

# समाचार पत्रों से चयित अंश Newspapers Clippings

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## **DRDO system to help Indian Navy's scorpene submarines stay hidden for longer periods**

*The DRDO has been working with the Navy to develop it at the Naval Materials Research Laboratory (NMRL) in Pune*

In a major boost to Prime Minister Narendra Modi's Make in India programme, the Indian Navy would fit their Kalvari-class submarines with DRDO-built Air Independent Propulsion (AIP) systems, which would allow the underwater warships to remain below the surface for longer periods while carrying out their operations.

An AIP is fitted on the conventional diesel-electric submarines and significantly enhances the capability of the boats to stay underwater, which, otherwise, have to come to the surface to charge their batteries frequently. "The DRDO-built AIP would be fitted on the Kalvari class submarines during their refit programme. The first refit of the first boat INS Kalvari is scheduled for the year 2023," French firm Naval Group's Senior Executive Vice President Alain Guillou told ANI. The French industry official was in India for the biennial DefExpo in Lucknow.



He said the DRDO AIP has been found good and compliant and would add to the capabilities of the submarines.

The DRDO has been working with the Navy to develop it at the Naval Materials Research Laboratory (NMRL) in Pune.

The Indian AIP was earlier supposed to be fitted only on the fifth and the sixth boat but it has now been decided that it would be equipped on all the six boats as and when they go for their major refit programmes.

The first boat was inducted by the Navy a couple of years ago and the last boat is expected to be commissioned with full firepower by the end of 2022.

Indian public sector firm Mazagon Dockyards Limited and the Naval Group are building the submarines together in Mumbai.

Guillou said his firm was also taking part in the Indian Navy programme for supplying torpedoes for the Kalvari class boats and was offering its F-21 torpedo for the project.

The heavyweight torpedoes are also supposed to be used by the Indian Navy for its strategic nuclear submarines as they are also functional without their main underwater weapons. (ANI)

<http://www.businessworld.in/article/DRDO-System-To-Help-Indian-Navy-s-Scorpene-Submarines-Stay-Hidden-For-Longer-Periods/10-02-2020-183796/>

## DefExpo 2020: DRDO tech impresses UK Minister, Joint R&D projects proposed

New Delhi: United Kingdom's Minister of Defence Procurement, James Heapey, visited the DRDO pavilion and interacted with G Satheesh Reddy, Chairman of Defence Research and Development Organisation (DRDO) and Secretary, Department of Defence R&D on 6 February 2020.

Reddy briefed the Minister about various technology developments at DRDO and latest products showcased at the DRDO Pavilion, DefExpo 2020.

The Minister showed keen interest in Nirbhay Missile and its capabilities. He was impressed with DRDO products namely the airborne early warning and control system (AEW&C), Air and Naval versions of AMCA (Advanced Medium Combat Aircraft), Trainer Aircraft and LCA (Light Combat Aircraft) Mk II. He enquired about re-fuelling capabilities of these aircraft and appreciated the efforts done by DRDO during the discussions.



The Minister also showed interest in the Electronics & Communication Cluster Products, Swathi Weapon Locating Radar, Night Vision Devices, Laser Ordnance Disposal System (LORDS), and Optical Target Locator. The Minister was thrilled to experience the demonstration of the LCA MK II cockpit simulator and high-resolution video and images from the night vision devices developed by DRDO.

Reddy also briefed him about the latest developments of missiles for Indian Armed Forces viz. Astra, LRSAM, Nag and Helina.

Reddy expressed that Indian and UK's research departments should identify at least five futuristic technology areas for collaboration. They agreed to set up a task force to initiate and take up Joint R&D Projects within 3 months.

<https://indusdictum.com/2020/02/09/defexpo-2020-drdo-tech-impresses-uk-minister-joint-rd-projects-proposed/>



## DRDO to train state teams for avalanche rescue

*By Vijay Mohan*

Chandigarh: In a public-outreach venture, the Defence Research and Development Organisation (DRDO) will train quick-response teams (QRTs) of state governments to undertake safety and rescue operations in mountainous areas hit by avalanches or snow storms.

The first such programme is scheduled to be conducted by DRDO's Snow and Avalanche Studies Establishment (SASE) at Manali from this week for a 30-member contingent deputed by the Himachal Pradesh Government.

“We had received a request from the Himachal Pradesh Government to train their QRTs,” Naresh Kumar, Director SASE said.

“Though we have been training Army teams to operate in avalanche-prone area for the past many years, this is the first such programme for a state government. It is a new beginning and can be extended to other hill states as well,” he added.

The state government team would comprise members drawn from the police, home guards and local civil defence volunteers. They would be taught safety procedures and precautions to be undertaken while moving in areas facing threat of avalanche, undertaking rescue operations and extracting trapped persons in case of an avalanche and the use of detection, rescue and communication equipment, both theoretically as well as practically in snow-bound areas.

<https://www.tribuneindia.com/news/drdo-to-train-state-teams-for-avalanche-rescue-38918>



*Tue, 11 Feb 2020*

## **Indian DRDO developing Pranash, a new 200km strike range ballistic missile**

The Defence Research and Development Organisation (DRDO) has started working on the development of the Pranash, a 200-km range surface-to-surface ballistic missile that would be armed with conventional warheads.

The trials of the single-stage, solid-propellant missile should take place in the forthcoming years. It would also be readied for exports to friendly foreign countries as its strike range is within the permissible limits of international regimes on missile sales.

The Pranash is an advanced version of the 150-km strike range Prahara missile which was designed for tactical missions. The surface-to-surface ballistic missile will be of use for the Air Force and Army.



Prahara was developed to provide a cost-effective, quick-reaction, all-weather, all-terrain, highly accurate battlefield support tactical weapon system. The development of the missile was carried out by the DRDO scientists in a span of less than two years. The maneuvering capability, greater acceleration, better accuracy and faster deployment fills the short-range tactical battlefield role as required by the Indian Army to take out strategic and tactical targets. The mobile launch platform carries six missiles that can be deployed in stand-alone and canisterised mode, which can have different kind of warheads meant for different targets and can be fired in salvo mode in all directions covering the entire azimuth plane. This solid-fueled missile can be launched within 2–3 minutes without any preparation, providing significantly better reaction time than liquid-fueled Prithvi ballistic missiles and act as a gap filler in the 150 km (93 miles) range, between the Pinaka Multi Barrel Rocket Launcher and Smerch MBRL in one end and the Prithvi ballistic missiles on the other.

[https://www.armyrecognition.com/february\\_2020\\_global\\_defense\\_security\\_army\\_news\\_industry/indian\\_drdo\\_developing\\_pranash\\_a\\_new\\_200km\\_strike\\_range\\_ballistic\\_missile.html](https://www.armyrecognition.com/february_2020_global_defense_security_army_news_industry/indian_drdo_developing_pranash_a_new_200km_strike_range_ballistic_missile.html)

## **DRDO working with 1,800 industries: G. Satheesh**

Lucknow: Defence Research and Development Organisation (DRDO) is working closely with 1,800 industries, working on modern technologies to produce weapons which will be handed over to the army, said G. Satheesh Reddy, Chairman, DRDO.

Reddy in an exclusive interview to IANS said "Make in India is an opportunity for DRDO. It works on indigenous technology. So far we have manufactured a number of defence products in collaboration with several industries. Manufacturing of Akash Missile in Rs 2,500 crore is a great example of this. Along with this we are working with 1,800 Industries."

He said, "These industries are running Tier-1, 2, 3 type industries by taking some technology from us. So far, we have transferred over 900 technologies to the industries. Today (on Sunday) also 1,500 technologies have been transferred to 17 industries. So far, this year, we have transferred 40 technologies to Indian Industries."

Reddy said, "The industry manufactures defence products with the help of our technology, this is Make in India. With this the DRDO's work in India will continue to grow. We are also working on developing many new technologies, so that better defence products can be manufactured. The goal is to equip the Indian Army with these high quality defence products. After that we are also looking forward to export them."

Speaking about the new product of the DRDO, he said "We have many projects going on at one time. Currently, we are working on LCA Mork-2, LCA for Indian Navy, tank technology, radar technology, anti-tank missile equipped with innovative technology etc. Work on some small defence products is also going on including projects like SDR, laser products etc."

He said that technology is also being developed to deal with the drones too. DRDO is developing anti-drone technology, which will be handed over to the armed forces.

Talking about space war, Reddy said "Prime Minister Narendra Modi in his speech said that India is a peace loving country and we have to reduce the need of weapons used in space. We will continue to work for the good of the society by using these technologies in a positive way."

He said, "DRDO has more than 500 defence products. Big missiles are been manufactured by using small technologies. We have included many missile and radar models here, including Mission Shakti missile, Nirbhay missile. Torpedo technology has been specially showcased. All these technologies are attracting foreign visitors. A lot of people are showing interest in it which is a positive trend." (IANS)

<https://www.newkerala.com/news/2020/21531.htm>



## Process for procuring Indian anti-tank guided missiles begins

*The army has promised the industry an assured order of 101 launchers and 2330 missiles if the trials are successful but the potential orders in the coming decade could be ten times this number. For example, just last year the army cleared the purchase of 5,000 of the older generation Milan 2T missiles to replenish stocks*

*By Manu Pubby*

New Delhi: Seeking to cut down the import bill, the army has kicked started a process to order new anti-tank guided missiles (ATGM) from the Indian industry, preferring the domestic route for over 2,000 missiles, a number that could grow exponentially given its requirements.

The third generation ATGM project, which will replace thousands of Milan and Konours missiles that are currently in service, is being looked at keenly by the private sector, with some companies in advanced stages of prototype development.

The army has asked Indian companies – both private and public sector players like Bharat Dynamics Ltd – to submit their 'expression of interest' in the programme, which will be followed by the tendering process, trials and evaluations and commercial negotiations. Spelling out its requirements, the army said the present anti tank capabilities have been in service for more than three decades and there is a need to catch up with other armed forces across the world that have third generation missiles.



“These systems have better accuracy, enhanced lethality, a higher kill probability, day and night operation capability and ensure better survivability for the operating crew,” an army document on the requirement says, inviting Indian vendors to develop a prototype to offer for testing.

While there are a handful of Indian companies that claim to have the technology, the army is open to them having a foreign collaborator as long as there is a minimum of 40% indigenous content (IC) as the contract will be processed under the Indigenous Designed and Manufactured (IDDM) category.

The army has promised the industry an assured order of 101 launchers and 2330 missiles if the trials are successful but the potential orders in the coming decade could be ten times this number. For example, just last year the army cleared the purchase of 5,000 of the older generation Milan 2T missiles to replenish stocks.

To meet immediate needs, the army has placed an emergency order for third generation missiles on Israel’s Rafael. The order is for 210 missiles and a dozen launchers and is being processed on the fast track basis.

Indian companies like the Kalyani Group and VEM Technologies have already initiated work on the systems, with others like Solar Industries also in the reckoning. Not to be left behind, the state owned BDL, which has manufactured the Milan series of missiles in India, too is ready with an offering. BDL launched its ‘Amogha III’ ATGM at the just concluded DefExpo in Lucknow.

<https://economictimes.indiatimes.com/news/defence/process-for-procuring-indian-anti-tank-guided-missiles-begins/articleshow/74073698.cms>

## Defence, aerospace get Rs 1,800 cr FDI in 5 years

*The government had also announced two defence corridors-- in Tamil Nadu and Uttar Pradesh*

*By Sangeetha G*

- *While the country attracted FDI valued around \$286 billion in the past five years across sectors, defence and aerospace, which were projected as high potential sectors under 'Make in India', could grab only a measly Rs 1,834 crore, according to government data released on Monday*

Chennai: Defence and aerospace sectors, the corner stones of the government's ambitious Make in India programme, garnered relatively miniscule foreign direct investment (FDI) in the last five years.

While the country attracted FDI valued around \$286 billion in the past five years across sectors, defence and aerospace, which were projected as high potential sectors under 'Make in India', could grab only a measly Rs 1,834 crore, according to government data released on Monday.

"As per the data furnished by 79 companies operating in Defence and Aerospace sector, so far, FDI inflows of over Rs 1,834 crore have been reported after 2014 under both government and automatic route," it said.

In May 2001, the defence sector, until then reserved for the public sector, was opened up for 100 per cent Indian private sector participation and foreign direct investment up to 26 per cent.

Further, the government later allowed FDI up to 49 per cent under the automatic route and above 49 per cent through the government route wherever it is likely to result in access to modern technology or for other reasons to be recorded.

The government had envisaged that by allowing higher FDI in the defence sector, the global companies having high-end technologies can be encouraged to set up their manufacturing base in India in collaboration with Indian companies, thereby, resulting in creation of employment opportunities, saving foreign exchange and increasing indigenisation.

The government had also announced two defence corridors-- in Tamil Nadu and Uttar Pradesh. While launching the Tamil Nadu Aerospace and Defence Industrial Policy at the Global Investors Meet in Chennai in January 2019, the then defence minister Nirmala Sitharaman had said: "...by announcing the corridor, we have invited quite a lot of manufacturers from abroad to come, choose the location where they want to establish their unit and start producing defence equipment". But the investments are still nothing worth writing home about.

<https://www.asianage.com/business/economy/110220/defence-aerospace-get-rs-1800-cr-fdi-in-5-years.html>

## **Govt issues show-cause notice to Reliance Naval after encashing all bank guarantees in patrol vessel contract**

*By Rajat Pandit*

New Delhi: In fresh punitive action against the Anil Ambani-promoted Reliance Naval and Engineering Limited (R-Naval) for its failure to deliver five naval offshore patrol vessels (NPOVs) under a Rs 2,500 crore deal, the government has issued a show-cause notice to the debt-ridden company and encashed all its different bank guarantees worth around Rs 980 crore.

Defence ministry sources on Monday said R-Naval will have to explain within a month why the contract inked in May 2011, under which the five 2,000-tonne NPOVs were to be delivered from 2014-2015 onwards, should not be cancelled forthwith.

“Not a single NOPV has been delivered till now. The government’s interests had to be secured by encashing the different bank guarantees collectively worth Rs 980 crore, which will cover all the advances given in the deal. It was done a few days ago,” said a source.

R-Naval had earlier been taken to the National Company Law Tribunal (NCLT) by the IDBI Bank for debt-resolution, with the latter also recently filing an application to initiate insolvency proceedings against the company. A Reliance official, on being contacted, did not offer any immediate comment to the development.

R-Naval had inherited the contract for the NOPVs, the largest such warship deal awarded to the private sector, after it acquired Pipavav Defence and Offshore Engineering Company Ltd, which had gone under heavy debt, in 2015.

The work at the Pipavav shipyard in Gujarat had earlier come to a grinding halt but there was some progress after R-Naval took over the reins, with the first two NOPVs, Shachi and Shruti, being “launched” in July 2017.

The patrol vessels, armed with 76mm super-rapid gun mount systems along with two 30mm AK-630M guns, were supposed to be tasked with surveillance of the country’s vast Exclusive Economic Zone as well as anti-piracy patrols, coastal security operations and protection of shipping lanes.

R-Naval had also announced grandiose plans of constructing even bigger warships and submarines for the Indian Navy as well as servicing and repairing warships of the US Navy’s Seventh Fleet stationed in Japan. But no such plans have actually materialized on the ground.

In December 2018, the then Navy chief Admiral Sunil Lanba had dismissed any talk of “preferential treatment” being given to R-Naval, stressing that some of its bank guarantees were being encashed as a penalty against failure to deliver the OPVs in time. “The encashing of all the bank guarantees has taken place now, along with the decision to issue the show-cause notice,” said the source.

<https://timesofindia.indiatimes.com/india/govt-turns-heat-on-anil-ambanis-reliance-naval/articleshow/74072617.cms>



## US approves sale of integrated air defence weapon system to India for

Washington: The US has approved the sale of an Integrated Air Defence Weapon System to India for an estimated cost of USD 1.9 billion to modernise its armed forces and to expand its existing air defence architecture to counter threats posed by air attacks.

The Trump Administration has notified to the US Congress of its determination to sell India the Integrated Air Defence Weapon System (IADWS), the Defence Security Cooperation Agency said Monday. The entire system is estimated to cost USD 1.867 billion, the State Department has told the Congress in a notification.

"India intends to use these defence articles and services to modernise its armed forces, and to expand its existing air defence architecture to counter threats posed by air attack, the State Department said. The proposed sale comes amidst the massive military modernisation by China which is also flexing its military muscles in the strategic Indo-Pacific region.

It also comes ahead of a possible visit by President Donald Trump to India later this month.

Trump is set to visit India on a two-day trip between February 23 and 26 and both sides are in the process of fine-tuning his schedule, according to sources in New Delhi.

India and the US are set to seal a trade deal during Trump's planned visit, they said.

The proposed sale IADWS will contribute to India's military goal to update its capability while further enhancing greater interoperability between India, the US, and other allies, the State Department added. According to the notification, India had requested to the US to buy an IADWS. The request was for five AN/MPQ-64F1 Sentinel radar systems; one hundred eighteen AMRAAM AIM-120C-7/C-8 missiles; three AMRAAM Guidance Sections; four AMRAAM Control Sections; and one hundred thirty-four Stinger FIM-92L missiles.

Also included are thirty-two M4A1 rifles; 40,32) M855 5.56mm cartridges; Fire Distribution Centers (FDC); Handheld Remote Terminals; Electrical Optical/Infrared (EO/IR) Sensor Systems; AMRAAM Non-Developmental Item-Airborne Instrumentation Units (NDIAIU); Multi-spectral Targeting System-Model A (MTS-A); and Canister Launchers (CN); High Mobility Launchers (HML). Also included are thirty-two M4A1 rifles; 40,32) M855 5.56mm cartridges; Fire Distribution Centers (FDC); Handheld Remote Terminals; Electrical Optical/Infrared (EO/IR) Sensor Systems; AMRAAM Non-Developmental Item-Airborne Instrumentation Units (NDIAIU); Multi-spectral Targeting System-Model A (MTS-A); and Canister Launchers (CN); High Mobility Launchers (HML).

Among other things included in the comprehensive sale is Dual Mount Stinger (DMS) Air Defence Systems; and Vehicle Mounted Stinger Rapid Ranger Air Defence Systems.

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

*(This story has not been edited by Business Standard staff and is auto-generated from a syndicated feed.)*

[https://www.business-standard.com/article/pti-stories/us-approves-sale-of-integrated-air-defence-weapon-system-to-india-for-120021001720\\_1.html](https://www.business-standard.com/article/pti-stories/us-approves-sale-of-integrated-air-defence-weapon-system-to-india-for-120021001720_1.html)

## भारत को एकीकृत वायु रक्षा हथियार प्रणाली देगा अमेरिका, 13,000 करोड़ रुपये का है यह सौदा

**भारत के अनुरोध पर अमेरिका आइएडीडब्ल्यूएस को बेचने पर राजी हुआ है।**

**भारत 1.9 अरब डॉलर (लगभग 13000 करोड़ रुपये) में यह सौदा कर रहा है।**

**वाशिंगटन:** अमेरिका भारत को एकीकृत वायु रक्षा हथियार प्रणाली (आइएडीडब्ल्यूएस) बेचेगा। वायु हमलों के खतरों से निपटने, वायु रक्षा प्रणाली को मजबूत करने और अपने सशस्त्र बलों को अत्याधुनिक बनाने की दिशा में भारत 1.9 अरब डॉलर (लगभग 13,000 करोड़ रुपये) में यह सौदा कर रहा है। बता दें कि इससे पहले भारत ने रूस से पांच अरब डॉलर (लगभग 35000 करोड़ रुपये) में पांच एस-400 वायु रक्षा प्रणाली खरीदने का समझौता किया था, जिसको लेकर अमेरिका ने नाराजगी भी जताई थी।

**ट्रंप प्रशासन ने अमेरिका संसद को अपने फैसले की दी जानकारी**

डिफेंस सिक्योरिटी कोऑपरेशन एजेंसी ने सोमवार कहा कि ट्रंप प्रशासन ने भारत को यह रक्षा प्रणाली बेचने के अपने फैसले के बारे में अमेरिकी संसद कांग्रेस को जानकारी दे दी है।

**13,000 करोड़ रुपये का है सौदा**

विदेश मंत्रालय ने अमेरिकी संसद को अधिसूचित किया है कि यह सौदा लगभग 1.867 अरब डॉलर का है। मंत्रालय ने कहा है कि भारत इस हथियार प्रणाली से अपने सशस्त्र बलों को अत्याधुनिक और हवाई हमलों के खतरों से अपनी रक्षा को मजबूत बनाना चाहता है।

**यूएस द्वारा भारत को हथियार बिक्री का प्रस्ताव ऐसे समय आया जब चीनी सेना अत्याधुनिक हो रही**

अमेरिका द्वारा भारत को यह प्रस्तावित हथियार बिक्री ऐसे समय में सामने आया है, जब चीन अपनी सेना को अत्याधुनिक बनाने की मुहिम में लगा है। यही नहीं वह सामरिक नजरिए से महत्वपूर्ण भारत-प्रशांत क्षेत्र में अपनी ताकत का प्रदर्शन भी कर रहा है।

**इस महीने के आखिर में ट्रंप की भारत यात्रा भी संभावित है**

अमेरिकी राष्ट्रपति डोनाल्ड ट्रंप की इस महीने के आखिर में भारत की संभावित यात्रा को देखते हुए भी यह फैसला महत्वपूर्ण है। ट्रंप 23 और 26 फरवरी के बीच भारत की दो दिन की यात्रा पर आ सकते हैं। ट्रंप की यात्रा के दौरान दोनों देशों के बीच व्यापार समझौते पर भी मुहर लगने की उम्मीद है।

**इस सौदे में भारत को क्या-क्या मिलेगा**

भारत के अनुरोध पर अमेरिका आइएडीडब्ल्यूएस को बेचने पर राजी हुआ है। इस हथियार प्रणाली में कौन-कौन से हथियार हैं इस पर नजर डालते हैं। इसमें पांच एएन/एमपीक्यू-64एफ1 सेंटिनल रडार सिस्टम, 118 एमराम एआइएम-120सी-7/सी-8 मिसाइल, तीन एमराम गाइडेंस सेक्शन, चार एमराम कंट्रोल सेक्शन और 134

स्टिंगर एफआइएम-92एल मिसाइल शामिल है। इसके अलावा 32 एम4ए1 राइफल, मल्टी-स्पेक्ट्रल टारगेटिंग सिस्टम-मॉडल ए भी शामिल है।

<https://www.jagran.com/world/america-us-to-give-integrated-air-defense-weapon-system-to-india-this-deal-worth-rs-13000-crore-20019633.html>

## THE ECONOMIC TIMES

Tue, 11 Feb 2020

# India readying \$2.6 billion U.S. Naval helicopter deal ahead of Trump trip

*Prime Minister Modi's cabinet committee on security is expected to clear the purchase of 24 MH-60R Seahawk helicopters for the Indian navy in the next two weeks, a defence official and an industry source briefed on the matter separately told Reuters. "It's a government-to-government deal, it is close," said the industry source*

New Delhi: India is set to give final approval to a \$2.6 billion deal for military helicopters from U.S. defence firm Lockheed Martin ahead of a proposed visit by U.S. President Donald Trump this month, defence and industry sources said.

Prime Minister Narendra Modi's government is trying to pull out all the stops for Trump's trip in a bid to reaffirm strategic ties between the two countries, which have been buffeted by sharp differences over trade, to counter China.

India's defence purchases from the United States have reached \$17 billion since 2007 as it has pivoted away from traditional supplier Russia, looking to modernise its military and narrow the gap with China.

Modi's cabinet committee on security is expected to clear the purchase of 24 MH-60R Seahawk helicopters for the Indian navy in the next two weeks, a defence official and an industry source briefed on the matter separately told Reuters.

"It's a government-to-government deal, it is close," said the industry source.

To cut short lengthy negotiations between Lockheed and the Indian government, the helicopters that will be deployed on India's warships will be bought through the U.S. foreign military sales route, under which the two governments will agree details of the deal.

Trump is expected in India around Feb 24 on his first official visit to the country, although no formal announcement has yet been made.

Both countries are separately working on a limited trade agreement ahead of the trip, after earlier imposing tit-for-tat tariffs on each other's imports.

Trump has called India the "tariff king of the world" but the Modi government has been trying to address some of his concerns. Trade officials have pointed to large-scale U.S. arms purchases, from surveillance planes to Apache and Chinook helicopters, as proof of India's willingness to tighten strategic ties.

The multirole helicopters will be equipped with Hellfire missiles and are meant to help the Indian navy track submarines in the Indian Ocean, where China is expanding its presence.



Many of India's warships are without any helicopters because of years of underfunding, and the navy had sought their acquisition as a top priority.

The government outlined only a modest rise in its 2020/21 defence spending to \$73.65 billion in the budget on Feb. 1, of which a part will go towards making a down payment on the helicopter purchase, a defence official said.

"We expect a positive announcement soon on the helicopters," the official said, speaking on condition of anonymity because of service rules. "There are limited resources, but there is an allocation."

The U.S. State Department approved the sale of the choppers to India last year along with radars, torpedoes and 10 AGM-114 Hellfire missiles.

The clearance came after the Trump administration rolled out a new "Buy American" plan in 2018 that had relaxed restrictions on sales, saying it would bolster the American defence industry and create jobs at home.

The United States has also offered India the armed version of Guardian drones that were originally authorized for sale as unarmed for surveillance purposes, the first such approval for a country outside the NATO alliance.

India plans to buy 30 of these unmanned aircraft for surveillance of the Indian Ocean, at a cost estimated to be about \$2.5 billion, from General Atomics. However, the defence official said the deal is unlikely immediately because of lack of funds.

<https://economictimes.indiatimes.com/news/defence/india-readying-2-6-billion-u-s-naval-helicopter-deal-ahead-of-trump-trip/articleshow/74070053.cms>



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## **ISRO's space station and human mission programme: US companies keen on space collaboration with India**

*Space agencies of the two countries will be launching the jointly developed NASA-ISRO Synthetic Aperture Radar (NISAR) satellite in 2022*

*By Huma Siddiqui*

Topping the agenda of talks between India and the US leaders later this month will be potential space defence cooperation as well as deeper cooperation between Indian Space Research Organisation and the American Space Agency NASA. Besides lunar exploration and working on the Space Station, the two space agencies are seeking deeper cooperation in interplanetary and cooperation in the human space flight and Space Station. According to a senior officer who wished to remain anonymous "When the US President Donald Trump visits India later this month (dates have not been officially confirmed) Space Cooperation between ISRO and NASA and related areas will be on the agenda of talks at the delegation-level."

So far ISRO's Polar Satellite Launch Vehicle (PSLV) has been the chosen one as a low-cost launch option for the small satellites built by the American private sector. In September 2015, ISRO has launched four LEMUR remote sensing satellites, followed by the launch of several satellites built by the American private sector onboard Polar Satellite Launch Vehicle (PSLV). Last year, around thirteen commercial nanosatellites from the US were launched on PSLV.

Space agencies of the two countries will be launching the jointly developed NASA-ISRO Synthetic Aperture Radar (NISAR) satellite in 2022.

### **Beyond Launches**

India and the US has already been started working together in the Satellite Navigation (SatNav). The US Congress has in principle decided to designate the Indian Regional Navigation Satellite System (IRNSS) or better known as the NavIC as an “allied system”.

After the rigorous selection process for the first-ever manned mission Gaganyaan in 2022, four Indian astronauts will be going to Russia for advanced training. This is under the agreement between the Roscosmos State Corporation for Space Activities and ISRO. As part of the training, under this agreement, the Indian astronauts will go on a short visit to the International Space Station (ISS) on board a Soyuz spacecraft.

The US Space Agency NASA too is expected to play an important role in the Human Mission of ISRO by sharing its expertise as well as training facilities.

According to the joint statement released at the end of the second India-US 2+2 Dialogue last winter, both sides recognized space cooperation, including on Earth science and lunar exploration, as a critical component of the India-US relations.

### **India’s Space Diplomacy**

In the recent years Space diplomacy has become a very important part of International Security. India offers not only economically feasible satellite launches, but has achieved major successes in the Space Sector including the Mars Mission. This itself has become a major attraction for the countries including the US, Russia, Japan, and China.

### **ISRO’s plan for the Space Station**

According to sources, “Two top US companies are in talks with ISRO and want to be part of Space Station Programme of ISRO and other related areas of the Human Mission. The talks are in preliminary stages.”

India will become a member of the elite club of countries once it has its own space station.

### **What is a Space Station?**

It is an artificial satellite in low Earth Orbit and functions as a Space Station. So far there is only one International Space Station. This spacecraft has the capability to support the crew members and can stay in space for an extended period.

<https://www.financialexpress.com/lifestyle/science/isros-space-station-and-human-mission-programme-us-companies-keen-on-space-collaboration-with-india/1863246/>



## Solar Orbiter probe blasts off to capture first look at Sun's poles: NASA

Washington: The European Space Agency (ESA) and NASA's Solar Orbiter spacecraft on Monday rocketed into space on a historic mission to provide humanity with the first-ever images of the Sun's elusive poles, the US space agency said.

The USD 1.5 billion spacecraft launched aboard a United Launch Alliance Atlas V rocket from Launch Complex 41 at Cape Canaveral Air Force Station in Florida, NASA said in a statement.

Early Monday, mission controllers at the European Space Operations Centre in Germany, received a signal from the spacecraft indicating that its solar panels had successfully deployed, it said.

In the first two days after launch, Solar Orbiter will deploy its instrument boom and several antennas that will communicate with the Earth and gather scientific data, according to NASA.

Solar Orbiter is on a unique trajectory that will allow its comprehensive set of instruments to provide humanity with the first-ever images of the Sun's poles, the US space agency said.

This trajectory includes 22 close approaches to the Sun, bringing the spacecraft within the orbit of Mercury to study the Sun, and its influence on space, it said.

"As humans, we have always been familiar with the importance of the Sun to life on Earth, observing it and investigating how it works in detail, but we have also long known it has the potential to disrupt everyday life should we be in the firing line of a powerful solar storm," said Gunther Hasinger, ESA director of Science.

"By the end of our Solar Orbiter mission, we will know more about the hidden force responsible for the Sun's changing behaviour and its influence on our home planet than ever before," Hasinger said.

Solar Orbiter will spend about three months in its commissioning phase, during which the mission team will run checks on the spacecraft's 10 scientific instruments to ensure they are working properly.

It will take Solar Orbiter about two years to reach its primary science orbit, according to the US space agency.

Solar Orbiter combines two main modes of study. In-situ instruments will measure the environment around the spacecraft, detecting such things as electric and magnetic fields, and passing particles and waves.

The remote-sensing instruments will image the Sun from afar, along with its atmosphere and its outflow of material, collecting data that will help scientists understand the Sun's inner workings.

During the mission's cruise phase, which lasts until November 2021, the spacecraft's instruments will gather scientific data about the environment around the spacecraft.

The remote-sensing telescopes will focus on calibration to prepare for science operations near the Sun, NASA said.

The cruise phase includes three gravity assists that Solar Orbiter will use to draw its orbit closer to the Sun: two past Venus in December 2020, and August 2021, and one past Earth in November 2021, it said.

Following its Earth gravity assist, Solar Orbiter will begin the primary phase of its mission -- leading up to its first close pass by the Sun in 2022 -- at about a third the distance from the Sun to the Earth.

Throughout its mission, Solar Orbiter will use successive Venus gravity assists to draw its orbit closer to the Sun, and lift it out of the ecliptic plane.

Solar Orbiter's unique orbit will bring the spacecraft out of the plane that roughly aligns with the Sun's equator where Earth and the other planets orbit.

Spacecraft launched from the Earth naturally stay in this plane, which means that telescopes on the Earth and those on satellites have limited views of the Sun's north and south poles.

A previous ESA-NASA mission, Ulysses, launched in 1990, achieved an inclined orbit, giving scientists their first measurements of the space around the Sun in this critical region.

Unlike Ulysses, Solar Orbiter carries cameras that will provide the first-ever images of the Sun's poles.

This vital information, NASA said, will help scientists fill in the gaps in models of the Sun's magnetic field, which drives the Sun's activity.

"Solar Orbiter is going to do amazing things. Combined with the other recently launched NASA missions to study the Sun, we are gaining unprecedented new knowledge about our star," said Thomas Zurbuchen, NASA's associate administrator for Science at the agency's headquarters here.

"Together with our European partners, we are entering a new era of heliophysics that will transform the study of the Sun, and help make astronauts safer as they travel on Artemis programme missions to the Moon," Zurbuchen said.

*(This story has not been edited by Business Standard staff and is auto-generated from a syndicated feed.)*

[https://www.business-standard.com/article/pti-stories/solar-orbiter-probe-blasts-off-to-capture-first-look-at-sun-s-poles-nasa-120021001212\\_1.html](https://www.business-standard.com/article/pti-stories/solar-orbiter-probe-blasts-off-to-capture-first-look-at-sun-s-poles-nasa-120021001212_1.html)