

# समाचार पत्रों से चयित अंश Newspapers Clippings

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Thu, 27 June 2019

## Half of Indian Anti-Satellite test debris still orbiting in space - Harvard Astronomer

India's Anti-Satellite missile was a three-stage rocket, which successfully engaged an Indian orbiting target satellite on 27 March. The Indian defence ministry claims that the test was conducted to intercept the missile in a manner that minimised the threat of space debris.

Three months after India conducted an anti-satellite test, in which it "shot down" a low-orbiting satellite, the 41 pieces of debris generated in the process remain in orbit. This accounts for about 50% of all fragments of debris that were created in the 'Mission Shakti' missile test, says Jonathan McDowell, an astronomer at the Harvard-Smithsonian Center for Astrophysics.



This is in complete contrast to the claim made by India's Defence Research and Development Organisation (DRDO) which said

the test was planned in a manner to ensure that all debris would fully disintegrate within 45 days.

McDowell estimates that the debris will take "at least a year or so" to fully deteriorate. Another satellite tracker Marco Langbroek claimed that "many of these objects still on-orbit have apogees still well into the range of operational satellites, i.e. they remain a threat to other objects in space".

In his analysis published on 18 June, Langbroek warned that these remaining objects, "at least 5 objects will stay in orbit for at least a year to come, and the last one might not reenter until mid-2021".

Earlier in April, US space agency NASA called the destruction of Microsat-R satellite a "terrible, terrible thing" that poses a threat to astronauts aboard the International Space Station (ISS). The Russian defence ministry raised similar concerns just after the test, and said that the over 100 fragments that were formed in the altitude range from 100 to 1,000 kilometres have been orbiting very close to the ISS, "which may create threats in the near future".

The US has criticised India over its anti-satellite missile test, calling it unacceptable and incompatible with the future of human space flight.

On 27 March, Indian Prime Minister Narendra Modi announced New Delhi had successfully tested its first anti-satellite missile by hitting a defunct Indian satellite at an altitude of 300 km. Modi added that India had become the fourth country in the world to possess such a weapon after China, Russia, and the United States.

<http://www.defencenews.in/article/Half-of-Indian-Anti-Satellite-Test-Debris-Still-Orbiting-in-Space---Harvard-Astronomer-585497>

Thu, 27 June 2019

## 'Make in India' air-to-air missiles: Bengaluru-based manufacturer celebrates milestone

Bengaluru: Bengaluru-based SASMOS HET Technologies Limited is celebrating two major milestones - delivery of the 2,000th wiring harness assembly for the MICA programme, and delivery of the first wiring harness assembly for the ASRAAM programme - with European defence company MBDA.

ASRAAM and MICA are air-to-air missiles that meet the most demanding operational requirements and have been selected by the Indian Air Force. SASMOS, a leading manufacturer of wiring harness, electro-mechanical assemblies and unit integration products, first started working with MBDA on MICA in 2013 and has delivered 2,000 wiring harnesses on time.

Over the last decade, SASMOS has progressed from being a start-up organisation to becoming a preferred partner by Original equipment manufacturers. It has also created the benchmark for aerospace and defence harness manufacturing in India for mission-critical applications.

These two milestones are significant in the 'Make in India' initiative and underscore the importance of Indian manufacturers in building the future of aerospace and defence globally. SASMOS has worked continuously with MBDA to bring new technologies to India, and create a talented work force through collaboration in manufacturing. According to Loïc Piedevache, MBDA country head, India, "This delivery is not just an important milestone for SASMOS, but also for MBDA and the Indian aerospace and defence manufacturing industry."

"This is a good example of MBDA's industrial partnership in India. For many years MBDA has been working closely with Indian Industrial partners on high-end technologies with significant quantities and business values over the years. SASMOS deliveries and relationship are perfectly aligned with MBDA's long term strategy on Make In India," he added.

Chandra Shekar, the founder and Managing Director of SASMOS, said that the company is proud of their association with MBDA. "Our collaboration with MBDA has enabled us to create new competencies in India to deliver quality products to mission-critical aerospace and defence applications. We are confident to grow with MBDA's India initiative further and we have crafted a robust plan to take forward this initiative," he said.

### **Missile systems for Indian Air Force:**

MICA is being delivered for the Indian Air Force's Mirage 2000 upgrade and for Rafale. MICA is the only air-to-air missile in the world featuring two interoperable seekers (active radar and imaging infrared) to cover the spectrum from close-in dogfight to long beyond visual range.

ASRAAM is a high-performance within visual range air combat missile that is being delivered to the Indian Air Force for its New Generation Close Combat Missile programme for the Jaguar fleet. With its large rocket motor, and clean aerodynamic design, ASRAAM has unrivalled speed and resultant aerodynamic maneuverability and range.

MBDA has been working with suppliers in India for decades in manufacturing and engineering services. Today more and more Indian suppliers are providing advanced, complex components and sub-assemblies for MBDA missile programmes, for the Indian Armed Forces and as part of an integrated global supply chain.

<http://www.defencenews.in/article/Make-in-India-air-to-air-missiles-Bengaluru-based-manufacturer-celebrates-milestone-585492>

Thu, 27 June 2019

## **Mirage-2000 modified in record time with targeting pods, laser-guided bomb for kargil war**

Asserting that the use of Mirage-2000 "turned the tide" in favour of India during the Kargil War in 1999, Air Chief Marshal B S Dhanoa Monday said modification of the multi-role fighter aircraft was in process back then and was "expedited" for its deployment in the operation.

Addressing a press conference here, he also said, to accelerate the modification of Mirage-2000, which he described was still the "sword arm of the IAF", its integration with targeting pods and 1000-pound laser-guided bombs (LGBs) were done in a "record time of 12 days".

Air Officer Commanding-in-Chief of the Central Command, Air Marshal Rajesh Kumar, who accompanied Dhanoa during the interaction with reporters at the Air Force Station here, said, "the aircraft is going an upgrade and one squadron worth of Mirage-2000 aircraft has been upgraded".

In response to a question, Kumar said that on August 2, 2002, the IAF conducted an attack on an adversary target in Kel area of Jammu and Kashmir to send out a clear message that "you can't do this" and of course, "we do not want to start a war".

The IAF chief earlier participated in a dramatic reenactment of the Tiger Hill attack and its recapture, that was held at the base to mark the 20th anniversary of the attack on the hill by the Indian armed forces. He attended the commemorative event as the chief guest and wore an olive flying overall. At the press interaction, he also spoke about the LGB-equipped Mirage-2000 used in Tiger Hill attack on this day in 1999 and the Spice Bomb-equipped Mirage-2000 deployed in Balakot operation in February 2019.

"Modification to the Mirage-2000 was in process and expedited, and system was brought in play for the Kargil War," the IAF chief said. To accelerate the modification of the aircraft, its integration with targeting pods and 1000-pound laser guided bombs (LGBs) were done in a "record time of 12 days," he added.

Dhanoa asserted said deploying Mirage-2000 jets and air support to ground forces turned the tide of the 1999 war in favour of India.

"Tiger Hill was also a message at that particular time that no matter how small you are, no matter how precariously you are positioned, we will be able to get you and hit you," Dhanoa said.

The Mirage-2000 aircraft played a crucial role in the battles fought during the war and also hit enemy targets bunkered in at the Tiger Hill, besides tasting success at Muntho Dhalo in June 1999.

To a question on the recent crash of an IAF AN-32 aircraft in Arunachal Pradesh, Dhanoa said, "AN-32 aircraft will continue to fly in mountainous areas. We don't have any replacement."

"We are in process of getting more modern aircraft which will be put in critical role once received, and AN-32 will be out and used for transport and training purposes," he said.

All 13 air warriors on board the transport aircraft died in the crash in a heavily forested mountainous area in Arunachal Pradesh earlier this month. Air Marshal Kumar, elaborating on the upgrade of Mirage-2000, said, this will "extend its life by 20 years" and bring in new weapons, new system. "The HAL has already delivered a squadron's worth of aircraft and they will continue to do so," he said. A squadron consists of 18-odd jets. The Gwalior Air Base has three squadrons of Mirage-2000 -- Battles Axes (Sqn No 7), Tigers (Sqn No 1) and Wolfpack Aggressors (Sqn No 9).

<http://www.defencenews.in/article/Mirage-2000-Modified-in-Record-Time-with-Targeting-Pods,-Laser-Guided-Bomb-for-Kargil-War-585489>

# India's new defence cyber agency will have to work around stovepipes built by Army, Navy & Air Force: Lt Gen DS Hooda

*Another crucial task for the agency will be the framing of a long-term policy for the security of defence networks, which includes weaning the Indian military away from its current reliance on foreign hardware and software*

*By Lt Gen (Retd) DS Hooda*

In April, media reports announced the appointment of Rear Admiral Mohit Gupta as the head of the new Defence Cyber Agency (DCA) being raised for the Indian military.

Admiral Gupta's work is cut out for him as, starting from a virtual scratch, he will have to build an organisation capable of warfighting in the cyber dimension. Two of his crucial tasks will be to develop a doctrine that integrates cyber-warfare with conventional operations and to evolve long-term, robust policies for the security of defence networks.

In preparing the doctrine, some recent events could serve as a guide as to how a cyberwar could play out. On 22 June, *The Washington Post* reported that the US Cyber Command had launched a "cyber strike that disabled Iranian computer systems used to control rocket and missile launches". The report also stated: "The strike against the Islamic Revolutionary Guard Corps was coordinated with US Central Command".

The cyber strikes had taken weeks of preparation and were carried out in retaliation to the shooting down of a US RQ-4A Global Hawk drone in the vicinity of Iranian airspace on 20 June.

The second event took place on May 4 when the Israel Defence Forces (IDF) carried out an airstrike against a building in the Gaza Strip that was claimed to house a Hamas cyber unit. The IDF tweeted, "We thwarted an attempted Hamas cyber offensive against Israeli targets. Following our successful cyber defensive operation, we targeted a building where the Hamas cyber operatives work."

The IDF spokesperson, Brig. Gen. Ronen Manlis said, "After dealing with the cyber dimension, the Air Force dealt with it in the physical dimension."

Both these incidents carry some valuable lessons. Cyber operations are increasingly being used as part of a nation's warfighting efforts, but these should not be viewed only as standalone operations. It is a fact that some very targeted and effective cyber attacks have been conducted, like the American 'Operation Olympic Games' that damaged the Natanz nuclear facility in Iran. However, as far as the military is concerned, cyber operations will require to be fully integrated with conventional operations.

The US responded to a kinetic attack on its military drone by a cyber strike on Iran's air defence networks, while the IDF responded to a cyber threat from Hamas through a kinetic air strike.

Therefore, there are no neat dividing lines between cyber operations and conventional use of force. And cyber deterrence straddles areas, using deterrence by denial (a defensive measure to harden critical systems against attacks) and deterrence by cost imposition. A 2017 report of the US Department of Defense Task Force on Cyber Deterrence pointed out that deterrence by cost imposition "requires credible response options at varying levels of conflict", including the "full range of military responses".

In attempting to draw up a doctrine for cyber warfare, Admiral Gupta will have to find a way to work around the vertical stovepipes into which the three services have enclosed themselves. There is

great reluctance within the army, navy, and air force to share operational information and resources. Cyber warfare is also seen narrowly as a technical, information technology (IT) issue, and there is not enough understanding of its value in our operational planning. Unless these matters are doctrinally addressed, the effectiveness of cyber operations will remain limited.

A second crucial task for DCA will be the framing of a long-term policy for the security of our defence networks. There are many aspects to this, but perhaps the most important is to wean the Indian military away from its current reliance on foreign hardware and software.

After the Snowden revelations, it was clear that IT companies in the US were aiding the worldwide surveillance operations by their government. Yahoo, Google, Microsoft and Apple were all complicit in this programme known as PRISM. Other countries have not been far behind.

In October 2018, *Bloomberg* reported that tiny malicious microchips, not part of the original design, had been found in the motherboards of Super-micro, one of the world's biggest suppliers of server motherboards. These had apparently been inserted at factories run by manufacturing subcontractors in China.

Despite a surfeit of such examples, there is no concerted effort to promote indigenous products in our military networks. There is a similar story with software. A serious attempt was made in the army to adopt the Bharat Operating System Solutions (BOSS), developed by the Centre for Development of Advanced Computing. After a test-bed in Northern Command that lasted almost three years, the effort has now been rolled back with a return to the Windows Operating System. Compare this with Chinese and Russian militaries, both of whom have recently announced that due to security concerns they will replace Windows with their indigenously developed operating system.

The actions of IT companies after the recent placing of Huawei on the 'entity list' by the US government should be the real wake-up call for our military. Google has blocked Huawei's future access to Android updates, while UK-based chip designer ARM has suspended business with Huawei. Last week, the US warned of punitive action against Indian companies found supplying equipment or other products of American origin to Huawei.

I have no sympathy for Huawei or its predatory practices, but the real lesson here is that foreign companies could cut off support to their hardware and software at any time, based on their government's direction. And before we dismiss this possibility, let us remember that we live in an anarchic system of international relations where national interests reign supreme. Our military's reliance on foreign companies is a serious vulnerability that could prove devastating in a time of crisis.

The doctrine and policies put in place by the DCA will define the future path to be taken by the Indian military to successfully prosecute cyber operations as a part of its warfighting strategy. If this requires ruffling some traditional feathers and intruding on established turfs, the DCA should not be too hesitant.

*(The author is former Northern Commander, Indian Army, under whose leadership India carried out surgical strikes against Pakistan in 2016. Views are personal.)*

<https://www.news18.com/news/opinion/new-defence-cyber-agency-will-have-to-work-around-stovepipes-built-by-army-navy-air-force-lt-gen-hooda-2204033.html>

Thu, 27 June 2019

# India moves forward with local construction of six diesel-electric attack subs

*The Indian Ministry of Defense has invited proposals to local shipyards to participate in the construction of a new class of submarine*

*By Franz-Stefan Gady*

India's Ministry of Defense (MoD) on June 20 has sent 'Requests for Expression of Interest' (REoIs) to local shipyards inviting them to participate in the ambitious and long-deferred Project-75 India (Project-75 I) that aims to domestically construct six diesel-electric attack submarines equipped with air-independent propulsion (AIP) systems for the Indian Navy.

The shipyards have two months to respond to the REoI. Shortlisted shipyards will be designated Strategic Partners (SPs) under the MoD's strategic partnership (SP) model within the framework of the Defense Procurement Procedure 2016 that aims behind to boost the manufacturing of indigenous military hardware as part of Prime Minister Narendra Modi's "Make in India" policy.

Project-75I is the second project after the procurement of 111 armed light naval utility helicopters (NUH) and 24 naval multirole helicopters (NMRH), under the MoD's SP model. The Defense Acquisition Council, the Indian MoD's principal procurement body chaired by the country's defense minister, has approved the procurement of the six new SSKs in January of this year. Notably, the Project 75-I acquisition program was first approved by the MoD already in November 2007.

Once selected, the SPs will partner with an international ship maker, referred to as the original equipment manufacturer (OEM), in the construction of the boats. OEMs have now two months to respond.

"The Indian companies would be shortlisted based on their capability for integration of system of systems, expertise in shipbuilding domain and the financial strength," the MoD said in the recent statement. "The OEMs would be shortlisted primarily based on their submarine design meeting the Indian Navy's Qualitative Requirements and qualifying the Transfer of Technology and Indigenous Content (IC) criteria."

International bidders for the new contract will include Naval Group (France), Kockums (Sweden), Rubin Design Bureau (Russia), and Howaldtswerke-Deutsche Werft (Germany) following a request for information (RFI) issued for P-75I in July 2017.

"The SPs in collaboration with OEMs have been mandated to set up dedicated manufacturing lines for these submarines in India and make India the global hub for submarine design and production," according to the MoD. "All six submarines under this project will be built in India by the selected Indian Strategic Partner in collaboration with the selected OEM."

The total contract value is estimated at around \$6 billion.

The Indian Navy will also have the option to manufacture six more SSKs under Project 75-I, according to the MoD. A previous acquisition program, Project-75, saw the award of a \$4.16 billion contract by the Indian government to French submarine maker Naval Group to build six SSKs in cooperation with Indian shipbuilder Mazagon Dock Limited (MDL) by 2022. To date, one out of six *Scorpene*-class (*Kalvari*-class) SSKs has entered service with the Navy.

<https://thediplomat.com/2019/06/india-moves-forward-with-local-construction-of-six-diesel-electric-attack-subs/>

## India tells US S-400 deal to go ahead, trade rift lingers

*Will act in our national interest, says S Jaishankar*

*By Sridhar Kumaraswami*

New Delhi: Talks between visiting US secretary of state Michael Pompeo and external affairs minister Subrahmanyam Jaishankar on Wednesday focused on the entire gamut of bilateral ties, including the terror issue, the S-400 India-Russia missile deal, trade disputes, Iran and Afghanistan, with both sides hailing their “great relationship” and the “big picture” despite the sharp differences on some issues.

At a joint press conference after the talks, India indicated it was going ahead with the S-400 missile deal with Russia despite US concerns, with Mr Jaishankar saying New Delhi would act in “its national interests” and had relationships with other countries that were of “standing” with a “history”.

New Delhi also made it clear to Washington that it was “key” that there has to be “trust and understanding” in each other if India-US defence ties are to grow even stronger. While India appreciated the strong support it had got from the US government in the “zero tolerance on cross-border terrorism”, clear differences also emerged on the origin of that terror. In the presence of Mr Jaishankar, Mr Pompeo termed Iran as the “biggest state sponsor” of terror while it is well known that for India, it is Pakistan that has been the main sponsor of state terrorism.

As Mr Pompeo pushed for greater market access to India in the context of rising trade disputes with New Delhi and said the economic aspect of ties must be set “right”, Mr Jaishankar urged the US to adopt a “constructive and pragmatic view”.

In his address at the India International Centre here in the evening, Mr Pompeo also hailed India’s move to “cut off oil imports from Iran”, while he accused Tehran of “attacking oil tankers” in the Persian Gulf region. The US has also reportedly assured India that it would have adequate energy supplies. Interestingly, New Delhi has not officially announced the stopping of Iranian oil imports but it has been known that it is cutting Iranian oil imports to zero due to the threat of US sanctions.

Mr Pompeo also said later in the evening that “China has sought dominance in the South China Sea” even as he praised cooperation between India, the US, Japan and the Philippines in the South China Sea. But sounding a cautious note, perhaps in view of the improving Sino-Indian ties, Mr Jaishankar said in the presence of Mr Pompeo at their joint press conference that their cooperation in the Indo-Pacific region was “for peace, stability, security, prosperity and rules (rule-based order)” and “not against anyone”. The US secretary of state also attacked China, saying that countries in this part of the world that participated in the Chinese Belt and Road Initiative (BRI) found that “Beijing’s deals come not with strings attached, but with shackles”.

With looming trade disputes between India and the US, the secretary of state however sought to focus on President Donald Trump’s line on trade, saying: “Great friends are bound to have disagreements. The US ... (wants to see) greater market access and the removal of trade barriers in our economic relationship. Today I address these differences in the spirit of friendship and I think the two of us will be able to see a good outcome for each of our two countries. We’ll keep working to address any economic disputes that in any significant trade relationship inevitably arise. We have to get this piece right, the economic piece right.”

Mr Pompeo also called on Prime Minister Narendra Modi, who “reiterated the priority that he attaches to relations with the US, and outlined his vision for the strategic partnership in the new tenure

of the government and beyond, building on a strong foundation of trust and shared interest". The US dignity also met national security advisor Ajit Doval.

After talks with Mr Pompeo, Mr Jaishankar said: "We discussed a number of bilateral and global issues... obviously there will be some issues on which we will have our individual perspectives. Harmonising our views is the task of diplomacy. Both of us guided by the big picture of the relationship... Today our discussions covered trade issues, energy issues, defence issues, investment concerns and people to people contacts. Our discussions took an integrated view."

Over US concerns about India's defence acquisitions from Russia, Mr Jaishankar said: "We have many relationships with many countries. Many of them are of some standing and have a history. So we will do what is in our national interests. Again part of the strategic partnership is the ability of each country to comprehend and understand the national interests (of the other)." He added: "We had a look at our (Indo-US) defence cooperation. Today we operate a number of American-origin platforms and equipment and the key point is that if that is to continue to grow, it's important that we display trust and confidence in each other."

On terror, the minister said, "I took the opportunity to express our appreciation for the strong support that we have received from the Trump Administration. What we see is zero tolerance for cross-border terrorism. We have PM (Modi's) initiative for a global conference on terrorism and I'm sure that's something the US will look at positively." In his remarks, Mr Pompeo said: "Terrorism is a constant in this region and India's ability to fight it should be second to none." At the IIC event, Mr Pompeo also said the US was "pleased" that Pakistan-based terrorist Masood Azhar had recently been designated by the UN as a global terrorist.

On trade disputes, Mr Jaishankar said: "If we trade with somebody, it's impossible we don't have trade issues. But in a mature relationship, we negotiate and find common ground. Perhaps that's not been as efficient as it could and should have been in the recent past." Pointing out that both governments "need to try harder and make sure this (resolution) happens", Mr Jaishankar added: "On trade and investment, the US is today our largest trading partner ... on some outstanding issues particularly relating to trade, my urging was that we take a constructive and pragmatic view of that. The real test of that is our ability to address that effectively."

Regarding India's concerns on the energy situation after the US insistence that countries not import oil from Iran, the minister said, "We also discussed energy issues. I underlined the importance of stability, predictability and affordability in terms of India's energy imports. We have started sourcing some of our energy from the US in recent years ... We also had a fairly detailed discussion on the situation in the Gulf, he knows we have big stakes there, of energy, trade, diaspora and regional stability."

In his remarks earlier in the day, Mr Pompeo said: "The US-India partnership is beginning to reach new heights, in our defence cooperation, for a free and open Indo-Pacific, cooperation in energy and space. with 1.7 billion people and two of the world's largest democracies coming together, we can do great things."

Mr Pompeo also pushed for religious freedoms in his address in the evening, saying India was the home of four of the world's religions. This interestingly comes after New Delhi rejected a US state department report on religious freedoms that made certain adverse comments about India.

Sounding an optimistic note, Mr Jaishankar said: "Today Secretary Pompeo said ... there's been a lot of noise, (and) we need to cut through that noise and get to the real issues in our relationship. This has been a great relationship. My confidence has been reaffirmed today. I'm reassured of the solidity of this relationship."

<https://www.asianage.com/india/all-india/270619/india-tells-us-s-400-deal-to-go-ahead-trade-rift-lingers.html>

## Trump vs Triumph: What India can do to salvage Indo-US ties

*Clearly, India and the US have come a long way from the trauma and blunders of the 1971 War. The US needs India to contain China and New Delhi realises that without a multi-pronged thrust, the dragon will grow into a hulking threat across the Himalayas*

*By Rakesh Krishnan*

During the 1971 War, US Secretary of State Henry Kissinger, angered by the Indian military's clinical demolition of the Pakistan armed forces, called Indians "such bastards". His boss President Richard Nixon described Indian Prime Minister Indira Gandhi as "that bitch". Again, in 2011, an American diplomat delivered a lecture in Chennai described Indians as "dirty and dark".

Yes, a large number of Americans are racist and the overwhelming majority of the country is possessed by an evangelistic zeal to conquer the world. But the US is no more an adversary as it was during the Cold War when it is believed Nixon contemplated nuclear bombing India cities to prevent the Indian Army from liberating Bangladesh.

Today, India and the US are friendly allies. In fact, in a 2012 Pew survey of 21 nations, Indians seemed most favourably disposed towards the US with only 12 per cent saying they had an unfavourable opinion of the US.

After the US amended its Arms Export Control Act to expedite arms trade and technology transfers between the two countries, there has been a flurry of activity in India's defence sector, which is contributing to Make in India and a more technologically advanced indigenous defence industry. This is of course in parallel with other critical joint defence ventures with Russia, France and Japan, but the cooperation with the US involves a strategic dimension.

India and the US have also signed the COMCASA agreement which allows live datalink between Indian and the US defence forces. This has huge implications for joint ties because it shows that the armed forces of both sides implicitly trust each other.

And that's not all - both sides have also operationalised the Logistics Exchange Memorandum of Agreement (LEMOA) and the Helicopter Operations from Ships Other Than Aircraft Carriers (HOSTAC) programme. The India Strategic Trade Authorisation Tier 1 status enables free flow of advanced technology from the US. Clearly, there is no other military with which India has such wide-ranging engagement.

An example of the strategic angle is how the Japanese, Indian and US Navies jointly track the movement of Chinese submarines. The military satellites, aviation assets and warships of the three countries play tag as these Chinese vessels pass through South China, exit the Straits of Malacca chokepoint and enter the Bay of Bengal and on to the Bay of Bengal. Chinese warships are tailed, watched and spied on by these three navies 24/7.

Unlike India's military focussed ties with Russia, the US-India relationship is not of a one-dimensional nature. It also spans the economic sphere plus there is the Indian diaspora in the US estimated at three million and growing. India's information technology success story is primarily built by Indian software workers and entrepreneurs who trained and worked in the US.

India's IT services exports to the US alone were an estimated \$63.51 billion in 2018. In contrast, in the same year, India's total annual exports to Russia amounted to just \$3.23 billion.

Clearly, India and the US have come a long way from the trauma and blunders of the 1971 War. The US needs India to contain China and New Delhi realises that without a multi-pronged thrust, the dragon will grow into a hulking threat across the Himalayas.

Beijing has lost none of its expansionist appetite and despite its size, it hankers for bite-sized territories from far smaller neighbours such as Vietnam and the Philippines. Against India, Beijing has propped up the jihadi neighbour next door and it provides with weapons and cash as a check on India.

In February when Indian Air Force warplanes entered Pakistani air space and pounded the living daylight out of the terrorist camps in Balakot in Khyber-Pakhtunkhwa, the US looked the other way. It was a virtual thumbs up to India's hegemony in the region.

You could almost hear Donald Trump saying, "Why didn't they also take out Kahuta!" In an earlier era, there would have been rounds of condemnation by the State Department, White House and other Beltway flunkies.

### **Managing the S-400 fallout**

With the US pressuring India to walk out of the S-400 deal with Russia, what are New Delhi's options? First up, it is incontestable that India requires the powerful missile defence system to strengthen its antiquated air defence network.

The five batteries of the S-400 that have been ordered will act as an interim measure as India's own long-range air defence systems are in the development stage.

However, no weapon, no matter how powerful and capable, can be allowed to impact ties. India must not make the S-400 a cause celebre. This is the mistake that the puffed up Recep Tayyip Erdogan is making. The Turkish President is literally prepared to bail out of NATO - a military alliance that it has been a part of for over six decades - due to American pressure to cancel his S-400 deal with Russia.

In Turkey's case, the US has a legitimate case that Russian military advisors - who will accompany the S-400 batteries and stay on for months if not years - could scoop up data on the performance of the American stealth fighter, the F-35.

However, there won't be an F-35 in a 1,000 km radius from India's land borders where the five S-400 regiments will be stationed. This indicates that at least in India's case the US pressure is aimed at denying market space to Russia.

The US has reportedly offered the Patriot surface-to-air missile defence system and the Terminal High Altitude Area Defence (THAAD) system if India kills the S-400 deal. However, the Patriot has been overhyped and its effectiveness is limited as a number of Middle Eastern allies have found out.

The ease with which Houthi rebels fire missiles into Saudi Arabian cities is not only an indictment of the poor combat capabilities of the Saudi military but also the inability of the US supplied Patriots to stop these missiles from raining down.

### **Offer THAAD technology**

Since the US doesn't have an equivalent system to offer, scrapping the deal will leave India with a hole in its air defences. In this backdrop, when Indians sit across the table from visiting US Secretary of State Mike Pompeo and his team, they should get their pound of flesh.

One of the reasons why Russia, China and North Korea are squirming of late is the US plans to install THAAD in South Korea. Clearly, if this wasn't a game changer, the three countries wouldn't be accusing the US of ratcheting up the arms race.

But instead of buying THAAD batteries, India should acquire the technology which can be grafted on to its own missile defence systems. As the ASAT test proved recently, India has an advanced missile development programme and the infusion of American technology will give agencies such as the DRDO the ability to make a quantum leap.

Necessity is the mother of invention, and India has been its biggest proponent. It survived decades of virtual technology apartheid which was erected specifically by the West to stop India's rise as a military and nuclear power.

However, as a former ISRO chairman said, because of Western sanctions that ran for decades, India literally reinvented the wheel and the result is that today India can produce the smallest gasket to the largest rocket.

The loss of the S-400 could thus become a blessing in disguise for India. Since India is buying five systems outright for \$5.4 billion - and there is no technology transfer involved - buying THAAD technology for perhaps half the amount could give India an indigenous missile defence weapon that it could one day export to friendly nations.

### **The blowback**

The Russians are emotional people and there will certainly be a blowback. They have exhibited vindictive behaviour on at least two similar occasions. In 2011 when India scratched the MiG-35 from the MMRCA competition, the Russians took it badly.

In late April 2011 when the Indian Navy's three most modern destroyers, INS Delhi, INS Ranvir and INS Ranvijay sailed into the Russian port of Vladivostok for joint exercises, the Russian ships were nowhere to be seen.

According to the Russian Navy brass, their ships were assisting the Japanese with rescue operations at the Fukushima nuclear plant. This is as big a snub as it gets. You don't invite your friends halfway around the world and tell them to go fishing in the Pacific.

But what literally rubbished Russia's reputation in India was the Gorshkov deal. The Russians had initially quoted around \$750 million to refurbish the carrier for the Indian Navy. But then they jacked up the price to nearly \$3 billion and when the Indian side balked the Russians issued a threat: "Fine, we'll keep the boat, and we have your money too."

So India can possibly expect a few Russian walkouts from ongoing programmes - the indigenous aircraft carrier which is in the final stages, BrahMos Corp and nuclear submarines. However, enough indigenisation has been achieved for India to go solo from here.

Secondly, India is the only country that refused to poach Russian military and aerospace scientists when the Soviet Union crumbled. South Korea, for instance, absorbed hundreds of Russian scientists who propelled the country to the tech stratosphere. Such examples of fake Vasudeva Kuttumbakam are not to be repeated and India must hire Russian freelancers to work on unfinished projects.

### **Pakistan factor**

Many observers fear that Russia could spite India by ramping up ties with Pakistan. But that is already happening. Russian state media such as RT - or Russia Today - routinely broadcasts highly negative news about India while showing glowing accounts of Pakistan. It's like the Cold War flipped.

At any rate, Pakistan's ability to buy Russian weapons is severely limited by the parlous state of its economy. Even if Moscow offers Islamabad a few advanced S-300s or similar tier-2 weapons free of cost, it will have to face the embarrassment of its systems being knocked out by India in the opening hours of war. The prime example is Israel which attacks Syria almost on a weekly basis, destroying the country's latest Russian supplied weapons.

### **Know your worth**

It is quite apt that India is often portrayed as an elephant, for an elephant often forgets its size. Indians, especially their political leaders, often forget that India is a country that can change the course of history if it so wishes.

For decades, India remained confined to the South Asian binary, instead of breaking out like a true leader as much smaller Japan and South Korea did.

With the demise of Pax Americana, policy wonks Richard Fontaine and Daniel M. Kliman describe India as a "global swing state". Such a state possesses a large and growing economy, occupies a central position in a region or stands at the hinge of multiple regions.

In an interview to the Seattle-based National Bureau of Asian Research, they say alliances with swing states can "deliver a geopolitical pay-off" because the choices these nations make may "decisively influence the course of world affairs".

Both Pompeo - and his Russian counterpart Sergey Lavrov - should be reminded of this new reality.  
(The author is a New Zealand-based defence and foreign affairs analyst)

<https://www.businesstoday.in/opinion/columns/trump-triumf-india-us-russia-s-400-fighter-jets-f-35-stealth-fighter-indian-air-force/story/359069.html>

## THE ECONOMIC TIMES

Thu, 27 June 2019

### **New space bill to have cover for mishaps**

*India's space policy currently does not cover liabilities for damage to third party space assets although the country is a signatory to the UN Treaties on Outer Space activity*

Bengaluru: India has begun prelegislative consultations on a "Space Activities Bill" that is designed to encourage domestic private rocket and satellite companies to offer services for Indian and global customers.

This is expected to address a long-pending concern on covering liabilities in the event of a mishap or damage to spacecraft.

India's space policy currently does not cover liabilities for damage to third party space assets although the country is a signatory to the UN Treaties on Outer Space activity.

The Bill will help formulate necessary rules under the Space Activities Act to deal with damages under the liability provisions and the mode of securing financial guarantee to compensate for damages, Union minister of state Jitendra Singh, who handles Space, told the Lok Sabha on Wednesday.

The United States, France and the European Union have legislations that underwrite costs of damage if it exceeds insurance when a private satellite launch goes awry or a rocket hits another object in space. These laws also have clauses that favour local companies to be competitive in space-related activities.

The Bill will address the liability issues arising from their space activities, in a suitable/ rational manner, in line with international practices, the minister said. The government first introduced the Bill in 2017. India's space agency has created a public-private entity NewSpace India that will allow private participation in building rockets and satellites.

India's polar satellite launch vehicle (PSLV) has emerged as the preferred rocket to hurl small satellites globally. The country is also working on a small satellite launch vehicle that is designed to tap the global opportunity to carry satellites of less than 50 kg into space.

<https://economictimes.indiatimes.com/small-biz/startups/newsbuzz/new-space-bill-to-have-cover-for-mishaps/articleshow/69967043.cms>

## **Fact check: Did high methane level indicate life on Mars? The science and the setback**

*What were scientists hoping to find, and what does methane signify?*

Last week, NASA's Curiosity rover discovered high amounts of methane in the air on Mars, leading to excitement whether this was an indication of life on the Red Planet, or beneath its surface (The New York Times report published in The Indian Express, June 24). But on Monday, NASA reported that the methane had fallen back to usual levels. The setback means the question of life remains unanswered. What were scientists hoping to find, and what does methane signify?

### **What is methane?**

On Earth, methane (CH<sub>4</sub>) is a naturally occurring gas. Most of the methane on Earth is produced in biological processes — some of it by microbes, and some occurring as underground natural gas that had been formed by earlier generations of microbial life. Many of these methane-producing microbes live in the digestive systems of animals, especially cows.

However, methane can also be produced by abiotic processes (those that do not involve living organisms). It has been found to occur in formations such as rocks, springs and aquifers, and studies have concluded that it was formed there by chemical reactions between carbon and hydrogen atoms at low temperature.

Once it is released into the atmospheres of either Earth or Mars, methane is relatively short-lived. Since the time the gas was first detected on Mars, it has been considered a potential biomarker. The first time was in 2003 by the Mars Express, a European Space Agency orbiter. Since then, there has been further evidence of the gas in Mars' atmosphere.

### **So what's new?**

In most previous observations, the concentration of methane in the Martian air has been low. Then in 2013, Curiosity — which had landed on Mars in 2012 — detected methane in a concentration of seven parts per billion by volume. Now, methane concentrations on Earth are much higher — the global mean is over 1,800 parts per million — but the Mars measurement caused excitement because it was much higher than previous readings. This concentration continued for about a couple of months, then ebbed away before scientists could establish where the methane came from.

Last week's readings were an unprecedented 21 parts per billion. On Earth, it created excitement to the extent that scientists at NASA's Jet Propulsion Laboratory cancelled Curiosity's original schedule for the weekend, so that it could repeat the experiment. They were hoping to detect the source of the gas, and in the process clues that might point to the existence of life on the Red Planet.

On Wednesday, NASA reported that the second reading had fallen back to less than 1 part per billion. This suggests that last week's methane detection was a transient methane plume, which has been observed in the past, NASA explained on its website. While scientists have observed the background levels rise and fall seasonally, they haven't found a pattern in the occurrence of these transient plumes.

Curiosity doesn't have instruments that can definitively say whether the source of the methane is biological or geological. "With our current measurements, we have no way of telling if the methane source is biology or geology, or even ancient or modern," the NASA website quoted Sample Analysis at Mars (SAM) Principal Investigator Paul Mahaffy of NASA's Goddard Spaceflight Center as saying.

To determine where the plumes are located on Mars, scientists would need a clearer understanding of these plumes, combined with coordinated measurements from other missions, NASA said.

“The methane mystery continues. We’re more motivated than ever to keep measuring and put our brains together to figure out how methane behaves in the Martian atmosphere,” NASA quoted Ashwin Vasavada, Curiosity’s project scientist at the Jet Propulsion Laboratory, as saying.

<https://indianexpress.com/article/explained/fact-check-did-high-methane-level-indicate-life-on-mars-the-science-and-the-setback-5801638/>