

➤ EDITOR'S NOTE

I feel extremely privileged and honoured by the trust reposed in me to be appointed Director General of this great institution, the Centre for Air Power Studies. Set up by the legendary strategic thinker, late Air Commodore Jasjit Singh (Retd), and later steered by Air Marshals Vinod Patney and KK Nohwar (Retd), CAPS is well-respected for the credibility and depth of its research and analyses.

Think tanks enjoy the luxury of time and resources for research. I feel that the research papers produced by any think tank must provide inputs for strategy and policy through their focused research. For this, the think tanks must remain abreast of ground realities. They must interact with the service HQ and the government to help evolve subjects of research and study. The research papers must get wider coverage. They should reach and be read by policymakers, young military leaders and other national security enthusiasts. CAPS has the additional responsibility of educating the masses on aerospace issues.

With changing times, the dissemination strategy must change too. It is important to produce the content in more readable form. There is a need to go digital and use new media for greater and meaningful reach. I look forward to greater interaction with other think tanks and aerospace industry. We will encourage more young people to write on aerospace issues. We will look at and support indigenisation to realise the dream of *Atmanirbharta*. I would like to lead the organisation with passion and enthusiasm, and look forward to support from all.

The last quarter has seen the world continue to be preoccupied with COVID-19, which has also impacted the military and security operations. Till the very end of the term of President Trump, United States of America

continued to take actions to contain rising China. President Joe Biden has initiated policy changes which include possible avenues of dialogue with China, but it is already clear that the foreign policy towards China, Russia, Afghanistan, and the Middle East will not change drastically. Indications are that the USA will once again strengthen relations with NATO and will push QUAD to new levels.

In the Indo-Pacific region, China continues its show of force in the South China Sea and the Taiwan Straits. Beijing has been using fighter and bomber aircraft on intimidation missions against Japan and Taiwan, and foreign shipping, mostly with the intent of signalling its command over the region. American withdrawal from Afghanistan is still evolving. On February 7, the Foreign Ministry of Afghanistan reported that the Taliban has maintained close ties with the Al Qaeda and other terrorist groups despite claiming to advocate peace in the country. The claim came after UN Security Council Watchdog Group indicated the Taliban's continued relations and coordination of activities with other terrorist outfits in the Taliban controlled areas.

A stand-off between India and China began around north and south banks of Pangong Tso in eastern Ladakh in May 2020. Chinese troops had crossed the LAC in four areas. These were in Gogra Post at Patrolling Point 17A (PP17A) and Hot Springs area near PP15, both of which are close to each other. The third transgression was at PP14 in Galwan Valley, which became the site of the major altercation between Indian and Chinese troops on June 15, 2020, in which 20 Indian soldiers and an undeclared number of Chinese troops were killed. The fourth, was at Depsang Plains, which is close to India's strategic Daulat Beg Oldie base, near the Karakoram Pass in the north. The Chinese troops had come around 8 km deep west of India's perception of the Line of Actual Control. They had positioned their troops on the ridgeline connecting Fingers 3 and 4. Chinese had thus occupied the so-called no man's land. Later, the Indian forces had gained strategic advantage in the south bank of the lake in late August last year by occupying certain heights of the Magar Hill, Mukhpari, Gurung Hill, Rezang La and Rechin La. Since then, the Chinese side had been particularly sensitive as these positions

allowed India to not only dominate Spanggur Gap, which is a two-km wide valley that can be used to launch an offensive. This also allowed India a direct view of China's Moldo Garrison. Both sides had around 50,000 troops in the region, along with additional tanks, artillery and air defence assets.

After repeated rounds at the levels of military commanders and diplomatic officials, the stand-off between China and India in Ladakh resulted in a mutually acceptable disengagement agreement. The ground commanders began meetings on February 9, 2021, to figure out the modalities of the process. Defence Minister Rajnath Singh informed the Indian Parliament that patrolling between Fingers 4 and 8 area of Pangong had been suspended till further decision was taken by military commanders based on diplomatic talks. China's Defence Ministry also announced that Chinese and Indian troops on the southern and northern shores of Pangong Tso had begun "synchronized and organized disengagement" in line with the consensus reached between Corps Commanders when they last met on January 24. Both sides decided to remove the forward deployment in a phased, coordinated and verified manner. China also agreed to pull its troops on the north bank towards the east of Finger 8. India also committed to position its forces at its permanent base at the Dhan Singh Thapa post near Finger 3. Similar action will be taken by both the parties in the south bank area as well. Both sides also agreed that the area between Finger 3 and Finger 8 will become a no-patrolling zone temporarily, till both sides reach an agreement to restore patrolling. Further, all the construction done by both sides on the north and south banks of the lake since April 2020 would be removed. Neither party would attempt to change the status quo unilaterally. India has to beware that China has strengthened Rutog base near Pangong Tso to house the disengaged troops.

The future of this agreement lies in its full adherence by both parties. Clearly, China is now aware of India's resolve to protect the sovereignty of the country. The main stumbling blocks in finding a permanent resolution are lack of trust and no clarity on intent. Also, both sides have a differing perception of what is the real LAC. Meanwhile, General Zhang Xudong has recently taken over China's Western Theatre Command.

During the stand-off, there was significant air activity from both sides. IAF has a relative advantage in the Ladakh region. China essentially has two airfields within 350 km of area of action. These are the civil dual-use Ngari Gunsar airport at an elevation of 4,274 m (14,022 ft) and Hotan airfield at an elevation of 1,424 m (4,672 ft). Hotan can support up to three People's Liberation Army Air Force (PLAAF) squadrons. Mostly, the J-10 fighters have been seen in the region, but there have also been J-11 and other Su-30 class Chinese aircraft. H-6K bombers have been seen, too. The third airfield Kashgar is around 600 km away and it is at an elevation of 1,380 m (4,529 ft). Indian Air Force (IAF) has nearly 10 airfields which are within 350 km from the place of action. Most of the IAF airfields are at an elevation of under 500 metres. IAF can thus pump in much higher number of air missions. Air assets will play a significant role in air defence, ISR, air strikes, interdiction, air logistics support, among others. IAF's transport and helicopter fleets have been very active in moving military assets to the region. Fighter squadrons were flying regular missions.

Amidst the India-China stand-off, Sino-Pak air exercise Shaheen IX was conducted at the new Pakistan Air Force (PAF) base at Bholari, 120 km north of Karachi. PLAAF fielded the J-10 and J-11 B fighters simulating as Rafale and Su-30 MKI in mock combat drills. PAF deployed the JF-17s and the Mirage III/V variants. Maritime training was included for the first time. Other aircraft that participated included PLAAF's Xian Y-20 heavy-lift transport, Shaanxi KJ-500 AEW&C aircraft and Shaanxi Y-8 EW aircraft. The PAF F-16s were not used because of US restrictions. The airborne forces practised dropping paratroops in special operation missions. The aim was to improve interoperability and "fortify brotherly" relations between the two countries.

Closer home in India, as far as air and space domains are concerned, the Aero India 2021 air show was held at Yelahanka, Bengaluru in February 2021. Despite the COVID pandemic, a large number of companies were represented. The government of India placed an order for 73 single-seat and 10 two-seat LCA Mk1A. The first of these will be delivered by 2024. And

the rest by the end of the decade, in 2030. Many Unmanned Aerial Vehicles (UAV)—including those by Indian private companies—were showcased. The Combined Air Teaming System (CATS) programme was announced by Hindustan Aeronautics Limited (HAL). A mother ship (fighter jet) and a few autonomous unmanned aerial vehicles known as CATS Warrior will fly in coordination as a team. Even a rotary wing UAV (RUAV)—a helicopter drone concept designed to carry load to inaccessible areas, borders and high-altitude regions—was showcased. IAF also gave a Request for Proposal to HAL for supply of 70 Basic Trainer HTT40 aircraft. HAL's Light Combat Helicopter (LCH) is moving closer to induction. DRDO also showcased the Advanced Medium Combat Aircraft (AMCA) model and cockpit at the air show. Clearly, indigenisation was the flavour of the season. Meanwhile, the IAF's first Rafale squadron now has eleven aircraft and the squadron will have complete strength by mid-2021. During the Aero India, the Air Chief had one-to-one meetings with a large number of Air Chiefs of foreign air forces, and discussed close cooperation. He also articulated IAF's Vision 2030. He said that the 114 multirole fighters will be under "Made-in-India" package.

India's Finance Minister presented the annual budget on February 1, 2021 in the Indian Parliament. The total defence budget for 2021-2022 saw a marginal hike of around 1.4 per cent. But the good news was that the Capital budget for modernisation jumped by nearly 19 per cent. Interestingly, the figures released showed that an unbudgeted Rs.20,776 crores were additionally spent to buy military hardware to immediately beef up military requirements in view of the skirmishes and face-off with China in Ladakh. The total allocation for the Ministry of Defence (MoD) for 2021-2022 was Rs.4.78 lakh crores (US\$65.4 billion) compared to Rs.4.71 lakh crores (US\$64.5 billion) in the 2020-2021 budget. This allocation includes all expenditures of the MoD. It also covers the pay and pensions of all military personnel and civilians, including DRDO and ordnance factories. The total defence budget comes to around 1.63 per cent of the GDP. The budget can be further broken down to Defence Services Revenue at Rs.2,12,027.56 crores

(US\$29.05 billion); Defence Services Capital Outlay at Rs.1,35,060.72 crores (US\$18.5 billion); MoD Civilians Revenue at Rs.10,083.93 crore (US\$1.38 billion); MoD Civilians Capital Rs.5,173.41 crores (US\$0.7 billion); and Defence Pensions at Rs.1,15,850 crores (US\$15.87 billion). The real defence expenditure—also referred to as defence estimates—includes only the Capital and Revenue expenditures of the Armed Forces, and this amount is Rs.3,47,088.28 crores (US\$47.55 billion). This amount was 1.21 per cent of the GDP.

The Capital budget had gone up to the Revised Estimate for 2020-2021 of Rs.1,34,510 crores as against last year's budgetary allocation of Rs.1,13,734 crores. The capital outlay for 2021-2022 was thus an increase of 18.75 per cent over the previous year's original allocation. This was the "highest ever" increase in the last 15 years. The capital outlay for Indian Army was Rs.36,481 crores, Indian Navy Rs.33,253 crores, and the Indian Air Force (IAF) Rs.53,214 crores. IAF traditionally gets the higher capital budget as the airborne platforms and sensors which are more liable to early obsolescence need faster replacements. One good decision was that henceforth the "capital defence budget" will be non-lapsable, as advised by the Finance Commission.

The Chief of Defence Staff (CDS) has been progressing the formation of the triservices Theatre commands, Maritime Command, and Air Defence command. Indications are that these will unfold in the near future. The unity of control over air assets is likely, the more so because of fewer assets and resources. Meanwhile IAF has carried out a major air exercise with French Air Force. Russia has announced that the S-400 strategic surface-to-air missile defence system contract is progressing well and the systems will begin inducting end-2021. The French have given the Indian MoD a proposal for lease/purchase of the A330 multirole transport tanker (MRTT) to augment the existing IL-78 Flight Refueller Aircraft (FRA) fleet. The case for Avro aircraft replacement with Airbus C-295 is also in the final stages. The thrust is on unmanned aerial systems. More IAI Harops (P IV) are being acquired. The BrahMos family of cruise missiles are being developed with newer variants and more numbers are being inducted. ISRO launched PSLV C50 in December

2020. It carried the CMS-1 geostationary communication satellite to give extended C-band cover, including to India's island territories. Meanwhile, HAL delivered the largest cryogenic propellant tank to ISRO. DRDO's hypersonic wind-tunnel was inaugurated in Hyderabad in December 2020. This pressure vacuum driven facility has an exit diameter of one metre and can simulate hypersonic speeds up to Mach 12. Indian Cabinet cleared export of Akash air defence missile system. HAL has received the clearance to fit the AESA radar on Jaguar DARIN III UPG. This is the first India-made AESA radar with ToT from Israel. AESA radar configuration for LCA Mk 1A has also been finalised. It is expected that the FDI policy of 74 per cent through automatic route for new licences would bring more transfer of technology. The USA and some others are already looking at sixth-generation technologies. India needs to hasten development of its fifth-generation fighter, AMCA. Indian Navy is already operating the Sea Guardian UAVs on lease. More UAVs, including the Sky Guardian for IAF and Indian Army are likely to be ordered.

Security developments in the region and the increasing salience of air power were extensively highlighted in the speech delivered by Chief of the Air Staff at the 12th Jumbo Majumdar webinar conducted by CAPS on February 9, 2021. This features as our lead article for this issue. The Air chief harkened back to the reduced footprint of the US forces in Afghanistan, increased Chinese push in Indo-Pacific and realignment of West Asia, as some of the factors that had complicated our security scenario. As he stated, "With our northern and western borders being volatile and active, the possibility of a full-fledged war always exists, and as a Nation we need to be prepared and capable of handling any form of conflict." In such scenarios of multiple threats, air power offers the political leadership flexible options that can be adequately calibrated and yet signal deterrence and resolve.

As security concerns remain active in the region and beyond, other scholars featuring in this issue of the *Air Power Journal* offer some serious food for thought. Prof. Sanu Kainikara discusses how Grand strategy in relation to national security is often discussed or debated. Why are such

discussions often obscure and unclear? He discusses why it must focus on linking the ends, ways and means paradigm. The need to make a clear distinction between strategy and tactics. Grand strategy is the long-term strategy pursued at the highest levels by a nation. It is based on the geopolitical environment, the threat analysis, the theatres in war, the size of the country and economy, availability of resources, the military strength, capability for defence production, and possibility of international alliances best suited to national goals. There is an overlap between the foreign policy and military implications as the grand strategy is evolved by the political leadership with the support of the security establishment. As the world is facing many "No War, No Peace" scenarios, the long-term nature of grand strategy must stand the test of time. The goals must be defined by core interests and fundamental policy and it must look at the achievement of peace and prosperity beyond war.

Sanjana Gogna has written on China's nuclear strategy. Immediately, a few things come to mind. Fundamentally it is defensive in nature, and designed primarily to deter other countries from using or threatening to use nuclear weapons against China. Unlike the USA and Soviet Union, or now Russia, China has not built a huge nuclear arsenal. While the Cold War protagonists had amassed thousands of nuclear warheads, China's current stockpile, according to some estimates, is around 320. It appears that effectively it is not in a nuclear race with any country. China feels that nuclear weapons are not for physical use. More importantly, China remains committed to the policy of no first use of nuclear weapons. Minimum deterrence seems their mantra. China also has a counter-nuclear coercion doctrine. It has maintained a credible nuclear delivery triad with land-launched nuclear missiles, nuclear-missile-armed-submarines, and strategic bombers. Having a lean and effective arsenal with second strike capability is the doctrinal focus. China finds more reward in disruptive technologies such as hypersonic weapons for better results in conventional war. The 2015 military reforms resulted in surface-to-surface arsenal coming under the newly constituted PLA Rocket Force (PLARF) with the status of independent

service, thus clearly flagging the importance China gives to the use of SSMs. The new H-6N variant of the H-6 bomber is known to be nuclear capable. The under-development Xian H-20 stealth bomber may be inducted by 2025. The DF-17 Hypersonic Glide Vehicle (HGV) can carry both conventional and nuclear payloads, and brings in a new dimension. China banks on space-based platforms and low frequency ground-based radars for early missile approach warning.

Joshua M. Paul looks at China's Consolidation Strategy in the Near Seas. Undoubtedly, China is emerging as a significant maritime power. Its capabilities and interests are currently limited to the South and East China Seas and coastal defence. Reunification of Taiwan is the highest national priority. The territorial island disputes and claims with its maritime neighbours, including Japan and many ASEAN countries, are on its immediate agenda. China's unilateral usurping of a large part of South China Sea by creating artificial islands, and declaring an additional three million square kilometres of Exclusive Economic Zone (EEZ) is of serious concern to the world. On July 12, 2016, the arbitration tribunal adjudicating the case of the Philippines against China in the South China Sea had ruled overwhelmingly in favour of the Philippines, determining that major elements of China's claim, including its nine-dash line, recent land reclamation activities, and other activities in Philippine waters, were unlawful. But China refused to accept the ruling. The United States and many major navies have been sailing through the South China Sea to reinforce "freedom of seas" in international waters, much to China's discomfort. China is building a global reach navy with a large air element. It wants to dominate the Western Pacific. It also looks at Asia as an area of its influence and has been investing in naval facilities in the Indian Ocean region. With a deep-water port in Gwadar in Pakistan, and naval bases and presence in Djibouti, Sri Lanka and a few other countries, it is of concern to India. People's Liberation Army Navy (PLAN) is targeting a six aircraft carrier fleet by 2035. With its economic muscle and shipbuilding capacity, the target is achievable. China has already tested the carrier-killer hypersonic missiles. Indian security establishment needs to factor this in its

strategic plans. India must invest more in disruptive technologies and build a credible maritime deterrent, including strengthening assets at its Island territories.

Rushali Saha has written on the elusive quest for stability in US-China relations. Geopolitics is a constantly evolving domain. The USA and Soviet Union jointly supported China during the Second Sino-Japan War (1937-1945). Americans were with China in World War II. But immediately after China went communist in 1949, the USA and China fought each other in the Korean War. After the Sino-Soviet split in the late 1950s and in the 1960s, the USA found an opportunity, and moved closer to China. Autocratic Chinese Communist Party (CCP) believed that "power flows from the barrel of the gun". They clearly had global ambitions. Like the Americans, they also realised that one who controls the aerospace controls the planet. Therefore, very early they started investing in air and space domains.

The Sino-American bonhomie did not last long for essentially two reasons: firstly, with the dissolution of the Soviet Union, a relatively weakened Russia that was struggling to restore a collapsing economy hardly posed any threat; secondly, the Chinese global ambitions were fast becoming a challenge to the US global unipolar position. China had used the closeness with the US to seek investments in high-technology areas by allowing some top-end American companies to set up shop in China. China also used Chinese diaspora in the USA to acquire some leading technologies. Much worse, China also used cyberattacks to steal research documents of defence and space agencies like NASA and DARPA. China's aggressive actions in South China Sea and extension of its EEZ and Air Defence Identification Zone (ADIZ), not only affected many of its neighbours, but also the freedom of navigation for practically all nations. These actions forced Japan to propose a Quadrilateral Security Dialogue between the larger democracies of the Indo-Pacific region such as the USA, Australia and India. These four, often referred to as the QUAD, have been engaged in show of force sailing and fly-bys in the region. They have also been exercising together to build better interoperability of their armed

forces for a possible NATO-like military alliance in the future. Recently, they had their first meeting after the Biden administration took over.

American action against China began as late as 2016 when the US imposed economic and technology transfer sanctions against many Chinese firms. Senior US Administration officials started naming and shaming the CCP actions in Hong Kong, Xinjiang and Tibet. Meanwhile, China became more aggressive in its territorial claims against Taiwan and Japan. Despite the Wuhan emerged COVID-19 pandemic, which President Trump named as the "China Virus", the Chinese chose to make serious incursions in India's Eastern Ladakh region. In one act of belligerence, China antagonised 1.3 billion Indians, comprising over a sixth of the world's population. Clearly, Xi Jinping is a man in a hurry. He has taken full control of the CCP, the government machinery and the military. He has become the "Chairman of Everything". Former CCP Chairman, Deng Xiaoping's famous dictum of caution, enjoining "hide your strengths, bide your time", has been thrown to the winds. China is now openly challenging the unipolar world structure, and driving a bipolar world and unipolar Asia scenario.

The USA was conscious that India has had serious boundary differences with China. It began to tilt towards India, with a clear aim to create a bulwark against China in the region. In the last about a decade, the two countries have signed many security enabling agreements. These are clearly the "Next Steps in Strategic Partnership" (NSSP), which is both a milestone in the transformation of the bilateral relationship and a blueprint for its further progress. Also, the USA has allowed sale of many state-of-the-art military platforms to India. The armed forces of the two countries engage in military exchanges and exercises at various levels. The 2+2 dialogue between the defence and foreign ministers of the two countries became a time-bound formal arrangement to monitor progress and push new joint initiatives. Clearly the Chinese neighbourhood, and the world at large has begun to factor in, and to stand-up against, Chinese hegemony.

Khatu Jayesh Jayprakash has written an article on NATO in Libya. Libya has been in armed conflict since 2011. The Arab Spring, a series of

anti-government protests and uprisings, were spread in many countries across the Arab world. It was essentially against oppressive regimes and a low standard of living. Social media was extensively used to fan dissent. In Libya, essentially it has been a fight between forces which were loyal to Colonel Muammar Gaddafi and foreign supported groups which were seeking to oust his government. Also called the February 17 Revolution, there was a spate of protests followed by rebellion and conflict. The forces opposing Gaddafi established an interim governing body, the National Transitional Council. The United Nations Security Council froze the assets of Gaddafi and his inner circle and imposed other restrictions. A UN resolution authorised establishing and enforcing a no-fly zone over Libya to prevent attacks on civilians. China and Russia, originally, abstained on United Nations Security Council Resolution 1973 due to the influence of the Arab League. Yet, 100 countries recognised the anti-Gaddafi National Transitional Council as Libya's legitimate representative. NATO began aerial attacks against military installations and civilian infrastructure of Libya. The rebels rejected government offers of a ceasefire and efforts by the African Union to mediate. Muammar Gaddafi was finally captured and killed on October 20, 2011. A low-level insurgency by former Gaddafi loyalists continued. Clearly, the militias which fought in the civil war wanted a greater role in the new Libya. Even in 2020, multiple conflicts are still continuing in Syria, Yemen and Lebanon. Western powers and Russia have been supporting proxy fighters. NATO imports significant quantity of oil from Libya, and has greater stake and interest, and was the primary actor in the intervention in Libya. Yet, there were fissures among NATO allies like France and Italy. Meanwhile, the Islamic State (IS) and Al Qaeda found a fertile ground for resurgence. Clearly, it has been a case of multifarious meddling. There are political lessons for the world. NATO and the West are reluctant to put boots on the ground. Air power was significantly used against pro-Gaddafi forces. This was in terms of Intelligence, Surveillance and Reconnaissance (ISR) and precision attacks. The results of such attacks were immediate.

In subsequent issues of the *Air Power Journal*, it shall be our endeavor to continue to get more researchers to write on air and space related issues, besides our overall focus on national security. We will look at subjects like autonomous aerial platforms and weapons, hypersonic weapons, weaponisation of space, lessons of recent air wars, 5G risks and challenges for aviation, future of aerial power plants, air forces balance in India's neighbourhood and the Indo-Pacific, primacy of aerospace power in operations, and element "Air" in joint operations. We also plan to cover India's neighbourhood. Other areas of interest are smaller quick-launch satellites, the relevance of a strategic bomber, electronic warfare trends, Artificial Intelligence in military aviation, manned-unmanned teaming, air defence and air space management, emerging technologies for sixth-generation combat aircraft, and evolving trends in aerial combat.

A publication is a gift you can open again and again. Reading nourishes the mind. Austin Phelps once said, "Wear the old coat and buy the new book."

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Wishing you all happy reading!!

