jammu and Kashmir today killing at least 40 people. We send our thoughts and prayers to those affected. The Maldives will continue to work with India and the international community to combat terrorism in our region and the world at large," Maldivian President Ibrahim Solih said.

Bangladesh Prime Minister Sheikh Hasina, in a message through the country's High Commission, said her country remains steadfast in its commitment against terrorism of all forms and manifestations and maintains a zero tolerance policy against any kind of terrorist activities.

"Deeply saddened by the news of the horrific terrorist attack in Kashmir. Bhutan strongly condemns terrorist attack of any nature. Our prayers are with the grieved family and we are following the situation closely," Bhutanese Prime Minister Lotay Tshering said.

Sri Lankan President Maithripala Sirisena expressed sadness, saying the world must condemn such brutal terrorist attacks and take effective action to prevent such incidents in future.

This is the worst terror strike in Kashmir since the October 1, 2001, attack in which, three terrorists rammed an explosives-laden vehicle into the main gate of the Jammu and Kashmir Legislative Assembly complex in Srinagar, killing 38 people. In 2016, the Indian Army carried out a cross-border surgical strike and destroyed several terror launch pads after 19 of its soldiers were killed in an attack on the Uri Brigade Headquarters. SP

**China condemned the incident but did not respond to India's appeal to declare Jaish-e-Mohammad leader Masood Azhar a UN-designated terrorist. It stuck to its old position, where it blocked such a designation by using its Security Council veto.**

The first lot of the 22 Apache attack helicopter ordered by India will be delivered by March

# 2019 Set to be a Landmark Year for Military Inductions

*From a game-changing missile-firing drone to an Inter-Continental Ballistic Missile (ICBM), key new weapons this year will give India more military muscle, and generate fresh options for the politico-military leadership to address threats. SP's MAI takes a sneak peek.*

[ By **Vishal Thapar** ]

## Heron TP

Widely regarded as a game-changer, this will be India's first missile-armed drone. It will give India stand-off cross-border strike capability against adversaries, home in on targets like terrorist camps and bombard these remotely, minimising physical risk otherwise undertaken by soldiers. The Heron TP weaponised drones can detect, track and destroy targets, including mobiles ones, with air-to-ground missiles. These drones will give a new dimension to India's counter-terrorism capability.

India is believed to have ordered 10 of these hell-wreaking drones for an estimated $400 million. This acquisition will significantly scale up not just India's UAV collaboration with Israel but also significantly push up the stakes in the New Delhi-Tel Aviv strategic partnership. Reported to be in-the-works since 2015, the deal is said to have been finally clinched in 2018.

PHOTOGRAPH: Boeing

## Arighat SSBN

The second of India's indigenously-developed and produced ballistic missile firing nuclear-powered submarines, Arighat will join the nuclear deterrence fleet. It will join the Arihant in beefing up the third leg of India's Nuclear Triad, lending more strength and credibility to India's nuclear deterrence posture. The underwater leg of the Triad, regarded as the most survivable in the event of a decapitating attack by an adversary, is critical for India in view of its nuclear weapons doctrine of 'No First Use'. The Arihant Ship Submersible Ballistic Nuclear (SSBN) series of submarines are weapons of global significance. India is the only country outside the P5 which has this capability.

## Agni-5

The operationalisation of India's first Inter-Continental Ballistic Missile (ICBM), Agni-5, will demonstrate the increasing maturity of India's nuclear arsenal.

This will make the arsenal of India's Strategic Forces Command

(Left) Chinook CH-47F (I) will be inducted by the IAF in July this year; (right) IAF will get the first batch of Rafale aircraft by September 2019.

so much more potent with an Inter-Continental reach for its weapons. The three-stage Agni-5 is reported to have a range above 5,000 km. It incorporates key improvements in propulsion, navigation, guidance and re-entry technologies achieved during the course of India's Integrated Guided Missile Programme which started in 1983. The Agni-5 is reported to carry a 1.5 tonne nuclear warhead.

## Rafale

The Indian Air Force will get its first batch of Rafale fighter aircraft by September 2019. All 36 ordered are contractually required to be delivered by 2022. The Rafale induction will come 18 years after the initiation of process to get a medium multi-role combat aircraft for the IAF. This will be the IAF's first new western fighter type after the Mirage-2000 in 1985.

The Indian Rafale will be armed with state-of-the-art weaponry including the Scalp – a precision, long-range ground attack missile, which will be the most lethal in the IAF's armoury. It will also come with the Meteor, a beyond visual range air-to-air missile with an interception range of over 100 km, and reported to be the best in its class.

As many as 13 India-specific enhancements include helmet-mounted sights and targeting systems, cold start at high-altitude bases, radar warning receiver to identify hostile tracking systems, towed decoy system to divert incoming missiles. The French suppliers will provide industrial support this aircraft for 50 years.

## Apache AH-64E

Another game changer, the first lot of the 22 Apache attack helicopter ordered by India will be delivered by March. This is one of the most iconic symbols of American military might, and used to deadly effect in Iraq, Afghanistan and Somalia. Widely regarded as the most lethal helicopter gunship in the world, 2,200 Apaches have been sold worldwide by the manufacturer, Boeing.

The Apaches for India will be armed with the Hellfire Longbow and Stinger Block I-92H missiles, night vision sensors and inertial navigation systems. In its notification to the US Congress, the Pentagon stated that "this will strengthen India's ability to defend its homeland and deter regional threats". It's 30-mm cannon can fire 1,200 rounds in less than two minutes. It can also carry as many as eighty 70 mm rockets.

This "tank killer" is being inducted to play a decisive role in providing cover to advancing strike formations on the ground, and also an armoured gunship against heavily-armed terrorists.

The Indian contract provides for the option of a follow-on contract for 11 more Apaches.

PHOTOGRAPHS: Boeing, Dassault Aviation

## Chinook CH-47F (I)

Chinook is the other iconic American helicopter which will be inducted by the IAF this year in July. Its signature twin rotors make this versatile troop and weapon carrier stand apart.

India seeks assets like the Chinook to airlift weapons such as the recently-acquired M777 Ultra Light Howitzer into distant mountainous battle zones. This artillery gun can be slung under this helicopter, and quickly transported to provide firepower support to troop formations.

India has ordered 15 Chinooks, and has the option for a follow-on order for another seven. This chopper has also been widely used in humanitarian assistance and disaster relief operations worldwide.

## Khanderi and Karanj

The second and third of the six Scorpene attack submarines being built at Mazagon Docks, Mumbai, under Project 75 will be ready for naval service this year.

Christened the Kalvari class after the first Indian-made Scorpene submarine, these will make up the desperately required numbers for Indian conventional submarine fleet, and also modernise the Indian Navy's underwater arm.

## M777 and K9 Vajra

The M777 Ultra Light Howitzers and the K9 Vajra tracked artillery guns will be operationalised in their first respective regiments in the Indian Army.

These are the first new artillery guns to be inducted into the Indian Army after the Bofors acquisition in 1986. This provides the much needed firepower renewal for the Indian Army.

There's a 'Make in India' element to both these inductions. One hundred and forty five M777 guns are being acquired under an FMS deal with the US. Twenty-five of these guns are being directly imported. The remaining 120 will be assembled at an Assembly, Integration and Testing Facility in Faridabad. The manufacturer, BAE has chosen Mahindra for the assembly in India.

One hundred K9 Vajra guns are being assembled by L&T in India in collaboration with the South Korean Hanwha.

## Sig Sauer SiG 716 (assault rifle) & Caracal (carbine)

The Indian Army's foot soldier finally has something to cheer about. He will finally get a contemporary assault rifle and carbine this year. The Indian Army will start getting the first lot of 77,000 SiG Sauer SiG 716 assault rifles and 93,895 Caracal carbines, which are being imported under fast tracked programmes.

(Left) The second and third of the six Scorpene attack submarines built at MDL will be ready for naval service this year; (right) MH-60R Seahawk multi-role helicopter.

Army Chief General Bipin Rawat has said the principal focus of the modernisation drive is to improve the lethality and survivability of the Indian foot soldier. The SiG-716, which fires 7.62 mm ammunition, will replace the indigenous INSAS rifle which the Army has been unhappy with for a long time. The Caracal will replace the vintage Sterling 9 mm carbine.

These initial inductions will be followed up by Make in India programmes for 650,000 assault rifles and 350,000 carbines. Kalashnikov is reported to be in the reckoning for making the AK-103 in partnership with the Ordnance Factory Board. For the carbine tender, several leading small arms manufacturers including Caracal, Colt, IWI, S&T Motiv and Beretta are likely to compete.

There's yet another programme for acquiring 16,800 Light Machine Guns.

### Beretta and Barrett Sniper Rifles

The Indian Army also gets the Italian Beretta Lapua Magnum and American Barrett M95 guns to replace the ageing Soviet-origin Dragonov rifles. Both guns have been used effectively in Iraq and Afghanistan. The initial lot of over 700 guns will be supplied to meet the very pressing requirements of the Indian Army's Northern Command on the Line of Control, where Indian troops are repeatedly being targeted by Pakistani snipers. The larger requirement of over 5,000 guns will be met subsequently through a capital acquisitions programme.

The .338 calibre Beretta Lapua Magnum Scorpio TGT can be used for kills at a distance of up to 1,500 metres. It accounts for some record breaking sniper shots. The Barrett M95 is also used as an anti-materiels rifle (AMR), in the role of a bunker buster to target enemies holed up behind fortified defences. This .50 calibre weapon has a kill range of 1,800 metres, and will supplement the Indian Army's Denel AMR's acquired from South Africa post the Kargil War in 1999.

## Big deals in the offing in 2019

### Akula class N-submarine

India and Russia are expected to sign the lease of the second Akula class nuclear-powered attack submarine (SSN). The first, christened INS Chakra, was leased to India for 10 years, and commissioned into the Indian Navy in April 2012.

Although this 8,140-tonne submarine is not nuclear-armed, its long endurance and high speed gives India a huge advantage and 'long legs' in the Indian Ocean Region (IOR). It's an effective sea denial weapon, and the lease of the second submarine would ensure that one of these highly valued assets is always operationally available.

### Guardian armed drones

The US has offered at least 22 weaponised Guardian drones to India. The earlier approval was for the sale of 22 unarmed MQ-9B version of General Atomic's Guardian surveillance drone for the Indian Navy for an estimated $2 billion. Subsequently, the armed version is on the plate. The Indian Navy has reportedly taken the position that the cost does not justify buying an unarmed drone. Revised numbers are said to be under discussion.

This is being pursued along the Government-to-Government Foreign Military Sales (FMS) route. Its co-option of India under the Missile Technology Control Regime (MTCR) has enabled the sale of long endurance and armed drones to India.

### MH-60R Naval Helicopters

As a consequence of an urgent operational requirement for the Indian Navy, a $2 billion government-to-government deal for 24 MH-60R Seahawk multi-role helicopters is expected to be signed with the US before March 31, 2019.

The MH-60 'Romeo' Seahawk, manufactured by Lockheed Martin and its Sikorsky unit, is a proven platform for anti-submarine warfare. A quick deal is reported to be in the works, as the Indian Navy wants the first lot of these helicopters to be delivered this year. The Navy is also pushing, under a separate 'Make in India' process, the acquisition of 123 multi-role helicopters.

### Light Combat Helicopter

With Hindustan Aeronautics Limited (HAL) declaring the indigenous Light Combat Helicopter (LCH) ready for induction, the decks have been cleared for an early deal for 15 of these gunships. It is expected that two separate contracts to supply 10 LCH to the IAF and five to the Army could be signed at the forthcoming edition of India's biggest biennial airshow, Aero India at Bengaluru in February. The contracts are expected to be worth ₹3,000 crore.

HAL recently disclosed a successful test-firing of the Mistral 2 air-to-air missile from the LCH, and declared all weapons trials concluded.

### Apache AH-64E

The Indian Army, which is seeking control of the attack helicopter role from the IAF, also expects to sign a contract for the Apaches this year. Its Chief, General Bipin Rawat, recently hailed the Apache as "a tank in the air". The Army is looking at an initial induction of 6 Apaches into the Army Aviation Corps. SP

PHOTOGRAPHS: Indian Navy, UTC

GENERAL
V.P. MALIK (RETD)

# India and the China-Pakistan Economic Corridor


ILLUSTRATION: Anoop Kamath

In April 2015, China and Pakistan signed an agreement to work on a $46 billion (currently valued at $62 billion) China-Pakistan Economic Corridor (CPEC), generally viewed as the crown jewel of Chinese President Xi Jinping's Belt and Road Initiative. Many strategists called the project a 'regional game changer'. There were also many who wondered if Pakistan's political and economic instability, and the security situation in and around the Corridor, would allow its completion. India has resolutely opposed the CPEC as it passes through part of Jammu and Kashmir (J&K) claimed by it; even violates the Boundary Agreement between China and Pakistan of March 1963.

Nearly four years later, it is perhaps an appropriate time to re-assess the geo-political and strategic impact and the status of the CPEC.

CPEC is the largest investment made by China in any foreign country. Primarily, it involves modern transportation networks linking Gwadar and Karachi ports with Northern Pakistan and points further north in China and Central Asia. It is also part of China's 13th five-year development plan as it complements development of its western region including Xinjiang, Tibet and Qinghai.

The Corridor will provide China a short distance entry to the Indian Ocean, security for its oil transportation and facilitate trade with Middle East, Africa and Europe, cutting down the long maritime route through East China, South China and Yellow Sea and the Strait of Malacca. Due to confrontation with USA and other South East Asian countries over newly established PLA Naval bases, the situation in South China can flare up any time. Interestingly, American media has accused China of using CPEC as a means of flexing

(Left) Prime Minister Imran Khan with President Xi Jinping during his visit to China in November 2018; (right) Withdrawal of US troops from Aghanistan can escalate tension in the region.

muscles in the South Asian region.

The Corridor became partly operational in November 2016 when Chinese cargo was transported overland to Gwadar Port for onward shipment to Africa and West Asia. As per latest reports, 22 'early harvest' projects have been completed or are under construction with a total investment of $18.9 billion. These projects are aimed at resolving two major bottlenecks hindering economic development of Pakistan, namely poor transportation infrastructure and energy shortage.

For Pakistan, the CPEC is intended to rapidly modernise its infrastructure and strengthen its economy. High speed network of highways and railways ($11 billion) spanning throughthe entire nation, numerous energy projects ($33 billion), pipelines ($2.5 billions) and special economic zones are part of the project.

Last year, a consortium of Pakistani broker houses reported that Pakistan will end up paying $90 billion to China over a span of 30 years with annual average repayments of $3-4 billion per year post fiscal year 2020.

China and Pakistan hope that when completed it will transform Pakistan into a regional integrator (Iran to Myanmar in the South and with China in the North) and an economic hub. Pakistan media has called the CPEC a 'game and fate changer.'

Despite vocal criticism earlier, Prime Minister Imran Khan is now fully committed to CPEC. However, there are still many critics in Pakistan on concerns ranging from cost, financing and unbearable national debt, inequitable distribution of prospective benefits to strategic and cultural subjugation under China. To reduce financial debt, Pakistan has recently cancelled a major coal based power plant in Eastern Sindh. Pakistan Army has been able to provide project implementation security although occasional instances continue to be reported in Southern Balochistan and Khyber Pakhtunkhwa.

Several Central Asian nations have conveyed willingness to connect their own infrastructure networks with the CPEC via China to reach Pakistani sea ports, by passing the ever-turbulent Afghanistan. Some of them have already started working on it. Even Iran, where India has invested heavily in Chahbahar Port as 'a gateway to Central Asia', has stated, "Iran is eager to join CPEC with its full capabilities, possibilities and abilities."

**The security situation in Afghanistan has become the latest cause of concern. On that will depend India's continuation of developmental support to Afghanistan, Central Asia policy, and its 'resolute'opposition to CPEC.**

In Afghanistan, both Pakistan and China have strong strategic and security interests. CPEC can be exploited further if there is a favourable Government in Afghanistan and no threat to its security. Its vast mineral resources valued at $ One trillion are untapped and present a valuable economic opportunity. Both China and Pakistan have been in close touch with the Taliban as well as the National Unity Government in Kabul, encouraging them to join the peace negotiations. The NUG, despite heavy dependence on American security and massive investments from India, has often expressed interest to join the CPEC.

The security situation in Afghanistan has become the latest cause of concern. On that will depend India's continuation of developmental support to Afghanistan, Central Asia policy, and its 'resolute'opposition to CPEC.

Three developments have been taking place ever since the USA started withdrawing its troops from Afghanistan. One. The Taliban have expanded their territorial control and thus weakened the NUG in Kabul. Two. The international community has started breaking bread with the Taliban. The Russia-China-Pakistan-Iran-Taliban alignment, despite strong anti-US undertones, is quite happy with the latest US policy of direct talks with the Taliban and its sponsors in Pakistan.

Recently, the US President has announced his intention to pull out yet another 7,000 American troops from Afghanistan. This has caused further anxiety over the security situation in that country. India, without any security cover for its investments in Afghanistan, has been left in the lurch while Pakistan seems to have got into driver's seat in Afghanistan once again. Its next ploy would be to use its proxies to target Indian projects and truncate India's politico-diplomatic profile in Afghanistan. A Taliban comeback in Afghanistan will also embolden Islamist militancy in the Kashmir Valley. Under these circumstances, India may have no choice other than talking to Taliban—directly or indirectly—to safeguard its interests in Afghanistan.

Will India retain its centrality in South Asia or concede centrality of a 'Greater South Asia'to China? In the years to come, that would be decided by the CPEC. SP

*The writer is former Chief of the Army Staff.*

PHOTOGRAPHS: cpec.gov.pk, USAF

# Fortifying Andaman & Nicobar

LT GENERAL
P.C. KATOCH (RETD)


NAS Shibpur was commissioned as INS Kohassa by Admiral Sunil Lanba, Chairman COSC and Chief of the Naval Staff on January 24, 2019. The ceremony was attended by many dignitaries and senior officials including Vice Admiral Bimal Verma, AVSM, ADC Commander-in-Chief, Andaman and Nicobar Command.

PHOTOGRAPHS: Indian Navy

Media reports of January 27 state government has "virtually finalised" a ₹5,650 crore military infrastructure development plan for Andaman and Nicobar Islands (ANI) over a 10-year period. The term "virtually finalised" indicates there is still time before it is finally approved, which hopefully will not be too long. The plan reportedly caters to stationing more warships, aircraft, drones, missile batteries and infantry in the archipelago. The news report goes on to say that the plan has also been reviewed by the Defence Planning Committee (DPC) and the initial plan was pegged around ₹10,000 crore but had to be pruned down – to focus only on land that is already under acquisition by the Andaman & Nicobar Command (ANC). It can therefore be deduced that only 50 per cent of what was planned is getting approved. Could this be looked at from the prism of national security, enlarging China threat and strategic importance of ANI? Hastening land acquisition can hardly be problematic when land from military cantonments is being acquired by the government all over the country?

Leaving the land acquisition to ANC obviously means endless hiccups but surely, a push by the government can provide the right impetus to implement the original plan involving 10,000 crore. This will then be in synch with force accretion plan of the Armed Forces at the ANC by 2027 under consideration, which reportedly is pegged at 5,370 crore and would include adding one more infantry battal-


ion to the existing two infantry and one Territorial Army (TA) battalion. Accretions are also planned by way of air defence, signals, engineers, supply and other units. Night flights to Port Blair began only in 2015. In April 2016, a guided-missile corvette, INS 'Karmuk', was stationed at ANI.

Incidentally, the earlier infrastructure development package (2015-2025) approved for ANI costing $1.5 billion includes plans to double the number of naval patrol craft to 32 and army personnel to 6,000. After years of wrangling, construction of a new missile test facility on Rutland Island was approved by the government in mid 2017. Located 20 km south of Port Blair, Rutland Island falls in the South Andaman administrative district. Presently, long-range missile tests are conducted off the Odisha coast and are tracked by naval vessels on a trajectory into the Bay of Bengal. Most of the long-range tests for missiles like Agni IV and V have to be tracked over sea, with specialised vessels noting the 'hit zone' into the water. The missile test facility on Rutland Island will assist in confirming accuracy of the long-range missile hits. In June 2018, government took a decision to permanently station fighter jets in the ANI, something that should have happened years back. News reports said deployment of frontline fighter jets is under consideration for deployment at two bases in ANI – one each at Car Nicobar and at Campbell Bay. IAF already has a base at Car Nicobar but ANI has only one Mi-17V5 unit and two Dornier aircraft permanently stationed. Apart from the two existing major airports at Port Blair and Car Nicobar, runways at the naval air stations at Shibpur (recently commissioned as INS Kohassa by the Naval Chief) in the north and Campbell Bay (INS Baaz) in the south will be extended to 10,000 feet to support operations by larger aircraft. Another 10,000-foot runway at Kamorta island is also envisaged as part of the 10-year infrastructure development.

The ANC importantly also provides security cover to India's 5.95 lakh sq km exclusive economic zone (EEZ) in the region. Significantly, India has no maritime boundary disputes with any county of Southeast Asia. Taking cue from China's militarization of the SCS and feverish activities in the IOR, we should have taken steps to optimise the strategic advantage of ANI much before. China is going full steam in establishing and fortifying naval bases in the IOR and its nuclear submarines are periodically docking in Sri Lanka and Pakistan. As per reports of January 2018, she has developed a new underwater surveillance network to assist submarines get a stronger lock on targets, which includes deployment in the Indian Ocean. PLA Navy (PLAN) forays in the IOR are on the increase and Chinese marines are already stationed at Gwadar and Djibouti. PLAN has deployed SRBMs, underwater drones and has successfully mounted electromagnetic rail-gun on warships. From her naval bases in Djibouti and SCS, China has also been firing lasers at US pilots. In comparison, India's fortification of the ANI is very slow despite the Andaman & Nicobar Command (ANC) having been established in 2001 in accordance recommendations of the Kargil Review Committee (KRC) and the follow up Group of Ministers (GoM) reports, which devoid of adequate muscle, continues to look over its shoulder at mainland India. While Chinese marines are already deployed in the IOR, our Navy's case for a Marine Brigade is stagnating in MoD for the past two decades. Indian Naval Marines would also relieve some of the pressure on the Army's Infantry facing problems of turnover especially in counter insurgency areas, particularly by infantry regiments responsible for contributing manpower to Rashtriya Rifles units. We need to go full hog to not only beef up the defence potential of ANI but operationalise it as a 'springboard' for operations to nullify threat to our national interests. If the political will is there, finding the finances should not be any problem. The ANI also needs to transformed into a major international transshipment hub with the ANC having adequate muscle; replete with adequate number of frontline fighters and surveillance aircraft, ships, nuclear submarines, amphibious aircraft, marines, underwater defences and the like. Fortifying ANI fully should be a top national priority. SP

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

## DAC Approval for Indigenous Construction of Six Project 75(I) Submarines Under SP Model

The Defence Acquisition Council (DAC), in a landmark decision on January 31, also approved indigenous construction of six submarines for the Indian Navy at a cost of over ₹40,000 crore. This is the second project under the MoD's ambitious Strategic Partnership (SP) model that aims at providing a significant fillip to the Government's 'Make in India' programme. SP model envisages indigenous manufacturing of major defence platforms by an Indian Strategic Partner, who will collaborate with foreign OEM to set up production facilities in the country. The model has a long term vision of promoting India as a manufacturing hub for defence equipment through transfer of niche technologies and higher Indigenous Content thereby enhancing self-sufficiency for meeting the future requirements of the Armed Forces.

Today's DAC approval would be second such project following indigenous production of 111 Naval Utility Helicopters that was approved in August 2018. Construction of six submarines under Project 75(I) will provide a major boost to the existing submarine design and manufacturing ecosystem in India through transfer of design and equipment technology as well as necessary skill sets. The DAC also approved the acquisition of approximately 5,000 Milan Anti Tank Guided Missiles for the Army. SP

## Modest FDI Inflows for Defence and Aerospace Despite Reforms

India received a modest ₹90 crore ($12.54 million) Foreign Direct Investment (FDI) in defence and aerospace sector in financial year 2017-18, the Defence Minister stated in a written reply to a question in Parliament on February 4. This investment has been received in 19 companies.

The figures suggest a tepid response to the Government's effort to hike the FDI limit to 49 per cent under the automatic approval route, and up to 100 per cent with Government approval on a case to case basis where cutting edge technology is being brought to India.

India's Defence Budget for 2019-20 is ₹3,18,931.22 crore ($44.63 billion), of which the capital outlay for new purchases of military equipment is ₹1,08,248.80 crore ($15.68 billion). A significant part of the revenue outlay of ₹2,10,682.42 crore ($29.36 billion) is also spend on repeat purchases including ammunition, spares and maintenance.

Earlier, in another written reply submitted to Parliament in December 2018, the Government had declared receipts of over ₹438.60 crore ($62.7 million) of Foreign Direct Investment (FDI) in the Defence & Aerospace sector since April 2014.

The Ministry of Defence then clarified in its statement that 1.16 crore FDI pertains to receipts under just three National Industrial Classification Codes for the Defence Sector. Inflows of ₹237.44 crore ($33.95 million) have been received by six companies under other codes since April 2014, the Government stated.

"In addition to the six cases mentioned above, FDI of over ₹200 crore ($28.6 million) has been received in Defence & Aerospace Sector in 14 cases through the automatic route," it elaborated. The revised FDI limits in 2016 placed investments up to 49 per cent under the automatic route. Government approval is required only for FDI over 49 per cent.

In 2014, the Government liberalised the defence licensing regime, restricting the items which required a government license, and the different National Industrial Classification Codes are a reflection of the liberalised regime.

These figures relate to the incumbency of the Narendra Modi Government, which took office in May 2014. SP

***—Vishal Thapar***

## Successful Flight Test of SFDR

The Defence Research and Development Organisation (DRDO) successfully flight tested the second indigenously developed Solid Fuel Ducted Ramjet (SFDR) propulsion based missile system from ITR, Chandipur, Odisha on February 8, 2019. Ground booster, separation of ground booster and Nozzle-less-booster performance were found satisfactory. Missile was guided to high altitude to simulate aircraft release conditions and subsequently nozzle-less-booster was ignited. SFDR based missile accelerated to achieve ramjet Mach number successfully. The trajectory was tracked by telemetry and radar stations till touchdown. All the mission objectives have been met.

The success of SFDR propulsion technology is a significant milestone and will pave the way for development of long range air-to-air missiles in the country.

Defence Minister Nirmala Sitharaman congratulated DRDO and associated team members for the stupendous mission. SP

PHOTOGRAPHS: MDL, PIB

## GSL Signs Contract for Acquisition of Two Additional Project 1135.6 Follow-on Ships for Indian Navy

An Inter-Governmental Agreement (IGA) between the Government of Republic of India and Government of Russian Federation was concluded on October 15, 2016, for construction of additional Project 1135.6 Follow-on ships in India, at Goa Shipyard Limited (GSL). In line with the IGA, the Government signed a contract for construction of two ships with GSL to-date, with scheduled delivery in June 2026 and December 2026 respectively.

The Follow-on P 1135.6 series of frigates, customised to meet the Indian Navy's specific requirements, are potent platforms, with a mission span covering the entire spectrum of naval warfare; air, surface and sub-surface. The ships would be equipped to operate in littoral and blue waters; both as a single unit and as consorts of a naval task force. Advanced features of stealth include a special hull design, to limit radar cross-section, low electromagnetic, infrared and under water noise signatures. The ships would carry highly sophisticated and state-of-art weapon systems and sensors. To support these ships through their life cycle, the Indian Navy has put in place requisite infrastructures for training and maintenance.

Importantly, in line with the Government's 'Make in India' initiative, these ships being constructed at GSL under Russian assistance, would make these platforms the largest number of ships of a class in service showcasing indigenous equipment such as sonar system, Brahmos missile system, combat management system, etc. SP

## Vice Admiral M.S. Pawar Assumes Charge as Deputy Chief of the Naval Staff (DCNS)

Vice Admiral MS Pawar, AVSM, VSM has assumed charge as Deputy Chief of the Naval Staff on January 30, 2019. An alumnus of Sainik School Korukonda and the 60th course of National Defence Academy, Khadakwasla, Pune, he was commissioned on July 1, 1982. During the ab initio training he was adjudged 'Best all round Cadet' and also stood first overall in the year long Sub Lieutenant Technical Courses. He later specialised in Navigation and Direction topping the coveted and highly competitive course.

The Admiral has held various challenging Staff and Command assignments during his distinguished naval career and has had wide ranging experience of over 25 years in sea going billets onboard diverse platforms ranging from small ships to aircraft carrier. He was the Navigating Officer of INS Magar during Op Pawan in Sri Lanka, the Fleet Navigating Officer of the Western Fleet during Kargil War and the Fleet Operations Officer of Western Fleet when the IN commenced anti piracy patrols in the Gulf of Aden. He has commanded Indian Naval Ships Nashak as the commissioning CO, Kuthar, Talwar and the Mauritius National Coast Guard Ship Vigilant - the senior ship of the No. 1 Patrol Vessel Squadron. He was also the Commandant of the Mauritius National Coast Guard, during 2003. His Joint Service tenures include instructor at the National Defence Academy and Deputy Assistant Chief of Integrated Defence Staff (Maritime) at HQIDS. On promotion to Flag Rank, he has held the key assignments of Flag Officer Sea Training, Chief of Staff of Southern Naval Command and Flag Officer Commanding Maharashtra and Gujarat Area (FOMAG). As Vice Admiral he has been the Director General Project Seabird and Chief of Staff, Eastern Naval Command.

An alumnus of the Royal Naval Staff College, UK; College of Naval Warfare, Mumbai and National Defence College, Delhi, he has won awards at each of these institutions including the prestigious Herbert Lott Prize at Royal Naval Staff college, Greenwich, UK. The Admiral also holds a double MPhil in Defence and Strategic Studies from Universities of Mumbai and Madras. He was awarded commendations by the Chief of Naval Staff and also by the Commissioner of Police, Mauritius in 2003.

An accomplished long distance runner, the Admiral is married to Mrs Meena Pawar and they have two children. SP

## Vice Admiral G. Ashok Kumar, assumes charge as Vice Chief of the Naval Staff

Vice Admiral G Ashok Kumar, AVSM, VSM has assumed charge as Vice Chief of the Naval Staff on January 30, 2019. An alumnus of Sainik School, Amaravathi Nagar and National Defence Academy, Khadakvasla, Pune, he was commissioned into the Executive Branch of the Indian Navy on July 1, 1982.

The Admiral has held various challenging Staff and Command assignments during his distinguished naval career spanning more than three decades. After having completed his specialisation in Navigation and Direction at Kochi in 1989, he served as the Navigating Officer of Indian Naval Ships Beas, Nilgiri, Ranvir and Vikrant. His

PHOTOGRAPHS: GSL, Indian Navy

other sea tenures include Commanding Officer of INS Kulish and Ranvir, and Executive Officer onboard INS Brahmaputra. Among his shore tenures, the important ones include Staff officer (Ops/ND) at Indian Naval Work-up team, Head of Training Team (Navy) at Defence Services Staff College, Wellington, Defence Advisor at the High Commission of India in Singapore and the Chief Staff Officer (Operations) of the Western Naval Command. On promotion to Flag rank, he has held the important assignments of Flag Officer Sea Training (FOST), Chief of Staff (COS) of Southern Naval Command and Flag Officer Maharashtra and Gujarat (FOMAG). In the rank of Vice Admiral he has been the Commandant of the National Defence Academy and the Deputy Chief of Naval Staff.

He is a graduate of Defence Services Staff College, Wellington and has attended the Army Higher Command Course at Mhow as well as the Expeditionary Operations Course at Quantico, Virginia, USA. SP

## Vice Admiral Ajit Kumar P. takes over as Flag Officer Commanding-in-Chief Western Naval Command

Vice Admiral Girish Luthra handing over the traditional baton to Vice Admiral Ajit Kumar P. in the office of the Commander-in-Chief at Headquarters WNC

Vice Admiral Ajit Kumar P., PVSM, AVSM, VSM took over as the Flag Officer Commanding-in-Chief of the Western Naval Command on January 31, 2019, at Mumbai. He succeeds Vice Admiral Girish Luthra, PVSM, AVSM, VSM, ADC who retires upon superannuation, after an illustrious career spanning nearly four decades in the Indian Navy. At an impressive ceremonial parade at the Naval Air Station Shikra, the outgoing and incoming Cs-in-C were accorded a guard of honour after which they proceeded to the Headquarters of the Western Naval Command for a formal handing-taking over. On completion, Vice Admiral Luthra was "pulled out" in true Naval tradition.

An alumnus of Sainik School Kazhakootam and the National Defence Academy, Vice Admiral Ajit Kumar P. was commissioned in the Indian Navy on July 1, 1981. As a specialist in Missiles and Gunnery, the Flag Officer has served onboard frontline warships of the IN and abroad. Adm Ajit Kumar has the rare distinction of commanding six warships, including two foreign warships. These include guided missile corvette INS Kulish, guided missile frigate INS Talwar, guided missile destroyers INS Mumbai and INS Mysore. The officer has completed the Naval Higher Command Course and is also an alumnus of the prestigious Naval War College, Newport, USA. The Admiral has served extensively in the Western Naval Command in the initial specialist and Command appointments. He has also been the Chief Staff Officer (Operations) of the Western Naval Command.

Vice Admiral Ajit Kumar P. has also been the Flag Officer Commanding of the Eastern Fleet, Commanding Officer of Gunnery and Missiles Training School – INS Dronacharya, served as Assistant Chief of Personnel (Human Resources Development) at IHQ MoD (Navy) and Chief of Staff of Southern Naval Command. Promoted to the Rank of Vice Admiral in December 13, he has been Commandant of the prestigious Indian Naval Academy at Ezhimala. His tenures also include extensive experience in higher joint defence management where he has served as Deputy Chief of Integrated Defence Staff (Operations) and Deputy Chief of Integrated Defence Staff (Policy Planning & Force Development), at the HQ IDS. He was the Vice Chief of Naval Staff at Naval Headquarters, New Delhi in his last appointment prior to assuming charge as the Flag Officer Commanding in Chief, Western Naval Command. In recognition of his service, he has been awarded the Vishisht Seva Medal in 2006, the Ati Vishisht Seva Medal in 2014 and Param Vishist Seva Medal in 2019 by the Hon'ble President of India. SP

## INS Trikand participates in exercise Cutlass Express 2019

INS Trikand, a front-line warship of the Indian Navy, participated in a multinational training exercise Cutlass Express-19 held from January 27 to February 6, 2019. The aim of the exercise was to improve law enforcement capacity, promote regional security and progress inter-operability between the armed forces of the participating nations for the purpose of interdicting illegal maritime activity in the Western Indian Ocean. During the exercise, Naval, Coast Guard and Marine Police personnel from a number of East African countries were jointly trained by mentors from USA, India, and Netherlands, with support of international organisations like the International Maritime Organisation (IMO), Combined Maritime Force (CMF) and European Naval Forces (EUNAVFOR). The Indian Navy played a significant role in Cutlass Express-19, being involved in planning, coordination and execution. Through INS Trikand, the Indian Navy provided a platform for live Visit Board Search Seizure (VBSS) drills, which proved to be of immense training value to the participating nations.

The exercise was conducted in two phases. The first, called the Command Post Exercise (CPX) was conducted from January 27 to February 2, 2019. It involved training of personnel on shore for coordination and conduct of VBSS operations. During the CPX, extensive training and interaction was carried out between the officers and sailors of the Indian Navy and personnel from the participating nations. The training included exposure of the personnel to the various software tools used by the US Navy and the European Union for integration of maritime information, with a view to positively identify a suspicious vessel and direct a VBSS operation against it.

The second phase called the Final Training Exercise (FTX) was conducted from February 3-5, 2019. This phase consisted of actual boarding operations at sea and live boardings were out onboard INS Trikand, anchored off Djibouti harbour. The closing ceremony of the event was held at the Djibouti Naval Base on the morning of February 2019.

The ship's stay at Djibouti harbour also enabled the crew to interact professionally with the crew of other ships in harbour, including the Japanese Maritime Self Defense Force Ship Samidare, Spanish Naval ship ESPS Relampago and United States Ship Chung Hoon. Mutual ship visits were organised with a view to promote inter-operability between the Indian Navy and the other navies, as also understanding of best practices. SP

PHOTOGRAPH: Indian Navy

# Trijicon, Announces the Promotion of Charles 'Chuck' Wahr to Global Vice President of Sales and Marketing

Trijicon, Inc., global provider of innovative aiming solutions for the hunting, shooting, military and law enforcement markets is pleased to announce the promotion of Chuck Wahr to Global Vice President of Sales and Marketing. Chuck joined Trijicon in January 2015 as Vice President Sales and Marketing. Since that time, he has been instrumental in the company's sales growth and strategic marketing initiatives. In this new role, Wahr will continue to have oversight of the commercial sales and marketing organizations, and will add oversight for Trijicon's Business Development teams. The Business Develop teams call on our domestic military organizations, government agencies, international military/LE agencies and international commercial sales.

Chuck's successful career spans over 20 years with leadership roles in several well-known consumer brand companies including Black & Decker/Dewalt, Newell-Rubbermaid & Overhead Door.

"Chuck's expanded role as Global Vice President will allow him to bring his wealth of experience and strategic thought to another area of the business," said Stephen Bindon, Trijicon's President and CEO. "His ability to drive change and results make this role a great fit for him."

Addressing his newly appointed position, Wahr stated, "I am honored to lead the Global Sales and Marketing teams for Trijicon. Our commitment to success and innovation is well documented and I look forward to continuing to build on our strengths."

Wahr earned his MBA from Rensselaer Polytechnic Institute and graduated with a Bachelor of Science degree from the University of Oregon. Additionally, Chuck proudly served in the US Army Infantry Division from 1987 to 1991 and completed his career as a Staff Sergeant following Operation Desert Storm.

Growing up in Western Michigan, Chuck became an avid hunter, trapper and fisherman, and is still a passionate outdoorsman today.

Trijicon, Inc. has led the industry in the development of superior any-light aiming systems since the company's founding in 1981. Incorporating nearly four decades of innovation, Trijicon's riflescopes and sights are the most advanced aiming systems available today. SP

***—By SP's Correspondent***

**Sniper-IR and VCOG (Variable Combat Optical Gunsight) from Trijicon**

PHOTOGRAPHS: Trijicon

# A Drone Guard Ready to Protect Critical Sites

As unmanned aerial systems (UAS) and drones become more common in our daily life, they also become potential threats. Whether used by innocent enthusiasts to snoop into a local airport, smuggle drugs or weapons into a prison, or laden with explosive on a terrorist attack, drones are regarded as potential danger for certain critical assets and secured locations. However, the means available to regulate and control drone access to protected areas are limited.

Small, slow and low flying vehicles multirotor drones are hardly spotted from the ground by radar, camera or the human eye. When spotted over sensitive areas such as airports, drones can cause significant disruptions – as the three-day closure of London Gatwick in December 2018 has shown. Such incidents have made it clear that authorities need new tools to regulate and enforce drone restrictions to ensure public safety, security and privacy.

Israel Aerospace Industries' (IAI) operationally proven Drone Guard counter-UAS system meets this need. The latest version has been optimized for operation in high security environments such as airports, prisons and strategic infrastructures. As a system integrating multiple sensors to detect, classify, identify and track drone targets, Drone Guard employs a multilayered approach to manage drone activity and defeat targets suspected to be dangerous or hostile.

Drone Guard

When protecting a secured site such as an airport or other highly secured facility, DroneGuard can be controlled from the operations center. The system's sensors and effectors may be located in multiple outposts, in fixed or temporary locations covering the entire premises. Deployment of multiple units enable operators to employ electronic means to effectively jam and 'takeover' or spoof suspected drones using low power effectors, thus minimizing the potential of electromagnetic interference. Such an array monitors the entire secured area, inside and outside, effectively detecting and locating drone activity immediately as it appears and even locates their operators beyond the protected perimeter. Such systems also track the activity of drones authorized to operate inside the protected area.

The system relies on radar and Communications Intelligence (COMINT) as the means to detect drone activity in and around the protected area. Some types of radars can even track hovering drones, or drones being prepared for takeoff, by the unique signature emitted by their rotors. The radar model used for the Drone Guard is ELTA ELM-2026B X-band radar

The active radar is the first line of detection. The detection is robust and is based only on the drone movement and not on radio transmission. The radar detects targets in all-weather condition.

The passive COMINT is used to detect and classify drone activity by the electromagnetic signals emitted from the drone and ground control unit. Based on the most advanced techniques derived from military systems, Drone Guard intercepts and interprets both familiar signals from commercial systems as well as unfamiliar signals of hacked drones. Drone Guard's COMINT spots such signals from several kilometers, including in situations beyond the line of sight of EO and radar sensors.

Once a drone presence is verified, the radar directs the Electro-Optical (EO) system to identify it. The EOcamera is the Drone Guard's third sensing channel, used to visually verify a target and track it within the line of sight. As a passive sensor EO can track targets that have minimal radar reflection and no electromagnetic signature.

The different sensors are part of Drone Guard's multilayered detection capability, maximizing the system's efficiency and enabling authorities to manage situations and recommend the most appropriate enforcement and response.

Once detected and identified, operators can deal with the drones as required. Some response suffices tracking only, others require documentation, and evidence collection pursuing criminal charges against the operators. Drone Guard provides such capabilities with the data recording from COMINT and the EO camera. Deterring drone operators, security forces can quickly dispatch to apprehend rogue drone operators, relying on Drone Guard's indications. When operational needs require immediate ceasing of the drone's activity, Drone Guard provides various possibilities to deal with the situation.

The most basic is the use of electronic countermeasures against the drone's control and navigation channels, using different protocols to 'fend off' a drone from the guarded premises or bring it down safely using cyber 'takeover' and spoofing methods. In a civilian environment the use of electronic countermeasures, such as GPS or communications jamming is restricted, as it may jeopardize air traffic safety, other counter-UAS measures are employed. In such events Drone Guard supports various 'Hard Kill' measures, such as net guns and firearms, integrated with special sights to effectively aim and engage drones when they are in sight.

Employing the latest software defined electronics to provide an agile and adaptable C-UAS platform sets Drone Guard apart from numerous C-UAS systems available in the market. Based on operational lessons learned, ELTA has tailored Drone Guard to address a wide range of applications, from relatively simple deployments monitoring and alerting drone activity in a civilian area to conducting military C-UAS missions within a challenging electromagnetic environment. Drone Guard is best prepared to counter present and evolving threats and endure the most challenging situations. SP

***—By SP's Correspondent***

PHOTOGRAPH: IAI


IAI's Heron TP multi-role MALE RPAS

# UAVs Armed and Dangerous

*While the process for selection of a new FRA is underway, there is trepidation amongst IAF circles about the budgetary deprivation the defence services are afflicted with*

[ By **Lt Gen Naresh Chand (Retd)** ]

Employment of unmanned aerial vehicles (UAVs) as an airborne platform to carry out multiple roles has proliferated in geometrical progression in the last two decades. It was but a natural corollary to employ them in armed role in dangerous and sensitive areas. For nearly a decade, group of armed UAVs users was limited to the US, the United Kingdom, and Israel. But that club expanded with the entry of Pakistan in 2015. Pakistan used its domestic model, the Burraq—modeled after the Chinese CH-3—to strike militants in the North Waziristan tribal region. Nigeria and Iraq both used versions of China's popular Caihong drone when striking at militants within their borders. Turkey launched a strike in 2016 against presumed ISIS militants on its border region just a year after demonstrating armed drone development capability. Iran also launched its first strike in 2016, though it has been developing its drone capability for decades. Israel along with US have been leading the unmanned revolution but now it appears that China may over take them. General Atomics developed its popular surveillance UAV Gnat with a video camera, gave the US military commanders 96km panorama from a platform that could stay airborne more or less permanently. Gnat was renamed Predator and it was a Predator mission that located Osama bin Laden in Afghanistan in 2000 but efforts to act on that intelligence were frustrated by the complexities of launching a raid and by concerns about the risks to US troops and civilians. In exasperation, national security officials began asking as why Predator cannot be armed? Initial testing of missile-equipped drones was completed in 2001, and soon after the September 11 attacks the first weaponized Predators, armed with Hellfire missiles and designated MQ-1L, were flying over Kabul and Kandahar. In all, it flew 261 sorties in Afghanistan, totaling more than 2,700 hours. US is using them for hitting militants and terrorist leaders. Example of MQ-1 Predator UAVs armed with Hellfire missiles in Afghanistan and in tribal areas of Pakistan and in Yemen by the US, are now well known. Similarly Israel is using UAVs armed with missiles in Palestine. There was no looking back after this and many countries have armed UAVs. Some examples:

**General Atomics MQ-9 Reaper.** The MQ-9 Reaper flew its first operational mission in Iraq in July 2008.MQ-9 Reaper has an operational ceiling of 50,000ft, a maximum internal payload of 800lb and external payload exceeding 3,000lb. It can carry up to four Hellfire II anti-armour missiles and two laser-guided bombs (GBU-12 or EGBU-12) and 500 lb GBU-38 JDAM (joint direct attack munition). In May 2008,

PHOTOGRAPH: IAI

General Atomics MQ-9 Reaper armed with GBU-12 Paveway II laser guided munitions and AGM-114 Hellfire missiles

a USAF Reaper successfully test dropped four Raytheon GBU-49 Enhanced Paveway II 500lb bombs, which have laser and GPS guidance. Its sensor payload can include the General Atomics Lynx SAR (synthetic aperture radar).

**Northrop Grumman's X-47B**. X-47B is a tailless, strike fighter-sized unmanned aircraft developed by Northrop Grumman as part of the US Navy's Unmanned Combat Air System (UCAS) Carrier Demonstration programme. The successful flight test programme is setting the stage for the development of a more permanent, carrier-based fleet of unmanned aircraft. It is designed to cruise at 0.45 Mach and can attain speeds of over about 280km/h. It can easily take off from the ground and land all by itself; in addition to refueling over the ocean. It can also be fitted with smart bombs and other weaponry that can self-deploy using the onboard computer systems.

**IAI's Heron TP (Eitan)**. Media has reported that India has bought IAI's armed Heron TP also called Eitan from Israel. Israel Aerospace Industries (IAI) has partnered with Kalyani Strategic Systems to set up the plant. The Heron TP is a medium sized drone, measuring 14 m in length and has a wingspan of 26 m. The single Pratt and Whitney PT-6A 1,200 bhp engine is capable of powering it to a top speed of 241 kmph.The manufacturers claim that it can fly at over 45,000 feet above ground level payload weight is 2,700 kg.

**The Wing Loong II.** The Wing Loong II is an improved version of the Wing Loong 1 UAV in the category of MALE (Medium-Altitude Long-Endurance) designed and manufactured in China by the Aviation Industry Corporation of China (AVIC). It has length of 11m, a wingspan of 20.5m, can fly for 20 hours and has a maximum speed of 370 km/h and an operational radius of action of 1,500 km and is equipped with a satellite communications system. Wing Loong II has a maximum payload capacity of 400 kg. It is able of carrying up to 12 laser-guided bombs or missiles.

**BAE-The Taranis.** Taranis is an UK's unmanned combat aircraft system advanced technology demonstrator programme which was first flown in 2013. It is named after the Celtic god of thunder and is capable of carrying multiple ground to air missiles, bombs and other weaponry while in flight. It has some of the most sophisticated onboard computers that can deploy air-to-ground missiles both at moving and static targets. It is also designed with very complex stealth technology that allows it to carry out very covert operations and maintain a low radar profile. About the size of a BAE Systems Hawk aircraft – Taranis has been designed and built by BAE Systems, Rolls-Royce, the Systems division of GE Aviation (formerly Smiths Aerospace) and QinetiQ working alongside UK MOD military staff and scientists.

**NESCOM Burraq UCAV.** Pakistan's National Engineerings and Scientific Commission (NESCOM) has developed and produced Burraq unmanned combat aerial vehicle(UCAV). Its weight (empty) is 500 kg, maximum take off weight is 1,000 kg, maximum speed is 215 kmph and range is 1,000 km. It can carry 1 x "Barq" air-to-surface missile (laser-guided).

**CH-4.** The CH-4 is built by state-owned aircraft manufacturer China Aerospace Science and Technology Corporation. At Airshow China in Zhuhai in 2014, a company brochure said the CH-4 series is suitable for high-altitude missions over land and sea, and has a maximum take-off weight of 1,260kg and payload capacity of 115 kg. Endurance for the CH-4 series is claimed to be up to 30 hours. By another account, the UAV can carry a payload including Lan Jian 7 (Blue Arrow 7) laser-guided air-to-surface missiles, TG100 laser/INS/GPS-guided bombs, and AR-1/HJ-10 anti-tank missile – the Chinese equivalent to the American-made Hellfire missile. SP

PHOTOGRAPH: USAF

# India-Israel Scale up UAV Partnership: IAI Set to Outsource Composites to Lohia Group

India and Israel are poised to scale up their partnership in unmanned aerial vehicles (UAVs), with the Israeli defence and aerospace giant IAI set to outsource its requirements for composite materials for drone airframes to India.

The Kanpur-based Lohia Group is acquiring an Israeli company, Light and Strong, which supplies high-end composites to IAI and Elbit.

Light and Strong mentions "giving alternate solutions in the field of construction and engineering in the domain of UAV in particular" as its specialisation, and lists the Israeli Ministry of Defence, UAV integrators and defence companies as its customers.

The Lohia Group confirmed the "signing of a definitive agreement with Israel's Light & Strong Limited, a national leader in aerospace and military composite components production". "The acquisition will be completed in the immediate short term", Pavitra Goel, Lohia's Lead for Aerospace & Defence, declared.

After the acquisition, a parallel composites manufacturing facility will be set up on a part of the 100-acre Lohia industrial complex in Kanpur. Construction of this "world-class facility" is likely to begin early 2019.

"The focus will be on exports, and Israel will be our launch customer," said Goel. In the Lohia acquisition, Industry watchers also see Israeli companies positioning themselves for discharge of offset obligations in India. Recently, the Adani group launched a JV with Israel's Elbit in Hyderabad for the manufacture of airframes for the Hermes drone for the international market.

Israel has a head start in India's drone market, with the Indian armed forces already operating the Searcher and Heron UAVs. It has also been widely reported that the acquisition of Heron TP armed drones by India is in the pipeline. Industry analysts expect this market to grow in a competitive environment.

"Our vision to become the leading supplier of choice (of composite sub-assemblies) for global OEMs in the aerospace and defence sector will be ably supported by our teams in India and Israel. Both our facilities will strategically serve our customers globally, with symbiotic support of technology and value manufacturing," Goel said.

The market for composite structures and sub-assemblies in India, too, is significant. Hindustan Aeronautics Limited (HAL), Bharat Dynamics Limited (BDL) and Indian Space Research Organisation (ISRO) are the biggest customers, but the demand has not been clearly projected to Industry. For instance, the Light Combat Aircraft Tejas is known to have the highest proportion of composites among all the world's fighter aircraft.

The Lohia group is an engineering company with an annual revenue of $300 million. In the past, it has supplied precision-machined components to the Ordnance Factory Board for the Arjun Main Battle Tank, shell casings for 155mm Bofors ammunition, and fins for Pinaka rockets. With the acquisition of the Israeli Light and Strong, the Lohia Group is returning to the Defence & Aerospace sector after five years. SP

***—Vishal Thapar***

# Adani Gathers Momentum, Buys 25 Per Cent Stake in Alpha Design

Adani Defence & Aerospace has recently acquired a 25 per cent stake in Bengaluru-based Alpha Design Technologies for an estimated ₹400 crore ($55.9 million).

The transfer of shares has been actioned after the signing of the agreement in New Delhi on December 13, 2018, between Ashish Rajvanshi, Head of Adani Defence & Aerospace, and Col HS Shankar, Chairman of Alpha Design Technologies, sources confirmed.

This acquisition lends credibility and weight to the Gujarat-based group's efforts to qualify for various 'Make in India' programmes, including those under the Strategic Partnership model. In 2018, Adani submitted a bid for the billion dollar project to make 111 Naval Utility Choppers under the Strategic Partnership route.

"By picking up a significant stake in Alpha Design Technologies, the Adani group can claim several segment specific capabilities," an industry source inferred. "It gives Adani both capability and assets to show, and strengthens its case in several acquisitions programmes," he said.

Through its stake, Adani has accessed Alpha Design Technologies' proven capabilities in aero structures for helicopters and fighter aircraft, as well as in defence electronics. Alpha makes one-third of the structure of the Sukhoi-30 fighters being made at HAL, and one of three main surface structures of the Light Combat Aircraft Tejas.

Alpha Design's capability portfolio also includes software design radios and simulators. Tie-ups with leading Israeli and Russian companies add further value to the Bengaluru-based company, which has bagged orders worth ₹1,100 crore ($153.7 million) in the last four years.

Even before the Adani acquisition of Alpha Design Technologies stake, the two had been acting in concert. They jointly bid for the ₹2,100 crore ($293.5 million) competition for the upgrade programme for the Navy's Ka-28 anti-submarine helicopter in 2018.

Synergies between the two entities will complement the Adani joint venture with Israel's Elbit, which in February 2019 is due to commence production of aero structures for the Hermes 900 high-altitude long endurance (HALE) drone for the export market at a facility in Hyderabad.

Adani is attempting a rapid capability build-up through strategic tie-ups and acquisitions to target big orders. It has a well publicised tie-up with Sweden's SAAB to pitch for the Gripen fighter for India. The group is also collaborating with Rave Gears of the US for manufacture of helicopter precision gears and transmission systems. These collaborations are also giving this group exposure to the global market. SP

***—Vishal Thapar***

PHOTOGRAPH: IAI

# Prime Minister Modi Inaugurates India's First Private Sector Armoured Complex in Gujarat

PHOTOGRAPH: PIB

Demonstrating momentum to his Government's 'Make in India' agenda for military equipment, Prime Minister Narendra Modi on January 19 inaugurated India's first private sector facility for making tanks, armoured vehicles and artillery guns at Hazira in Gujarat.

Larsen & Toubro's Armoured Systems Complex (ASC), in the course of its inauguration by the Prime Minister, showcased before him the K9 Vajra-T self-propelled tracked howitzer that it being manufactured there currently. One hundred of these 155 mm, 52 calibre artillery guns will be supplied to the Indian Army to give punch and mobility to its firepower along the borders in the deserts and the plains.

"Boosting 'Make in India' in the Defence sector is our endeavour. I am glad that the private sector too is supporting this pursuit and making a valuable contribution," Modi tweeted after inaugurating the complex.

"I congratulate the entire team of Larsen & Toubro for building the state-of-the-art K9 Vajra Self Propelled Howtizer. This is a significant contribution towards India's defence sector and protecting the country," he added.

Defence Minister Nirmala Sitharaman was also present on the occasion at the complex, where L&T also famously manufactured the hulls for India's indigenous ballistic missile firing nuclear-powered Arihant class SSBN submarines at a neighbouring facility. The ASC is spread over 40 acres within L&T's 755-acre Hazira manufacturing complex.

"L&T has been supplying critical high technology equipment to the Indian Navy from Hazira and the ASC will now, in addition, address the needs of the Indian Army and friendly Nations to whom Govt of India promotes Defence Manufacturing Partnership," said S.N. Subrahmanyan, the engineering giant's CEO and MD.

The armoured facility is L&T's 10th manufacturing unit for Defence production, and its seventh raised over the past decade.

L&T describes its ASC as a state-of-the-art facility with a capability to make, besides artillery guns, futuristic tanks and armoured vehicles under the Army's Future Ready Combat Vehicles (FRCV) and Future Infantry Combat Vehicles (FICV) programmes. Besides high-end machinery and automation aids and feeder shops, it has full-fledged mobility Test Tracks for acceptance and qualification of armoured vehicles.

The ₹4,366 crore contract for the K9 Vajra-T guns is the largest awarded to a private sector company by the Ministry of Defence. L&T, in partnership with South Korean Hanwha, was declared the winner in a global procurement competition for these guns. Hanhwa is providing key technologies for this gun programme.

"The (K9-Vajra-T) programme embodies the spirit of the Government's Make in India initiative by large scale indigenous production of various equipment and systems for cost efficient through life support, through in-house development as well as transfer of technology, and judicious mix of L&T's in-house manufacturing facilities as well as multiple tiers supply chain. L&T Defence has played a catalyst's role in developing the ecosystem of partners mainly from the MSME sector," said J D Patil, L&T's Senior EVP (Defence).

Fourteen critical sub-systems have been developed indigenously by L&T, including the Fire Control System, Direct Fire System, and the Ammunition Handling System. Auxiliary Power Packs, Air-conditioning Systems, Fire Fighting Systems, and NBC Protection Systems have also been developed in-house

One hundred guns have been contracted to be delivered in 42 months, along with an associated engineering support package covering spares, documentation and training and Maintenance Transfer of Technology to the Army Base Workshop to support the K9-Vajra regiments throughout their life cycle. Having delivered the first 10 systems ahead of schedule, this complex is poised to deliver the balance 90 within the next 22 months.

L&T is delivering these guns with 50 per cent indigenous content by value. The Make in India package involves local production of over 13,000 components per gun system through a supply chain of about 400 Tier 1 manufacturers, 100 of which are MSMEs.

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L&T's Hazira Complex is among the few facilities in the world that produces extra-large offshore modules, reactor-end shields and steam generators for nuclear power plants, high-end equipment for the hydrocarbon, thermal power and Defence segments, as also ultra-clean special steels and heavy Forgings.

At Hazira, L&T Defence manufactures submarine hulls and range of platform specific equipment and subsystems and special alloy forgings for Defence applications. At its Advanced Composites Facility in Ranoli, Gujarat, it makes critical composite sub systems for India's Space Launch Vehicles and sub systems for BrahMos and Akash missiles. SP

***—Vishal Thapar***

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