

# समाचार पत्रों से चयित अंश Newspapers Clippings

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## **Private industries contribute 87 per cent to Akash Missile: DRDO Chief**

*Giving impetus to collaborations industry, research organisations and academic institutions, Reddy said the DRDO has more than 1,500 patents that is made available to students*

Bengaluru: Highlighting the contribution by private industries to Akash Missile, chairman of Defence Research and Development Organisation Satheesh Reddy said, the industries contribute 87 per cent value to each Akash missile. The total orders received by the missiles amounts to Rs 29,000 crore. He was addressing a batch of students at a convocation ceremony in the city recently. Reddy said that at present, the DRDO has 1,800 industry partners, a long way from the 1980's when the defence research organisation had just 20-30 industries working with it.

“We are taking people from the private industries as our partners today in the development of even critical systems like missiles,” he said, adding that the defence organisation has started transferring technology to industries at zero fee.

Giving impetus to collaborations industry, research organisations and academic institutions, Reddy said the DRDO has more than 1,500 patents that is made available to students. One can select what is suitable for them, and the organisation will render its support and handhold the student.

For India to be a technology supplier, he believed it was imperative to develop a first-of-its-kind system, like the BRAMHOS missile developed under the guidance of APJ Abdul Kalam. “We need to supply to the world and then the country will become prosperous,” he said.

### **DRDO's Mission**

“When you are weak, people mock you, and when you are strong, the same people admire you,” Reddy said, explaining the DRDO's mission that destroyed a satellite in the Low Earth Orbit on March 27. Explaining the feat, he said, “With a satellite orbiting at a velocity of 7.8 km per second, a missile travelling at 3.2 km per second, and the total relative velocity of 11 km/s, a 1.2 mtr by 1.3 mtr object was tracked, and was hit at an altitude of 300 km. The hit was just 6 cm away from the geometric centre of the object, post which, India was seen in a different light by other countries.”

<http://www.newindianexpress.com/nation/2019/nov/06/private-industries-contribute-87-pc-to-akash-missile-drdo-chief-2057644.html>



## Strong academic institutions vital for India's progress: DRDO Chief

*Research in fundamental science should be taken up, says Sateesh Reddy*

Hyderabad: The country can prosper only through science and technology and for it to happen, we need qualitative academic institutions to take up research in fundamental science, which in turn would propel technological innovations, said Defence Research and Development Organisation (DRDO) Chairman G. Sateesh Reddy here on Monday.

“Other than western countries, countries like Japan and Israel became economically prosperous owing to technological growth and innovations. Research in basic science ushers in applied research and it has to begin at schools and universities. Countries with a good science and technology base have strong academic institutions,” he said.

Dr. Reddy was addressing a gathering of scientists and students at B.M. Birla Science Centre after receiving the Birla Archaeological and Cultural Research Institute (BACRI) Golden Jubilee Award for lifetime achievement in science from Nirmala Birla, chairperson of the Centre.

The DRDO chief regretted that not a single academic institution from India figured in the global top 100 and hoped that the recent initiatives by the Government of India such as Atal Innovation Mission and other schemes would equip schools and colleges to focus on scientific research to inspire young minds.

The New Education Policy (NEP), which is at the drafting stage, is expected to give a big push to science and technology so that extensive research in various disciplines could be taken up. There has been a spurt in start-ups and several innovations in scientific fields and he expects these to increase further in the next few years.

“We need to have a vision for the next five-15 years to start preparing for advanced scientific research as Dr. A.P.J. Abdul Kalam had done in the strategic arena when he simultaneously took up manufacture of several missiles, new lab like Research Centre Imarat, missile launch facility at Balasore, ballistic missile, missile shield and so on,” said Dr. Reddy, also the Secretary of Defence (R&D).

India has done well in space research, atomic energy and defence production by attaining self-reliance in satellite launch vehicles, sonars, torpedoes, radars, artillery guns and anti-sat missile. “However, it is a second largest importer of arms in the world, so a lot has to be done,” he added.

“You have to be a technology leader and not a follower by coming out with state-of-the-art technological innovations to become strong. Research and development need not be in the government sector alone and we need at least 10 academic institutions to be among the top 100 globally,” he said.

Birla Science Centre Director B.G. Sidharth also spoke on the occasion.

<https://www.thehindu.com/news/cities/Hyderabad/strong-academic-institutions-vital-for-indias-progress-drdo-chief/article29882381.ece>

## Automated facility at HEMRL to save lives

*By Sandeep Dighe*

Pune: The High Energy Materials Research Laboratory (HEMRL) got a sophisticated, remote-controlled facility to eliminate human involvement in the hazardous process of igniter composition on its premises. The state-of-the-art 'Igniter Complex' for the design, processing and evaluation of ignition systems was inaugurated by Shripad Naik, minister of state for defence, on Tuesday.

The facility has come up after a recommendation made by a high-level committee that had investigated a December 2015 fire incident at the erstwhile igniter complex, in which two contractual staffers were killed.

"The committee had found that it was a big risk to engage humans in the making and designing of ignition systems and recommended an advanced, remote-controlled facility in its report to avoid such accidents in the future," a senior DRDO official, who did not wish to be named, told TOI on Tuesday.

The committee submitted its report to the DRDO headquarters in New Delhi, after which the project was sanctioned.

"It is equipped with sophisticated remote-controlled equipment such as sieve shaker, planetary mixer, granulating machine, pelleting machine, etc," a DRDO official said.

A design, modelling and simulation laboratory, and an assembly and testing centre are also part of the complex," the official added.

The High Energy Materials Research Laboratory (HEMRL) mainly develops rocket and gun propellants, pyrotechnic devices, high-explosive systems and synthesis of high-energy molecules.

"The laboratory can now design and develop any kind of ignition systems for key DRDO projects across the country," an official said.

<https://timesofindia.indiatimes.com/city/pune/automated-facility-at-hemrl-to-save-lives/articleshow/71929415.cms>

## **Harsh Vardhan lauds DRDO's contribution towards self reliance in defence technologies**

Kolkata (West Bengal) [India], Nov 5 (ANI): At the inauguration of the Fifth India International Science Festival (IISF) on Tuesday, Minister of Science and Technology, Harsh Vardhan lauded Defence Research and Development Organisation's (DRDO) contribution towards self-reliance in defence technologies.

Following the inauguration, Harsh Vardhan visited DRDO pavillion and applauded the efforts of the research organisation in bringing these technologies to Kolkata for inspring the young generation.

"Minister appreciated the DRDO's contribution towards self reliance in defence technologies. He also praised the efforts made by DRDO in bringing these technologies to Kolkata from all over the country which will inspire the young generation", DRDO said in a tweet.

A series of indigenously developed defence products were shown to the Union Minister, including the likes of Arjun Tank, BrahMos missile, LR SAM, ASTRA, Phased Array Telemetry, AEW&C System, SONARS, Night Vision Sights, Samyukta, Indigenous Radar Systems and Female Full Body Protector.

India International Science Festival (IISF) 2019, an annual event organised jointly by science and technology related Ministries and Departments of the Government of India and Vijnana Bharati (Vibha), is being held in Kolkata this year.

The four-day science festival is being organized in Kolkata from November 5 to November 8, 2019. The prime objective of the festival is to instill scientific temper among the masses, showcase India's contribution in the field of Science and Technology over the years and encourage translation of its benefits to people. It aims to build a strategy for inclusive advancement of Science and Technology. (ANI)

<https://aninews.in/news/national/general-news/harsh-varadhan-lauds-drds-contribution-towards-self-reliance-in-defence-technologies20191105130707/>

## Abdul Kalam, atomic panel differed on Pokhran-II tests: Kakodkar

By Srinivas Laxman

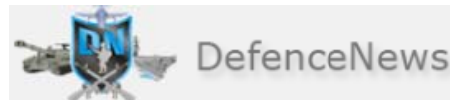
Mumbai: A hitherto unknown aspect of the 1998 nuclear tests at Pokhran was that Abdul Kalam, then chief of DRDO, differed with scientists at Atomic Energy Commission (AEC) about conducting a thermonuclear test (hydrogen bomb) over safety concerns.

The experiments, code-named 'Operation Shakti' consisted of testing an atomic bomb, hydrogen bomb and small devices. The tests were held on May 11 and May 13, 1998. The differences have been revealed for the first time by former AEC chief Anil Kakodkar in his autobiography, which has been co-authored with Suresh Gangotra of department of atomic energy (DAE).

Speaking to TOI on Tuesday, Kakodkar recalled that Kalam had expressed reservations about detonating a hydrogen bomb because he feared it could cause damage to the village of Khetolai, not far from the Pokhran weapon test site.

Due to Kalam's fears, Kakodkar said differences cropped up between DRDO and DAE regarding the testing of a hydrogen bomb. In his autobiography, Kakodkar says Kalam asked him for a written undertaking that the hydrogen bomb test with a yield close to 45 kiloton would not cause any damage to the village, Khetolai. "I agreed to put my neck on the block and gave a duly signed written note....," he writes. The test was carried out successfully and there was no damage to Khetolai.

<https://timesofindia.indiatimes.com/india/kalam-atomic-panel-differed-on-pokhran-ii-tests-kakodkar/articleshow/71931321.cms>



Wed, 06 Nov 2019

## GRSE delivers FPV, ICGS Annie Besant to Indian Coast Guard

Garden Reach Shipbuilders and Engineers Ltd., (GRSE), a mini ratna Category 1 and a leading warship building company in the country under the administrative control of the Ministry of Defence delivered ICGS Annie Besant, second in the series of five Fast Patrol Vessel (FPV) to the Indian Coast Guard, today.

The Protocol of delivery and acceptance was signed between Rear Admiral VK Saxena, IN (Retd.), Chairman & Managing Director, GRSE and Commanding Officer of the vessel, Commandant (JG) Sunny Deo, in the presence of DIG Sudhir Sahani, TM, Principal Director (Material), Cmde, P R Hari, Director (Personnel) and Cmde. Sanjeev Nayyar, IN (Retd), Director (Shipbuilding) and other Senior Officials of GRSE and Indian Coast Guard.

The FPV is a medium range surface vessel with a length of 50 m, width of 7.5 m and displacement of around 308 T and is capable of operations in the maritime zones of India. These powerful, fuel-efficient platforms are designed to perform multipurpose operations like patrolling, anti-smuggling, anti-poaching and rescue operations. The vessel is designed for a maximum speed of 34 knots with an endurance of more than 1500 nautical miles. She is equipped with 03 main engines of MTU make and



built up at GRSE with advanced control systems, ‘Water Jet’ units and an ‘Integrated Bridge System’ integrating all communication and navigation systems. The ship is also fitted with 40/60 gun as main armament and will also have improved habitability features with fully air-conditioned modular accommodation for 35 personnel. The entire design of these FPVs has been developed in-house by GRSE as per requirements specified by Indian Coast Guard. The FPV designs which are exclusive to GRSE are an improvisation on the Inshore Patrol Vessels (IPVs) built by the Shipyard for the Indian Coast Guard, few years ago. Over the years, GRSE has established capabilities for in-house design and shipbuilding and has made significant contributions to the indigenous warship construction program in India. The Design R&D Unit of GRSE, has been recognized by Dept. of Scientific & Industrial Research (DSIR), Ministry of Science & Technology, Govt. of India.

GRSE currently has a strong order book position of around Rs 27, 400 crore under which there are a total of 22 warships at various stages of construction. The shipyard has been recently honored with the ICC PSE Excellence Award (2017-18) for “Operational Performance Excellence” and 16th National Award for “Excellence in Cost Management” in the category of Medium Public Sector Manufacturing Companies. Presently, the company has six projects that are under way viz., five projects of the Indian Navy and one of the Indian Coast Guard. GRSE is aggressively pursuing the new request for proposals (RFP) that have been issued by MoD. GRSE has responded to the RFPs for two Pollution Control Vessels (PCVs) and eight Fast Patrol Vessels (FPVs) for Indian Coast Guard. GRSE is also preparing response to RFPs for construction of 12 Air-Cushion Vehicles (ACVs) for Indian Coast Guard & Indian Army and the major project for construction of six New Generation Missile Vessels (NGMVs) for Indian Navy.

<http://www.defencenews.in/article/GRSE-delivers-FPV,-ICGS-Annie-Besant-to-Indian-Coast-Guard-757814>

*The Indian* **EXPRESS**

Wed, 06 Nov 2019

## **Not only Kudankulam, ISRO, too, was alerted of cyber security breach**

*The breach at the Kudankulam plant became public on October 28 after some of the plant’s data showed up on virustotal.com, an online malware scanning service*

*By Jay Mazoomdar*

New Delhi: Not just the Kudankulam plant of the Nuclear Power Corporation of India Limited (NPCIL), the Indian Space Research Organisation (ISRO), too, was alerted of a possible breach by suspected malware, The Indian Express has learnt.

On September 3, the National Cyber Coordination Centre, set up under a classified project “to generate necessary situational awareness of existing and potential cyber security threats and enable timely information sharing,” received intelligence from a US-based cybersecurity company that a “threat actor” had breached master “domain controllers” at the Kudankulam plant and at ISRO with a malware, later identified as a “Dtrack.” Sources said both NPCIL and ISRO were alerted on September 4.

The breach at the Kudankulam plant became public on October 28 after some of the plant’s data showed up on virustotal.com, an online malware scanning service.

On October 29, Kudankulam Nuclear Power Project (KKNPP) said that no cyber-attack was possible on the plant’s standalone control system. The next day, however, NPCIL admitted there had been an infection “in the internet connected network used for administrative purposes” and that “the

matter was immediately investigated by DAE specialists.” It added: “This (network) is isolated from the critical internal network. The networks are being continuously monitored. Investigation also confirms that the plant systems are not affected.”

But there has been no word from ISRO so far.

The Indian Express sent ISRO a questionnaire Thursday. Despite several calls and messages, ISRO is yet to respond.

Sources, however, confirmed to The Indian Express that with the proposed lunar landing of Chandrayaan 2 due in about 100 hours — it subsequently failed — and the safety of a nuclear power plant at stake, a multi-agency team swung into action soon after the threat was received.

Most high-security setups operate on two “air-gapped (separate) networks”: a standalone control system that runs the core function — reactors in case of a nuclear power plant — and an online network responsible for the rest of the functions. The Dtrack malware, it is learnt, targeted the domain controller of the online network, exposing its credentials such as passwords.

On September 23, researchers at Russia-based cybersecurity company Kaspersky Labs reported that the last activity of a Dtrack malware that targeted “banks and research centres in India” was “detected in the beginning of September 2019”.

They attributed the malware to Lazarus, “an umbrella name that typically describes hacking activity which advances Pyongyang’s interests”. After the breach at Kudankulam became public last week, Seoul-based non-profit IssueMakersLab, an expert group of malware analysts, has claimed that they identified the malware as the same one that was used to infiltrate the South Korean military’s internal network in 2016.

“North Korea has been interested in the thorium based nuclear power, which to replace the uranium nuclear power (sic). India is a leader in thorium nuclear power technology,” it claimed on November 1.

Two days later, IssueMakersLab tweeted an image “of the history of malware used by the North Korean hacker group B that hacked the Kudankulam” plant. It showed a 16-digit password used to “compress a list of files on an infected PC” as well as a MBR (master boot record) Wiper version of the malware.

MBR Wipers are destructive malware often intended for cyber warfare. These can spread from an infected source to the entire network, erase files after extracting and uploading those to the attacker, and then overwrite the master boot record making the network unusable.

## **EXPLAINED**

### **How malware hits the system**

The malware targeting Kudankulam and ISRO in early September was identified as Dtrack. Designed to steal data, a Dtrack can give the “threat actor” complete control over all infected devices. In this case, it targeted domain controllers — the server computer that responds to security authentication requests.

<https://indianexpress.com/article/india/not-only-kudankulam-isro-too-was-alerted-of-cyber-security-breach-6105184/>



## Speed up delivery of S-400 missiles, India to tell Russia

By Rajat Pandit

### HIGHLIGHTS

- **India wants Russia to speed up the delivery schedule of the advanced S-400 Triumph surface-to-air missile systems, which can detect, track and destroy hostile strategic bomber**
- **India has also sought an extension of INS Chakra's lease till the Akula-1 submarine is ready for induction into the Indian Navy by 2025 or so**

New Delhi: India wants Russia to speed up the delivery schedule of the advanced S-400 Triumph surface-to-air missile systems, which can detect, track and destroy hostile strategic bombers, jets, spy planes, missiles and drones at a range of 380-km, after having now paid the first instalment of around Rs 6,000 crore for them.

The faster delivery of the five squadrons of S-400, under the \$5.43 billion (Rs 40,000 crore) deal inked in October 2018, will be discussed in the 19th India-Russia intergovernmental commission on military and military technical cooperation (IRIGC-M&MTC) to be held in Moscow on Wednesday, said sources.

India's lease of a Akula-1 nuclear-powered attack submarine under the over \$3 billion (Rs 21,000 crore) deal inked in March this year as well as a reciprocal military logistics pact will also be among the issues to figure in the delegation-level talks, which will be cochaired by defence minister Rajnath Singh and his Russian counterpart Sergei Shoigu.

The Akula-1 submarine is meant to replace INS Chakra, the Akula class submarine taken on a 10-year lease from Russia in April 2012, under the over \$900 million deal inked way back in January 2004. India has also sought an extension of INS Chakra's lease till the Akula-1 submarine is ready for induction into the Indian Navy by 2025 or so

But the delivery schedule for the S-400 squadrons, originally slated from October 2020 to April 2023, will figure higher on the agenda, with Rajnath Singh even likely to visit the production facilities at St Petersburg on Thursday.

India has also sought an extension of INS Chakra's lease till the Akula-1 submarine is ready for induction into the Indian Navy by 2025 or so.

This comes after India and Russia recently worked out a payment mechanism to get around the US sanctions regime against acquisition of Russian weapon systems, as was earlier reported by TOI.

"The first instalment of 15% for the S-400 deal got delayed by several months. But it (Russia) has now been paid, with the remaining instalments being linked to deliveries. Russia has assured India that it will stick to the original delivery schedule. India, however, is trying to quicken it further," said a source.

The IAF has described the acquisition of the five S-400 squadrons as well as the 36 Rafale fighters from France, under the Rs 59,000 crore deal inked in September 2016, as "game-changing" for combat capabilities and warfare in the region.



The S-400 squadrons will come equipped with missiles with an interception range of 120, 200, 250 and 380-km as well as battle-management systems of command posts and launchers, long-range acquisition and engagement radars, and all-terrain transporter-erector-launcher vehicles.

With it being possible to load as many as 128 missiles per battery, the highly-automated and mobile S-400 systems will be deployed on the borders with Pakistan and China to shoot down aerial threats before they come close to Indian airspace during hostilities. The air defence system can even intercept intermediate range ballistic missiles with a velocity of 4,800 metres per second.

<https://timesofindia.indiatimes.com/india/speed-up-delivery-of-s-400-missiles-india-to-tell-russia/articleshow/71930637.cms>

## ThePrint

Wed, 06 Nov 2019

# Make in India tops Rajnath agenda in Russia, Moscow to pitch for P75I submarine deal

*Russia also wants to pitch for a more detailed upgrade of its frontline fighter aircraft Su30 MKI than what is being planned by the Indian Air Force*

*By Snehesh Alex Philip*

New Delhi: Defence Minister Rajnath Singh has a packed agenda in Russia as he began a three-day visit Tuesday. Singh is set to focus on 'Make in India' as Moscow pitches for a government-to-government deal for Project 75 India (P75I) to build six new conventional submarines and a more detailed upgrade of Russia's frontline fighter aircraft Su30 MKI than what is being planned by IAF.

Accompanied by several Indian businesspersons, Singh will co-chair the 19th India-Russia Inter-Governmental Commission on Military and Military Technical Cooperation (IRIGC-M&MTC) in Moscow.

India and Russia will also focus on firming up the Agreement on Reciprocal Logistics Support (ARLS), allowing both nations to access each other's military bases and facilities for logistics support, including fuel and supplies.

The defence minister will further review the progress of two mega deals that were signed between India and Russia — construction of two frigates for the Indian Navy and supply of S400 Triumf air defence systems, sources said.

Russia is expected to push for a contract to manufacture the much-awaited Kamov 226T light helicopters in India too. While technical details of the chopper project have been worked out, the contract of a HAL-Kamov combine is yet to be awarded.

Singh will hold detailed discussions with his Russian counterpart, Sergei Shoigu, on areas of military-to-military and defence industrial cooperation. He will also inaugurate the India-Russia Defence Industry Cooperation Conference along with Denis Manturov, the Russian minister of industry and trade.

### **Russia eyes Su30 upgrade, P75I**

Russia has been eyeing the Indian Navy's mega P75I initiative, worth around Rs 80,000 crore, and will pitch for a joint design and production plan via a government-to-government agreement.

Highly placed sources have told ThePrint that Russia will raise the matter during discussion with Singh. Moscow's proposal tells how "India needs better submarines than the French-made Scorpene" — which the Indian Navy is in the process of inducting.

Russia wants to use its new Lada class submarines (the export version of which is called Amur), built by the Admiralty Shipyard, as a prototype for the design and construction of the new submarines.

It will also propose an elaborate upgrade of the Su-30 MKI aircraft, to be called the Super Sukhoi. The country has already submitted a proposal for it even as the Indian Air Force (IAF) is looking at a more functional upgrade, keeping in mind the cost of production and time required for it.

India plans to upgrade its fleet of Su-30 MKIs with more advanced avionics, radars and weapons. The IAF is eyeing a new computer system for greater weapon control and integration of new missiles and PGMs (precision-guided munitions). The force is also looking to integrate more non-Russian missiles.

Defence Minister Singh may visit Russian defence production facilities in and around St Petersburg, including the production facility of the S400 system.

<https://theprint.in/diplomacy/make-in-india-tops-rajnath-agenda-in-russia-moscow-to-pitch-for-p75i-submarine-deal/315937/>



*Wed, 06 Nov 2019*

## **India for production of high-end defence equipment with Russia**

New Delhi: India will share with Russia a list of spares and items of military use, that it needs to be manufactured in India. Defence Minister Rajnath Singh on Tuesday in Moscow asked the Russians to identify the manufacturers on their side who can partner in production of the spares.

“We are eager to see several joint industrial activities in India on the basis of the existing agreement,” said Rajnath. Several of IAF planes like the Sukhoi 30 MKI, MiG 29, MiG 29K, AN 32, IL 76, among others are of Russian origin. Besides this, tanks, air defence guns and warships are of Russian origin.

Rajnath was addressing CEOs of Original Equipment Manufacturers (OEMs) from the Russian defence industry after jointly inaugurating the India-Russia Defence Industry Cooperation Conference in Moscow.

The Indian side highlighted the inter-governmental agreement (IGA) on mutual cooperation in joint manufacturing of spares, components, aggregates and other material related to Russian or Soviet origin arms and defence equipment that was signed between India and Russia on September 4, 2019, during the 20th India-Russia Annual Summit at Vladivostok.

The IGA defines broad framework of cooperation for manufacturing of spares in India by way of collaboration between the Indian industry and Russian OEMs. Rajnath assured that India would provide orders for procurement of agreed quantities at mutually decided price for a period not less than five years. This was expected to reduce cost, reduction in timelines of the supplies and progressive indigenisation of spares.

The minister said India was ready to explore opportunities and co-production of high-end defence equipment with Russia.

He also invited the Russian manufacturers to participate in the forthcoming DefExpo 2020, to be held in Lucknow, Uttar Pradesh from February 5-8, 2020.

<https://www.tribuneindia.com/news/india-for-production-of-high-end-defence-equipment-with-russia/856831.html>

## Israeli tethered drones to check cross-border crime in Assam's Dhubri district: BSF IG

*The BSF has recently procured Israeli tethered drones and thermal imagers to check smuggling and illegal infiltration in Dhubri sector of Assam. The drones, equipped with day-night vision cameras, can fly up to a height of 150 metres to capture im..*

Guwahati: The BSF has recently procured Israeli tethered drones and thermal imagers to check smuggling and illegal infiltration in Dhubri sector of Assam, where a major part of the India-Bangladesh border passes through a riverine stretch, making it difficult to erect fences.

The drones, equipped with day-night vision cameras, can fly up to a height of 150 metre to capture images on the ground, especially of isolated areas not visible to unaided human eye, Piyush Mordia, the Inspector General (IG) of BSF's Guwahati Frontier, said.

"They (drones) are like kites capturing aerial view images. The cable attached to the drone is remotely controlled from the ground to adjust its height and directions," Mordia told PTI on Tuesday.

The 61-km-long border in Dhubri area of western Assam, where the Brahmaputra enters Bangladesh, comprises vast chars (sand bars) and multiple river channels that make border patrolling a daunting task, especially during the monsoons.

"Cattle smuggling and drug trafficking activities are usually carried out at night. These newly employed drones will be able to send images of smugglers hiding in the vicinity of the border area during day time," the BSF IG explained.

Given the topography of Dhubri district, miscreants often take the underwater route to sneak into the country illegally, Mordia stated.

"The BSF has also engaged underwater thermal imagers - which are non-contact temperature measurement sensor devices - to detect movement of people, animals and smuggled goods.

"The tethered drones and imagers will work as deterrents for cross-border smugglers once they found out they were under surveillance," he maintained.

Declining to divulge the exact number of drones engaged in the sector, Mordia said the aerial device would restrict its movement and images to the Indian Territory.

"The district administration imposes prohibitory orders on border areas under Section 144 CrPC, barring gathering of more than five persons. The drones in these areas will help manage crowd, especially when protests are organized or our men are attacked," the senior BSF official added.

Assam shares 263-km border with Bangladesh, of which 119.1 km is riverine.

The Union Ministry of Home Affairs had decided to opt for a technological solution along the border, besides the presence of BSF personnel.

Last year, the information and technology wing of the BSF had undertaken a smart fencing project and completed it in record time with the technical support of various manufacturers and suppliers.

In March this year, Defence Minister Rajnath Singh as then Union Home Minister in NDA-I inaugurated project BOLD-QIT (Border Electronically Dominated QRT Interception Technique) under CIBMS (Comprehensive Integrated Border Management system) in Dhubri district.

The new project will equip the unfenced areas along the riverine border with sensors, enabling the troops to take prompt action against intrusion, Singh had said.

<https://economictimes.indiatimes.com/news/defence/israeli-tethered-drones-to-check-cross-border-crime-in-assams-dhubri-district-bsf-ig/articleshow/71924221.cms>

Wed, 06 Nov 2019

## **India, US to hold first-ever-tri-service military exercise in November**

*Since the Trump administration began in 2017, the US has invested more than USD 1.1 billion in security cooperation with Indo-Pacific partners*

Washington: The United States and India will hold their first-ever tri-service military exercise codenamed "Tiger Triumph" at Visakhapatnam and Kakinada later this month, the US State Department said on Monday.

"This exercise will focus on humanitarian assistance and disaster relief. All three Indian military services will be alongside the U.S. Army, Navy, Air Force and Marine Corps. This is the latest example of how the United States is expanding security cooperation in the Indo-Pacific," State Department said in a press release.

Since the Trump administration began in 2017, the US has invested more than USD 1.1 billion in security cooperation with Indo-Pacific partners.

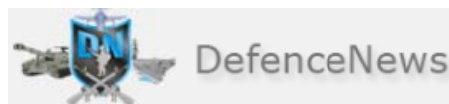
"The American people and the whole world have a stake in the Indo-Pacific's peace and prosperity," Secretary of State Michael R. Pompeo had said in 2018. "It's why the Indo-Pacific must be free and open."

"In addition to the Tiger Triumph exercise, the United States has carried out the first US-ASEAN joint military exercises in Southeast Asia to practice naval operations and participated in the first joint sail with Japan, India and the Philippines to ensure access to international waters in the South China Sea," read the release.

In September, the United States, India and Japan participated in the trilateral Malabar exercise to expand interoperability and maritime security.

Adding that training and the joint exercises are part of the U.S. Indo-Pacific strategy, the State Department said: "These exercises are in addition to the annual 10-nation Southeast Asia Cooperation and Training exercise to counter piracy and smuggling."

<http://www.newindianexpress.com/nation/2019/nov/05/india-us-to-hold-first-ever-tri-service-military-exercise-in-november-2057398.html>



Wed, 06 Nov 2019

## **India's first-ever military drill with Uzbek Army the strongest in the region**

The first-ever India-Uzbekistan Joint Exercise 'Dustlik 2019' took off at Tashkent in Uzbekistan in the presence of Defence Minister Rajnath Singh and his Uzbek counterpart Major General Bakhodir Nizamovich Kurbanov.

The ten-day drill starting November 4-19 is being conducted at Chirchiq Training Area near Tashkent where the armies from both countries train alongside each other. And, will also share best



practices and experiences between the Armed Forces of the two countries which will lead to greater operational effectiveness.

Displaying India's increasing strategic reach an Indian Air Force (IAF) C-130 aircraft airlifted Indian Army troops from Jamnagar to Tashkent.

The next edition of Ex- Dustlik will be conducted in India in 2020.

Before departing for Russia for the India-Russia Intergovernmental Commission on Military-Technical Cooperation (IRIGC-MTC) in Moscow from Nov 5-7, Singh who is in Uzbekistan called for isolating nations adopting terrorism as state policy.

Identifying 'Military-Technical Cooperation' as an area of huge potential, Singh offered to help in the modernisation and capacity building of the forces of that country. New Delhi has already offered to develop a state-of-the-art IT complex in Armed Forces Academy of Uzbekistan for the benefit of their soldiers. At the end of his talks with his counterpart, both sides have inked an MoU for military medicine to Uzbekistan.

With growing Chinese presence in the region, relations with Uzbekistan is important for India's security, connectivity and counter-terrorism efforts. Last year the two countries had announced that they will work together for a peaceful and prosperous Afghanistan which is beneficial for the region.

Uzbekistan which has a strong military in the region and is a key player in the region will be of great importance for India from a security point of view.

Though the CIS nations huge reserves of gas, uranium and gold, its relations with its neighbouring countries namely Tajikistan and Kyrgyzstan are rough due to water issues.

<http://www.defencenews.in/article/India%e2%80%99s-first-ever-military-drill-with-Uzbek-Army-the-strongest-in-the-region-757809>



*Wed, 06 Nov 2019*

## **Pakistan Navy successfully test fires land based anti ship missile**

Pakistan Navy on Tuesday test fired land based anti-ship missile 'Zarb' as part of a training exercise from the coastal region.

The missile successfully followed its preplanned trajectory and accurately engaged the target at sea.

Chief of the Naval Staff, Admiral Zafar Mahmood Abbasi witnessed the exercise as Chief Guest. While speaking at the occasion, Admiral expressed his utmost satisfaction on the operational readiness of Pakistan Navy.

The Admiral further said that Pakistan's pursuit for peace and stability has to be taken in the context of our quest for maintaining a peaceful coexistence in the region and not to be construed as our weakness. Pakistan Navy, being a professionally competent and potent force, is fully capable of thwarting any aggression with an iron fist.

He further said that operationalization of Zarb Weapon System is depictive of Pakistan's strong resolve and high level of preparedness. He reaffirmed the resolve that Pakistan Navy's personnel remain vigilant and combat-ready to guard the sea frontiers and maritime interests of our motherland.

Chief of the Naval Staff also underscored the importance of Pakistan Navy's own initiatives of Regional Maritime Security Patrols (RMSP) in Gulf of Aden/North Arabian Sea, Pakistan Navy's participation in multinational Combined Maritime Force (CMF) and recent joining of Trans Regional



Maritime Network with participants from 32 navies which will greatly contribute in improving maritime security.

Chief of the Naval Staff lauded the efforts, dedication and professional conduct displayed by all participants especially the crew of missile unit, scientists and engineers for making the event a complete success.

<http://www.defencenews.in/article/Pakistan-Navy-successfully-test-fires-land-based-Anti-Ship-Missile-757811>



*Wed, 06 Nov 2019*

## **Chinese military equipment lack quality, say experts**

China is making significant headway in terms of international arms sales, with the country having surged into fifth place globally and now trailing only the USA, Russia, France and Germany respectively. However, there are numerous signs that the quality of Chinese military products is lacking, with even US government officials weighing in on the topic.

Indeed, R. Clarke Cooper, Assistant Secretary of State for Political-Military Affairs at the US State Department, lambasted Russian and Chinese arms sales in a speech before defence attaches and ambassadors in Washington DC on 31 October 2019.

China came in for the sternest rebuke, with Cooper asserting: "...Through a combination of cut-price systems such as unmanned aerial systems, predatory financing mechanisms and sometimes outright bribery, China is using arms transfers as a means of getting its foot in the door - a door that, once opened, China quickly exploits both to exert influence and to gather intelligence."

Cooper continued, warning, "To quote another Latin phrase - caveat emptor! - Buyer, beware. We have seen countries around the world leap at the chance to obtain high-tech, low-cost defensive capabilities, only to see their significant investments crumble and rust in their hands."

One of the most prominent examples in recent times comes from Jordan, which purchased six CH-4B unmanned combat aerial vehicles (UCAV) produced by the China Aerospace Science and Technology Corporation (CASC) in 2016. However, within just three years, the kingdom had put them up for disposal, with their sale advertised in June.

Shephard Media reported Royal Jordanian Air Force sources telling the UK-based defence publisher back in November 2018 that "it was not happy with the aircraft's performance and was looking to retire them". They were flown by the air force's No. 9 Squadron.

The CH-4B, which has an 18.5-meter wingspan and can carry 345kg of weapons on four hardpoints, resembles the MQ-1 Predator produced by General Atomics Aeronautical Systems Inc (GA-ASI).

Other known users of the CH-4 UCAV are Algeria, Egypt, Saudi Arabia, the UAE and Iraq. Interestingly, the Iraqi Air Force is down to just one operational CH-4 out of an original fleet of ten. This problem was revealed in a report by the US Inspector-General in August, which blamed maintenance issues for the literal decimation of the fleet that was being used to fight ISIS. China has exported more than 30 CH-4s to date since its introduction to the market in 2014. Each aircraft is estimated to cost USD4 million, which is a fraction of what an American drone would cost. A Chinese research paper stated that the CH-4 worldwide had accumulated 10,000 flight hours and more than 1,000 sorties. It also claimed more than 400 missiles had been fired in combat with an accuracy level of 96%. Of course, this naturally raises questions as to how China knows so much about how foreign customers are using their aircraft.

However, one cannot point the finger solely at Chinese systems. The same US Inspector-General report cited ScanEagle tactical UAVs produced by Boeing Insitu as flying just two sorties from March-June 2019 because of a "combination of Iraqi training in the United States, a lapse in maintenance contracts and problems with signal interference".

The USA imposes far tighter restrictions and regulations when it comes to selling weapons such as UCAVs. This, plus price and politics, often makes China a more appealing source for military equipment for countries in the Middle East and Africa, for example.

US Assistant Secretary of Defense for Indo-Pacific Affairs Randall Schriver said in a recent Pentagon briefing: "It's potentially a tool for them to develop closer defence and military ties, particularly for future access. China is less disciplined, and so there's a proliferation risk as well to regimes that we would regard as not necessarily responsible."

The author asked the CEO of GA-ASI, the maker of the Reaper and Predator used by the USA, whether his company feared competition from China. Linden Blue replied, "I think they're a competitor in some countries...In Europe, it's not an issue, but in Asia-Pacific, they are a competitor," although this is only on a selective basis. He shared that smaller countries to which the US has not been paying a lot of attention and who face budget challenges may go for cheaper Chinese systems countries.

Nevertheless, he assessed that Chinese systems are "a little lower end at the moment. As far as we know, they're not really in the turboprop class yet. They've built some but they're not really competitive in that class yet and, in this [Asia-Pacific] region if you don't have a little bit of engine power to get around the weather in the wet season, you're kind of limiting yourself to not flying that much."

In contrast to problem-plagued Chinese UAVs, which is probably a reflection of the quality of militaries using them too, Blue pointed out that the "volume of operational experience is our strength," with GA-ASI currently supporting 60-70 air patrols simultaneously in locations around the world around the clock. "That's the infrastructure that we have in place that others will be building, but it will take them a couple of years, many years in some cases, to build that infrastructure."

Bad press has not stopped China finding new customers, however. Indonesia, for instance, was revealed as a new user of the CH-4B UCAV within the past few months.

According to Stockholm International Peace Research Institute (SIPRI) data, China sold eight CH-4, 39 CH-3, 16 Wing Loong 1, five Wing Loong 2, two WJ-600 and 18 ASN-209 UAVs overseas from 2008-17.

UAVs have been a fast-growing area of sales for China, but the country has a wide range of products available. SIPRI released figures earlier this year covering arms sales for the five-year period from 2014-18. Chinese sales were up just 2.7% compared to the preceding five-year period, but 70% of its sales currently go to Asia and Oceania, 20% to Africa and 6.1% to the Middle East. In fact, Pakistan is the major recipient of Chinese weapons, accounting for 37% of all sales from 2014-18.

China sold weapons to 53 separate countries in 2014-18, compared to 41 nations in 2009-13, demonstrating that its appeal is widening. Of course, there are large numbers of countries, predominantly Western ones but also including non-aligned India and Vietnam, which will never buy from China for political reasons. SIPRI commented: "Nonetheless, improvements in Chinese military technology have opened up opportunities for arms export growth, including exports to new customers."

In his Washington DC speech, Cooper gave further examples of problematic Chinese-supplied equipment. "In Africa, Cameroon procured four Harbin Z-9 attack helicopters in 2015: one crashed shortly after being handed over. Kenya invested in Norinco VN4 armoured personnel carriers - vehicles that China's own sales representative declined to sit inside during a test firing. But since going

ahead with the purchase regardless, sadly dozens of Kenyan personnel have been reportedly killed in those vehicles..."

**"Caveat emptor!" Cooper repeated.**

ANI has regularly encountered Chinese manufacturers such as Norinco, AVIC, Poly Technologies and the China Shipbuilding industry Corporation (CSIC) at numerous defence exhibitions around Asia. Routinely the company representatives at these exhibitions are evasive and occasionally even downright dishonest. About 5-10 years ago there were often sales representatives on duty who could barely converse in English, but in the past five years or so Chinese companies have begun to up their marketing game.

Nonetheless, Chinese companies continue to carry a stigma for offering poor service to foreign militaries, and products that are not always reliable or that do not perform as advertised. Of course, the reason that draws many customers to China in the first place - price - cannot be underestimated either. Even though clients know that a Chinese helicopter, fighter or tank may not be as reliable as an American one, they can be sure it will certainly be much cheaper.

Furthermore, China will sell anyone anything with no questions asked. This is attractive to countries like Thailand, whose relationship with the USA ebbs and flows depending on when the last military coup occurred. Indeed, Thailand is turning into a major Chinese client after buying equipment such as an S26T submarine (one bought already with two more sought), HQ-12/KS-1 surface-to-air missiles, VT4 main battle tanks and VN1 8x8 infantry fighting vehicles. Beijing's apolitical and uncritical stance is very much appreciated by customers that have less than rosy human rights records, for example.

Cooper also mentioned the quality of training that China offers to developing nations, tearing shreds off Beijing there too. "Foreign trainees may be wooed by the offer of unit-scale training in China, but on arrival they are disappointed to find themselves not spread among the elite Chinese training academies, but are lumped together with forces from around the world of significantly varying quality in China's International Military Education Exchange Center - a facility whose lackadaisical approach to military education is well below standard China provides to its own officers."

In contrast, the American Assistant Secretary of State for Political-Military Affairs argued that quality, transparency and accountability were the hallmarks of American support to his country's military partners and clients.

He noted that US defence industry "produces the best defensive equipment on the planet," and that arms sales are not shrouded in secrecy such as occurs in China, which opens the door to bribes and kickbacks. "Unlike the determinations made in Beijing or Moscow, our major foreign military and direct commercial sales are managed via a process whose policies are clear and transparent, and whose approvals are public."

US equipment does not come cheap, however, and political risk is attached. Pakistan found this out again to its cost when President Donald Trump banned the sale of Bell AH-1Z attack helicopters to Pakistan last year.

Cooper added, "It is true, if we scratch the surface of the offers laid out by our adversaries we find failed systems, flawed training, false bargains. And it is important countries around the world understand the risks of choosing to procure systems from China or from Russia. But while it is important that we lift the veil on our strategic competitors, it is more important that we make the case for why partnering with America is not just the better choice, but indeed the best choice."

Thus, there is an admission that self-interest is present. The above claims should be tempered by the fact that the USA would like to sell its defence products ahead of China and Russia in a competitive commercial world. After all, it does not want China to muscle in on the 36% share of global arms sales that it enjoyed from 2014-18.

<http://www.defencenews.in/article/Chinese-military-equipment-lack-quality,-say-experts-757805>

## सफल मिशन था चंद्रयान-2, युवाओं में जिज्ञासा पैदा हुई : प्रधानमंत्री

कोलकाता, 5 नवंबर (भाषा)।

देश के वैज्ञानिकों की उपलब्धियों की सराहना करते हुए प्रधानमंत्री नरेंद्र मोदी ने मंगलवार को कहा कि 'चंद्रयान 2' एक सफल मिशन था और इससे युवाओं में विज्ञान को लेकर उत्सुकता पैदा हुई।

प्रधानमंत्री ने कहा कि विज्ञान व प्रौद्योगिकी के बिना दुनिया का कोई भी देश प्रगति नहीं कर सकता। उन्होंने कहा कि जीवन के अन्य पहलुओं के विपरीत लोगों को वैज्ञानिक अनुसंधानों से तत्काल परिणामों की उम्मीद नहीं करनी चाहिए। उन्होंने कहा कि सकता है कि वैज्ञानिक खोजों से वर्तमान पीढ़ी को तत्काल मदद नहीं मिले लेकिन भविष्य में यह फायदेमंद हो सकती है।

उन्होंने वीडियो कॉफ्रेंस के जरिए कोलकाता में 'भारत अंतरराष्ट्रीय विज्ञान महोत्सव' को संबोधित करते हुए कहा, 'हमारे वैज्ञानिकों ने चंद्रयान 2 पर बहुत मेहनत की। सब कुछ योजना के अनुसार नहीं हुआ, लेकिन यह मिशन सफल था। यदि आप व्यापक परिप्रेक्ष्य की ओर देखें, तो आप पाएंगे कि यह भारत की वैज्ञानिक उपलब्धियों की सूची में एक प्रमुख उपलब्धि है।

सात सितंबर को चंद्रयान -2 के विक्रम लैंडर का इसरो के नियंत्रण कक्ष से संपर्क टूट गया था। यदि लैंडर की सॉफ्ट लैंडिंग सफल हो गई होती तो भारत अमेरिका, रूस और चीन की सूची में शामिल हो

सकता था।

प्रधानमंत्री ने कहा कि चंद्रयान 2 मिशन ने युवाओं और पुराने लोगों में एक जैसी जिज्ञासा पैदा की। उन्होंने कहा कि वैज्ञानिक अनुसंधान नूडल्स तैयार करने या पिज्जा खरीदने की तरह नहीं हो सकता, इसके लिए धैर्य की आवश्यकता होती है और ऐसे शोधों के परिणाम लोगों को दीर्घकालिक समाधान प्रदान कर सकते हैं।

उन्होंने कहा कि विज्ञान में नाकामी नहीं होती सिर्फ प्रयास और प्रयोग होते हैं और सफलता होती है। इन बातों को ध्यान में रखते हुए आप आगे बढ़ेंगे तो विज्ञान के क्षेत्र में भी आपको दिक्कत नहीं आएगी और जीवन में भी।

प्रधानमंत्री ने कहा कि आवश्यकता को पहले आविष्कार की जननी माना जाता था, और अब आविष्कार ने ही जरूरतों की सीमाओं को बढ़ाया है। उन्होंने शोधकर्ताओं से प्रयोगों के दौरान दीर्घावधिक लाभ और समाधान पर विचार करने का आग्रह करते हुए उनसे कहा कि वे अंतरराष्ट्रीय नियमों और मानकों को ध्यान में रखें।

उन्होंने कहा, 'विज्ञान में रूचि को वैज्ञानिक तरीके से रास्ता दिखाना चाहिए। इस जिज्ञासा को रास्ता दिखाना और उन्हें एक मंच देना हमारी जिम्मेदारी है। हमें मानवीय मूल्यों के साथ विज्ञान व प्रौद्योगिकी अनुसंधानों को आगे ले जाना होगा। हमारे देश ने दुनिया के कई शीर्ष वैज्ञानिक दिए हैं।'

engadget

## Robot bees can crash into walls without taking damage

*Soft muscles prevent the bots from taking a bruising*

*By Jon Fingos*

Tiny Robot Fliers aren't exactly durable at present, but they may be tough critters before long. Harvard researchers have developed a RoboBee that uses soft, artificial muscles (really, actuators) to fly without taking damage. The robot can smack into walls, crash-land or even collide with fellow 'bees' without getting hurt. Soft-muscle fliers have existed before, but this is the first with enough power density and control to hover -- that is, it's not just flying wildly.



The trick was to improve the power density through refined materials. The actuators are made with dielectric elastomers that deform under an electric field and have good insulating properties. Their upgraded electrode conductivity helps them operate at the same 500Hz as the stiff actuators found on other bots this size. They're easy to assemble and replace, too, so you could scale up with more wings and actuators to handle more complex tasks. It took a model with four actuators and eight wings to hover in a controlled manner.

The technology still isn't very efficient compared to conventional robots. Researchers hope to improve the technology, though, and they'd eventually like to sell it. If they do, there are numerous potential uses. Harvard imagines these robots being useful for [search-and-rescue missions](#), where a robot might have to navigate dangerous rubble looking for survivors.

<https://www.engadget.com/2019/11/04/harvard-robot-bees/>

## दैनिक जागरण

Wed, 06 Nov 2019

### सूर्य की सीमा के पार पहुंचने वाला दूसरा यान बना नासा का वॉयजर-2

वाशिंगटन, प्रेट्र: अमेरिका की अंतरिक्ष एजेंसी नासा के नाम एक और उपलब्धि जुड़ गई है। चार दशक से लंबे सफर के बाद नासा का वॉयजर-2 यान सौरमंडल की परिधि के बाहर पहुंचने वाला दूसरा यान बन गया है। इससे पहले नासा का ही वॉयजर-1 इस सीमा के पार पहुंचा था।

सूर्य से बाहर की ओर बहने वाली हवाओं से सौरमंडल के चारों ओर एक बुलबुले जैसा घेरा बना हुआ है। इस घेरे को हेलियोस्फियर और इसकी सीमा से बाहर के अंतरिक्ष को इंटरस्टेलर मीडियम (आइएसएम) कहा जाता है। अमेरिका की यूनिवर्सिटी ऑफ आयोवा के शोधकर्ताओं के मुताबिक, वॉयजर-2 आइएसएम में पहुंच गया है। विज्ञान पत्रिका नेचर एस्ट्रोनामि में प्रकाशित अध्ययन के मुताबिक, वॉयजर-2 ने पांच नवंबर, 2018 को आइएसएम में प्रवेश किया था। यान पर लगे प्लाज्मा वेव उपकरण से मिली प्लाज्मा घनत्व की रीडिंग के आधार पर यह निष्कर्ष निकाला गया है। वॉयजर-1 ने 2012 में सूर्य की सीमा को पार किया था।

बदल रही है धारणाएं: अमेरिका की

42 साल से अंतरिक्ष के सफर पर है नासा का यह यान

2012

में नासा के ही वॉयजर-1 को मिली थी यह कामयाबी



नासा के वॉयजर-2 की तस्वीर ●

चार दशक से हैं सफर पर वॉयजर-2 को 20 अगस्त, 1977 को लांच किया गया था। इसके 16 दिन बाद पांच सितंबर, 1977 को वॉयजर-1 लांच किया गया था। उद्देश्य और पथ में अंतर के साथ दोनों यान को धरती से परे ग्रहों व अंतरिक्ष के अध्ययन के लिए लांच किया गया था। दोनों यान पिछले 42

साल से काम कर रहे हैं। नासा के डीप स्पेस नेटवर्क के जरिये इनसे संपर्क स्थापित किया जाता है। नासा की वेबसाइट के मुताबिक, मंगलवार को वॉयजर-1 धरती से 13.76 अरब मील दूर था। वहीं वॉयजर-2 की दूरी 11.38 अरब मील थी। इस हिसाब से वॉयजर-1 धरती से सर्वाधिक दूरी पर पहुंची हुई मानव निर्मित वस्तु है।

यूनिवर्सिटी ऑफ आयोवा के प्रोफेसर डॉन गरनेट ने कहा, 'यह ऐतिहासिक उपलब्धि है। पहले यह सोचा जाता था कि जैसे-जैसे आप इंटरस्टेलर स्पेस में बढ़ते जाएंगे, सौर हवाएं धीरे-धीरे हल्की होती जाएंगी। नए प्रमाणों से यह धारणा

गलत साबित हो गई है। पहले वॉयजर-1 और अब वॉयजर-2 से हमें पता चला है कि वहां एक मजबूत सीमा बनी हुई है। यूनिवर्सिटी ऑफ आयोवा के बिल कर्थ ने कहा कि हेलियोस्फियर का आकार सही ज्यामिति में है।