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रक्षा विज्ञान पुस्तकालय
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नवभारत टाइम्स

Fri, 06 Dec 2019

रक्षा मंत्रालय ने पांच साल में भारतीय कंपनियों को 1,96,000 करोड़ रुपये के ठेके दिए

नयी दिल्ली: रक्षा मंत्रालय ने 2014 से अब तक भारतीय कंपनियों को 180 से ज्यादा ठेके दिए हैं। इन अनुबंधों का मूल्य 1,96,000 करोड़ रुपये से अधिक है। मंत्रालय ने बृहस्पतिवार को जारी बयान में पिछले पांच सालों में हुए कुछ बड़े रक्षा अनुबंधों से जुड़ी जानकारियां भी साझा की है। मंत्रालय का यह बयान ऐसे समय आया है जब इस बात की आलोचना की जा रही है कि ' मेक इन इंडिया ' कार्यक्रम रक्षा क्षेत्र में सफल नहीं रहा। बयान में कहा गया है , " रक्षा मंत्रालय ने 2014 से भारतीय उद्योग के साथ 1,96,000 करोड़ रुपये से अधिक मूल्य के 180 से ज्यादा अनुबंधों पर हस्ताक्षर किए हैं जबकि भविष्य में कुछ अनुबंधों पर हस्ताक्षर होने हैं। " रक्षा मंत्रालय ने कहा कि पी 17 ए परियोजना के तहत भारतीय नौसेना के लिए युद्धपोत बनाने के लिए मिजोरम डॉकयार्ड लिमिटेड (एमडीएल) को फरवरी 2015 में 45,000 करोड़ रुपये का ठेका दिया गया है। इसके अलावा , अक्टूबर 2018 में दो युद्धपोत के निर्माण के लिए गोवा शिपयार्ड लिमिटेड के साथ अनुबंध किया गया था। इसका मूल्य 14,100 करोड़ रुपये है। बयान में कहा गया है कि भारतीय वायुसेना के लिए 41 एडवांस्ड लाइट हेलीकॉप्टर (एएलएच) और भारतीय नौसेना के लिए 32 एएलएच बनाने के लिए हिन्दुस्तान एरोनॉटिक्स लिमिटेड को 2017 में कुल 14,100 करोड़ रुपये के ठेके दिए गए हैं। यह फरवरी 2015 में एचएएल के साथ 1100 करोड़ रुपये के 14 ड्रोनियर 228 विमानों की खरीद के लिए किए गए अनुबंध से अलग है। मंत्रालय ने कहा कि भारत इलेक्ट्रॉनिक्स लिमिटेड (बीईएल) से आकाश मिसाइल प्रणाली के सात स्कवैड्रन खरीदे जा रहे हैं। इसका मूल्य 6,300 करोड़ रुपये है। इससे अलग , 7,900 करोड़ रुपये के अनुबंध के तहत एकीकृत उन्नत कमांड एवं नियंत्रण प्रणाली (आईएसीसीएस) खरीदी जा रही है। मंत्रालय ने कहा , " सरकार की ' मेक इन इंडिया ' पहल के अंतर्गत एलएंडटी से सौ 155 x 52 एमएम स्वचालित तोपों की खरीदी जा रही हैं। इसका मूल्य 4,300 करोड़ रुपये है। "

https://navbharattimes.indiatimes.com/business/business-news/ministry-of-defense-awarded-contracts-worth-rs-196000-crore-to-indian-companies-in-five-years/articleshow/72389717.cms

THE HINDU

Fri, 06 Dec 2019

Firepower by India, for India

Defence deals worth **₹33,000 crore** have been placed with the Ordnance Factory Board and Bharat Electronics Limited in the last two months, according to the Ministry of Defence

Supplier: Ordnance Factory Board

T-90 tanks are built by OFB under license from Russia

464 T-90S/ SK tanks
₹19,100 crore

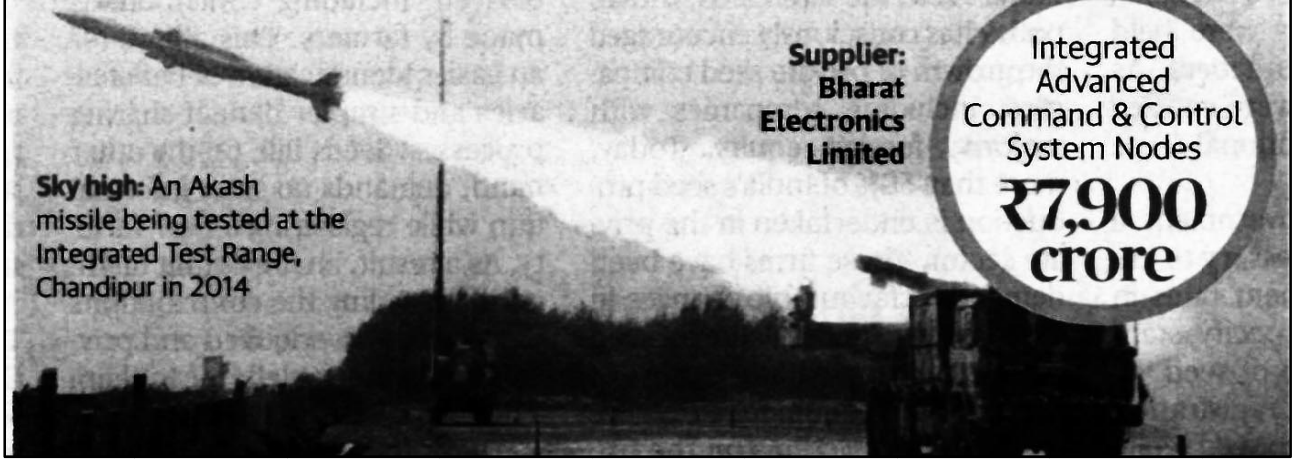
Akash surface to air missiles
₹6,300 crore

Supplier: Bharat Electronics Limited

Akash has been indigenously developed by the Defence Research and Development Organisation

IN PIPELINE:
A contract for modernisation of airfield infrastructure, to be executed through Indian vendors, is set to be signed soon

MAKE IN INDIA:
MoD has signed over 180 contracts, valued at over ₹1,96,000 crore, with Indian industry since 2014, while a few are set to be signed



Sky high: An Akash missile being tested at the Integrated Test Range, Chandipur in 2014

Supplier: Bharat Electronics Limited

Integrated Advanced Command & Control System Nodes
₹7,900 crore

the pioneer

Fri, 06 Dec 2019

Def Ministry signed 180 contracts

New Delhi: In an effort to sustain the pace of modernisation of the armed forces, the Defence Ministry has signed more than 180 contracts valued at over Rs 1,96,000 crore with the Indian Industry since 2014 while a few are in the pipeline to be signed in near future.

A contract for manufacture of Frigates under Project P 17A was signed in February 2015 with Mazagon Dockyards Limited (MDL), Mumbai valued at Rs 45,000 crores while 02 Frigates under Project P1135.6 are slated to be manufactured by Goa Shipyard Limited (GSL) under a contract signed in Oct 2018 valued at Rs 14,100 Crore.

Further, contracts for manufacture of 41 Advanced Light Helicopters for Indian Air Force (IAF) and 32 ALH for Indian Navy (IN) have been signed with Hindustan Aeronautics Limited (HAL) in March 2017 and Dec 2017 with a combined value of Rs 14,100 crore. This is in addition to procurement of 14 Dornier 228 aircrafts from M/s HAL valued at Rs 1100 crore through a contract signed in February 2015.

Seven Squadrons of Akash Missile System are being procured from BEL through a contract of October 2019 valued at Rs 6,300 crore as also the Integrated Advanced Command and Control System (IACCS) Nodes valuing Rs 7,900 crore. OFB has been tasked to supply 464 T-90S/SK tanks worth Rs 19,100 crore for which indent has been placed on it by the Ministry as recently as November 2019.

Also 100 units of 155x52mm cal Self-Propelled Guns are being procured under the 'Make in India' initiative of the Government from L&T valued at Rs 4,300 crore. Also Contract for Modernisation of Airfield Infrastructure (MAFI) to be executed through Indian vendors is under final stages of contracting.

https://www.dailypioneer.com/2019/india/def-ministry-signed-180-contracts.html

ThePrint

Fri, 06 Dec 2019

India has no plans for another anti-satellite missile test, but will improve tech

India proved its A-SAT capability on 27 March when it knocked off one of its own satellites 300 km in space. However, the Chinese threat still persists

By Snehesh Alex Philip

New Delhi: India is not planning to carry out a second test of its anti-satellite (A-SAT) missile, either in lower or higher orbits, after the maiden test earlier this year ticked off all the checkboxes, ThePrint has learnt.

However, work will continue on improving the missile and technology, said sources.

"There is no second A-SAT test that is being planned. The first test was fully successful. We have proven our capability to the world. Fine-tuning of the systems will of course take place to provide it with more lethality," a top government official told ThePrint.

India had successfully test-fired an anti-satellite missile on 27 March, knocking off one of its own satellites 300 km in space, thereby joining a small group of countries — the US, Russia and China — to possess such a capability.

Soon after, Defence Research and Development Organisation (DRDO) Chairman G. Sateesh Reddy ruled out future A-SAT missile tests in the lower Earth orbit, but hinted at keeping the options open for possible experiments in higher orbits.

Reddy said the interceptor used for the A-SAT missile test had the capability to hit targets 1,000 km away, but DRDO had intentionally chosen the target at an altitude of 283 km to prevent the creation of space debris.

The interceptor missile was a three-stage missile with two solid rocket boosters.

While there are other ways to demonstrate A-SAT capabilities such as “fly-by tests” and jamming, India had relied on the “kinetic kill technology”.

The main challenger

Officials have said in the past that Indian scientists moved towards the A-SAT test after China proved its capabilities in space and conducted the test in 2007 at an altitude of 865 km.

The Indian A-SAT technology came as a by-product of the Ballistic Missile Defence Programme.

In the mid-2000s, India secured Swordfish, an Indian active electronically scanned array (AESA) long-range tracking radar, specifically developed to counter the ballistic missile threat.

The radar is a derivative of the Israeli Green Pine long-range radar, which is a critical component of the country’s Arrow missile defence system.

During trials for the anti-ballistic missile systems, DRDO noticed that the radar was so powerful that it could even track satellites in lower Earth orbits of about 600 km.

When China carried out its test, the DRDO rushed to the government stating that it too could develop such a missile.

Given the wide condemnation that China attracted, the DRDO was asked by the government to focus on the anti-ballistic missile systems.

Chinese threat

While India has proved its space capabilities now, the Chinese threat persists.

In a review of Indian A-SAT missile test, think tank Carnegie Endowment for International Peace said the Chinese counter-space strategy since 2007 has clearly shifted in the direction of emphasising nondestructive means of space denial whenever possible.

“The available evidence suggests that China is currently pursuing several different alternatives, all of which singly or in combination would deeply threaten India’s ability to use space for civilian or military purposes in crises or in wartime,” it said.

It also noted that China’s counter-space capabilities are wide-ranging, highly diverse, and span the entire intersection of lethality and reversibility.

This includes capability to carry out sophisticated cyber attacks directed at ground stations with the intent of either corrupting or hijacking the telemetry, tracking, and command systems used to control various spacecraft on orbit.

“They also involve huge investments in developing ground-, air-, and space-based radio frequency jammers that target the uplinks, downlinks, and crosslinks involved in either the control of space systems or the transmission of data arising from various space system activities,” the think tank said.

https://theprint.in/defence/india-has-no-plans-for-another-anti-satellite-missile-test-but-will-improve-tech/330831/

Fri, 06 Dec 2019

Govt says 194 defence tech startups under 'Startup India'; reveals iDEX data

By Aman Rawat

- ***These startups are working in aeronautics, aerospace and defence sectors***
- ***Government has launched Innovations for Defence Excellence framework to achieve self-reliance in defence sector***
- ***DRDO has launched the Technology Development Fund under the Make In India initiative***

While Indian startups are leveraging new-age technologies to bring in a substantial change in the everyday lives of citizens, close to 200 startups are helping the country to boost its defence capabilities, according to the government.

In response to a question in the Lok Sabha, Shripad Naik, Minister of State for defence, said that 194 defence startups are registered with Startup India and are innovating in the aeronautics, aerospace and defence sectors.

Revealing plans about how the defence ministry is bolstering startups, Naik said that the government had launched Innovations for Defence Excellence (iDEX) framework in 2018 to achieve self-reliance and to foster innovation and technology development in defence and aerospace sector.

As of now, India is the world's largest arms importer and it is looking to reduce its reliance on defence imports with the launch of iDEX. For the iDEX framework, the defence ministry works closely with MSMEs, startups, individual innovators, research and defence institutes and academia, Naik added.

So far, 44 iDEX winners have been identified for 14 problem statements and now the government is now looking for solutions to three new problems with the third phase of Defence India Startup Challenge (DISC), recently launched under the iDEX programme.

In addition to iDEX, the defence research and development organisation (DRDO), defence ministry's R&D arm, has launched Technology Development Fund (TDF) for meeting the requirements of army, navy, and airforce. The programme was established with the aim to promote self-reliance in defence technology as part of the Make in India initiative.

Naik further said that the defence ministry has simplified the process — Make-II procedure — to promote innovative solutions working towards substituting defence imports. "The simplification will encourage wider participation of MSMEs and startups for timely acquiring of equipment into Indian armed forces," he added.

Moreover, DRDO has evolved a new industry-friendly patent policy for transfer of DRDO developed technologies to industries. The policy will help Indian startups to get free access to use DRDO patents and work on innovative solutions aimed to improve India's defence capabilities.

The Indian government is also considering funding over 250 startups over the next five years to achieve approximately 50 'tangible innovations' for the Indian defence sector. To make this into a reality, the government is currently seeking approval to allocate INR 500 Cr.

https://inc42.com/buzz/govt-says-194-defence-tech-startups-under-startup-india-reveals-idex-data/

CONSTRUCTIONWEEKONLINE

Fri, 06 Dec 2019

Land parcels identified for Tamil Nadu defence corridor project

An MoU was signed between DRDO and TIDCO

The government of Tamil Nadu has identified land parcels for the Defence Industrial Corridor. The five nodes include -- Chennai, Coimbatore, Hosur, Salem and Tiruchy -- which form the 'Defence Quadrilateral'. Around 1,500 acre have been identified between Hosur and Nallampalli in Dharmapuri.

Also, a memorandum of understanding (MoU) was signed between the Defence Research and Development Organisation (DRDO) and the Tamil Nadu Industrial Development Corporation (TIDCO).

The project will create an ecosystem where industries will be encouraged to take up more defence projects. The government is planning a Research and Development (R&D) centre in the Tamil Nadu Defence Corridor, where industries will be hand-held and groomed by Indian scientists.

In January 2019, an investment of over Rs 3,100 crore was announced by the Ordnance Factory Board/Departmental Public Sector Undertakings and private industries for the Tamil Nadu Defence Corridor. Further, the government has also appointed a consultant for preparation of a detailed project report (DPR) for the defence corridor.

"A memorandum of understanding (MoU) was signed between the Defence Research and Development Organisation (DRDO) and the Tamil Nadu Industrial Development Corporation (TIDCO)."

https://www.constructionweekonline.in/projects-tenders/11577-land-parcels-identified-for-tamil-nadu-defence-corridor-project

Stock Daily Dish

Fri, 06 Dec 2019

Defence salary bill leaves less for new weapons

Most of the scanty 6.35% rise in the defence budget is accounted for by manpower and running expenses

By Ajai Shukla

The modest 6.35% rise in defence allocations – from Rs 405,193 crore in last year's revised estimates, to Rs 431,011 crore in Friday's Budget — presents an even more worrying picture when the budget is disaggregated.

An analysis of the defence budget in a three-year window indicates that most of this scanty rise is accounted for by the revenue heads of manpower and running expenses.

Meanwhile, the important capital budget component, which funds equipment modernisation, has grown significantly slower.

From the baseline of the 2016-2017 budget to the present, three annual increments have raised spending on the three services by a total of 23%.

During this period, allocations for manpower (including salaries and pensions) have grown by 26%, while running costs have grown by 25%.

In comparison, the capital budget has grown by only 15%, averaging barely 4% each year.

This factors in allocations made to the army, navy, air force and coast guard; but not to the defence ministry, the ordnance factories and the Defence R&D Organisation.

It also assumes the defence budget will be spent in full this year, rather than returning a part of it unspent, as has happened in preceding years.

Government sources argue this year‘s capital allocation of Rs 108,248 crore cannot be increased further, since it already accounts for one-third of the central government capital expenditure of Rs 338,569 crore.

Defence industry executives also underline a compensatory factor: The benefits of customs exemption that Finance Minister Nirmala Sitharaman announced on the import of defence goods that are not made in the country.

This will make defence imports cheaper by 10.3%, which is the basic customs duty, and effectively increase the capital allocation by 5.15%, assuming half of all capital procurements are imported.

Effectively reduced by 10.3% will be the prices of Rafale fighters, P-8I maritime patrol aircraft, naval helicopters, Apache and Chinook helicopters from the US and S-400 missile systems, Krivak class frigates and a nuclear submarine in the pipeline from Moscow.

There is uncertainty over who will control the DRDO‘s research budget, which amounts to Rs 10,484 crore this year.

In her budget speech, Sitharaman announced that the government proposed to establish a National Research Foundation to ‘fund, coordinate and promote research in the country‘.

‘NRF will assimilate the research grants being given by various ministries independent of each other,‘ she said.

It is unclear whether the DRDO budget will be subsumed under this.

Besides the DRDO‘s research budget, the government allocated Rs 95 crore towards ‘Make‘ category projects, which involve Indian companies developing complex defence platforms.

Last year, the defence budget had allocated Rs 142 crore under this head, but the revised estimates brought it down to Rs 2 crore, indicating that the money had remained unspent.

The Budget has dissatisfied all three services, who believe their role entitles them to a larger share of the defence budget.

The army, by far the largest service, which is involved in counter insurgency duties year-round, notes that its share has come down over the last three years from 68.5% to 66.5% of the military budget.

The navy, which backstops the country‘s Indo-Pacific strategy and requires more warships, wants more than the 13.75% that its allocation is stagnating at.

The air force, whose budget has grown by almost 2%, wants a larger capital budget to fund a slew of fighter purchases in the pipeline.

https://stockdailydish.com/defence-salary-bill-leaves-less-for-new-weapons/

THE HANS INDIA

Fri, 06 Dec 2019

Tremendous progress made by India in indigenous growth of mechanisms to make life easier

HIGHLIGHTS

- ***India has made tremendous progress in the indigenous development of mechanisms that can make life easier for humans and also contribute to the growth…***

India has made tremendous progress in the indigenous development of mechanisms that can make life easier for humans and also contribute to the growth of the country, a leading scientist also known as the 'Missile Woman' of India' said on Thursday.

Tessy Thomas, the Director General, Aeronautical Systems at DRDO, said this at the 4th International and 19th National Conference on Machines and Mechanisms - iNaCoMM 2019 which is underway at the Indian Institute of Technology - Mandi (IIT Mandi), in Himachal Pradesh.

Thomas, who was the Chief Guest of the inauguration, said that "Indigenous development has seen tremendous progress in the past decade in mechanism as researchers have been making efforts to make life easier for humans. Indian aerospace has also contributed a lot in the growth of the country. This conference will create a forum for researchers to find solutions related to human advancements. " The conference is jointly sponsored by IIT Mandi, Indian Space Research Organisation (ISRO), Department of Science and Technology (DST), Ministry of Electronics and Information Technology (MEITY), and the Council of Scientific and Industrial Research (CSIR) among others. Researchers, including Shanti Swarup Bhatnagar Prize awardee G. K.

Ananthasuresh from IISc Bangalore, Sambit Bhattacharya from Fayetteville State University in the US, and industry experts such as Jayant Patil, Whole Time Director (Defence) at Larsen and Toubro Ltd, attended the inaugural day of the conference. The schedule for three-day conference from December 5-7 also includes poster and paper presentation events participated by B.Tech and M.Tech students from various colleges including IIT Kanpur, IIT Kharagpur, and IISc Bangalore.

The lectures and the presentations are planned to cover various topics such as the design and analysis of machines, mechanisms and robotics, machine learning (ML), and artificial intelligence (AI). "iNaCoMM 2019 is creating a cross-disciplinary summit that transcends public and private research organizations and lends itself to the integration of research and education in the vital field of machines and mechanisms, " said B D Chaudhary from the School of Computing and Electrical Engineering at IIT Mandi while addressing the gathering.

https://www.thehansindia.com/hans/young-hans/tremendous-progress-made-by-india-in-indigenous-growth-of-mechanisms-to-make-life-easier-587534

the pioneer

Fri, 06 Dec 2019

A shipless Navy

India has an ocean when other nations just have seas but it is not doing a great job of protecting its naval interests

When Admiral Karambir Singh bemoaned the lack of funds to the Navy, he stated not just a fact of life but also hinted at just how poorly India has treated its maritime force. This is peculiar given not just India's huge coastal border and the need to protect it but also the need to project itself as a power in the Indian Ocean Region (IOR). Indian interests in the IOR and that of its geographic neighbours are being challenged by the eastern neighbour giant, China, which has been busy acquiring assets across the IOR. China's "String of Pearls" is one that can potentially be used to strangulate India economically and militarily in case of a potential future conflict with assets like Gwadar in Pakistan. Sri Lanka's Hambantota Port is the most telling example of how China is developing a form of economic imperialism and the potential of deploying that against India. India's dwindling allocation to the Navy as a percentage of all defence funds has the sea service upset, and rightly so, from 18 per cent of overall funds in 2012-13 to 13 per cent in 2019-20. While some could dismiss this as inter-service rivalry and the constant jostling inside the forces for money, a reality in all large military powers, the Indian Navy is currently moth-eaten. New projects have taken eons, best exemplified by the inordinate gestation and commissioning process for the Project 15 and 15A guided missile destroyers. By the time the Project 15B 'Vishakhapatnam-class' ships come into service in 2021-22, India's 10 modern guided missile cruisers will be outnumbered by China's 34 Type 52C, 52D and Type 55 Destroyers. Even for coastal defence, a decision to purchase modern minesweepers have continued for two decades.

The Indian Navy, however, does need to share some blame with an unhealthy obsession with aircraft carriers, a need for power projection that has cost us. Carriers are inordinately expensive, take years to produce and in the Indian context, are of little tactical or strategic value against China, although things are slightly different against Pakistan. India should concentrate on rapidly building up its submarine and smaller surface vessel fleet, which with modern weapons can punch well above their weight. India is an old maritime power and we have an ocean when other nations just have seas. We should be proud of that and protect our interests at all costs.

https://www.dailypioneer.com/2019/columnists/a-shipless-navy.html

दैनिक जागरण

Fri, 06 Dec 2019

अब किसी भी जहाज की तलाशी और जब्ती कर सकेगा तटरक्षक बल

तटरक्षक कानून के तहत अब वह देश के समुद्री क्षेत्र में किसी भी संदिग्ध जहाज की तलाशी व जब्ती तथा आरोपित की गिरफ्तारी कर सकेगा।

नई दिल्ली: भारतीय तटरक्षक बल अब और ताकतवर हो गया है। तटरक्षक कानून के तहत अब वह देश के समुद्री क्षेत्र में किसी भी संदिग्ध जहाज की तलाशी व जब्ती तथा आरोपित की गिरफ्तारी कर सकेगा। समुद्री सुरक्षा एजेंसी को पहले विशेष आर्थिक क्षेत्र (ईईजेड) से गुजरने वाले किसी भी जहाज पर सवार होने की भी अनुमति नहीं थी।

तटीय सुरक्षा बढ़ाई गई

रक्षा सचिव अजय कुमार ने गुरुवार को ट्वीट किया, 'भारतीय तटरक्षक को सशक्त बनाते हुए तटीय सुरक्षा बढ़ाई गई है।' रक्षा मंत्रालय की अधिसूचना के अनुसार, तटरक्षक कानून-1978 के तहत केंद्र सरकार तटरक्षक बल के हर सदस्य को किसी भी संदिग्ध जहाज पर जाने, उस पर सवार होने, उसकी तलाशी लेने और उसे जब्त करने या किसी भी व्यक्ति को गिरफ्तार करने का अधिकार देती है। तटरक्षक बल के जवान ऐसे किसी भी कृत्रिम द्वीप या तैरती वस्तु या जल के नीचे किसी भी चीज को जब्त कर सकेंगे, जिनके किसी अपराध में शामिल होने का संदेह हो।

पहले ईईजेड से गुजरने वाले जहाजों पर सवार होने का भी नहीं था अधिकार

इससे पहले तटरक्षक बल ईईजेड में जहाजों पर सवार होने या उन्हें जब्त करने के लिए सीमा शुल्क कानून, एनडीपीएस कानून और अन्य कानूनों का इस्तेमाल करता था। अधिकारियों ने बताया कि इसे जरूरी कानूनी समर्थन नहीं प्राप्त था और कई मामले कोर्ट में ही गिर जाते थे। जहाज कंपनियों के पास कानून से बचने के कई रास्ते थे।

वे बिना किसी अधिकार के जहाज को रोकने पर तटरक्षक बल के खिलाफ मामला दर्ज करा सकती थीं। एक वरिष्ठ अधिकारी ने बताया कि समुद्री सुरक्षा बल वर्ष 2009 से ही क्षेत्रीय जल, महाद्वीपीय शेल्फ (तटों के निकट अपेक्षाकृत संकरी व उथली सागरीय पेटी), विशेष आर्थिक क्षेत्र और अन्य समुद्री क्षेत्र अधिनियम-1976 के तहत ज्यादा अधिकार दिए जाने की मांग कर रहा था।

https://www.jagran.com/news/national-now-coast-guard-will-be-able-to-search-and-seize-any-ship-19818200.html

DATAQUEST

Fri, 06 Dec 2019

ISRO Gaganyaan manned mission could take place in December 2021

ISRO Gaganyaan manned mission is an Indian crewed orbital spacecraft, which will be the first Indian Human Spaceflight Programme

The ISRO Gaganyaan Manned mission is being targeted to take place in December 2021. Information regarding the same was provided by the Union Minister of State, Dr Jitendra Singh in a written reply to a question in Lok Sabha on 4 December 2019, according to a PIB release.

The spacecraft is being designed to carry three people, and the crew selection and training process for Gaganyaan mission is progressing well including the training in Russia under the ISRO Gaganyaan mission, adds the release.

While the Indian Space Research Organisation has immense experience with respect to the launch vehicle, spacecraft management, and ground infrastructure, ISRO is planning to collaborate with national and international agencies for areas where it lacks experience such as human centric systems, crew training, crew recovery, etc.

The crewed vehicle is being planned to be launched on the GSLV Mk III and the design of the crew module has been completed as of May 2019. The space capsule will reportedly have life support and environmental control systems and also will be equipped with emergency mission abort and emergency escape that can be done at the first stage or second stage of the rocket burn.

ISRO has already signed MOUs with DRDO labs, Indian Air Force and Russian space agency. Some of the critical technologies to be provided by DRDO to ISRO include space food, space crew health monitoring, and emergency survival kit, radiation measurement and protection, parachutes for the safe recovery of the crew module and others.

Dr G Satheesh Reddy, Secretary, Department of Defence R&D and Chairman DRDO, said the technological capabilities existing in DRDO laboratories for defence applications will be customised to meet the requirements of the human space mission of ISRO.

https://www.dqindia.com/isro-gaganyaan-manned-mission-take-place-december-2021/

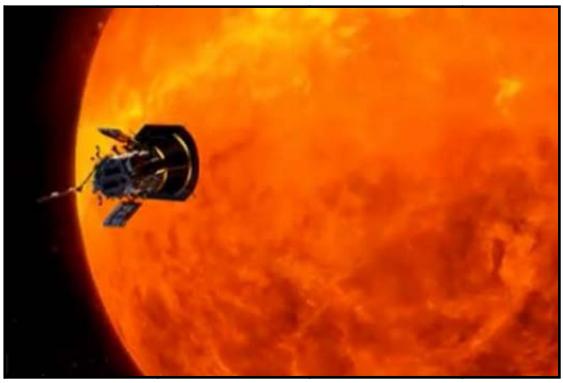
THE FINANCIAL EXPRESS

Fri, 06 Dec 2019

NASA's Parker Solar Probe unveils 'spectacular trove', sends first ever insights from Sun's edge

The data from the probe, described in four papers in the journal Nature, offers clues to long-standing mysteries, including why the Sun's atmosphere, known as the corona, is hundreds of times hotter than its surface, as well as the precise origins of the solar wind

NASA's Parker Solar Probe — which has flown closer to the Sun than any spacecraft ever — has beamed back the first observations from its close encounters with the Sun, revealing a "spectacular trove" of data about the solar wind and space weather, the US space agency said. The data from the probe, published in the journal Nature, offers clues to long-standing mysteries, including why the Sun's atmosphere, known as the corona, is hundreds of times hotter than its surface, as well as the precise origins of the solar wind. Since its launch in August 2018, Parker Solar Probe has completed three of the 24 planned passes through never-before-explored parts of the Sun's atmosphere, using cutting-edge scientific instruments to measure the environment around the spacecraft.



These findings reveal new information about the behaviour of the material and particles that speed away from the Sun, bringing scientists closer to answering fundamental questions about the physics of our star, NASA said in a statement. In the quest to protect astronauts and technology in space, the information Parker has uncovered about how the Sun constantly ejects material and energy will help scientists re-write the models used to understand and predict the space weather around our planet, it said.

Scientists have just announced the first discoveries from #ParkerSolarProbe's daring mission to the Sun. What they've learned has changed our understanding of the way the Sun releases material and particles, influencing Earth and the entire solar system:

https://t.co/3WFfZStojM pic.twitter.com/Q3BZAV7lrT

— NASA Sun & Space (@NASASun) December 4, 2019

On its mission to "touch" the Sun, our #ParkerSolarProbe will help us solve mysteries about our closest star. Join our @NASASun experts on @Reddit to ask questions about the first results from instruments on the probe.

The findings will also help understand the process by which stars are created and evolve, according to the US space agency. "This first data from Parker reveals our star, the Sun, in new and surprising ways," said Thomas Zurbuchen, associate administrator for science at NASA. "Observing the Sun up close rather than from a much greater distance is giving us an unprecedented view into important solar phenomena and how they affect us on Earth, and gives us new insights relevant to the understanding of active stars across galaxies," Zurbuchen said. He explained that it is just the beginning of an incredibly exciting time for physics related to Sun, with Parker at the vanguard of new discoveries.

"The first three encounters of the solar probe that we have had so far have been spectacular," said Stuart Bale, a professor at the University of California, Berkeley, and lead author of an article about new results. "We can see the magnetic structure of the corona, which tells us that the solar wind is emerging from small coronal holes," Bale said in a statement.

One of the main goals of the Parker Solar Probe is to discover the source of the “slow” solar wind and how it is accelerated in the hot atmosphere of the Sun — the 1 million-degree Celsius solar corona. The solar wind consists of charged particles, mostly protons and helium nuclei, travelling along the Sun’s magnetic field lines, the researchers noted.

The so-called “fast” solar wind, clocked at between 500 and 1,000 kilometres per second, is known to come from large holes in the solar corona at the Sun’s north and south poles, they said. However, the origin of the “slow” solar wind, which is denser but about half the speed of the “fast” solar wind, is more poorly understood.

Thanks to extreme ultraviolet mapping of the Sun by other spacecraft, the researchers were able to trace the wind and the magnetic fields back to a source — coronal holes — that strongly suggests that these holes are the source of the slow solar wind. Coronal holes, which are related to sun spots, are areas that are cooler and less dense than the surrounding corona. Another surprise, the researchers said, was the dust that peppered the spacecraft repeatedly during each fly-by at perihelion — the point in the orbit where the spacecraft was closest to the Sun.

Smaller than a micron, which is a thousandth of a millimetre, the dust particles are likely debris from asteroids or comets that melted near the Sun and left behind their trapped dust, the researchers said. That dust is now orbiting the Sun, and Bale suspects that much of it that hitting the spacecraft is being ejected outwards by light pressure and destined to escape the solar system entirely.

https://www.financialexpress.com/lifestyle/science/nasas-parker-solar-probe-unveils-spectacular-trove-sends-first-ever-insights-from-suns-edge/1785156/

INDEPENDENT

Fri, 06 Dec 2019

Scientists find huge planet orbiting around a white dwarf star for the first time

By Andrew Griffin

Scientists have found the first ever evidence of a planet orbiting a dead white dwarf star.

The giant, distant planet was discovered through the disc of gas that was created by its evaporating atmosphere.

The planet is much bigger than the dead sun that it orbits around. The world, which resembles neptune, is about four times as big as the white dwarf, which is roughly the same size as Earth.

The giant planet orbits the star about once every 10 days, leaving a trail of gas comprised of hydrogen, oxygen and sulphur in its wake.

Until now, there has been no evidence of a planet that has survived a star's transition to a white dwarf, researchers say.

The discovery by astronomers from the University of Warwick's Department of Physics and the Millennium Nucleus for Planet Formation (NPF) at the University of Valparaiso is published in the journal Nature.

They say it is the first evidence of a giant planet orbiting a white dwarf star.

The star, WDJ0914+1914, was identified in a survey of 10,000 white dwarfs observed by the Sloan Digital Sky Survey.

Researchers say the star is around 2,000 light years from Earth.

Astronomers at Warwick analysed subtle variations in the light emitted from the system to identify the elements present around the star.

They detected very minute spikes of hydrogen in the data, but also of oxygen and sulphur, which they had never seen before.

Using the Very Large Telescope of the European Southern Observatory in Chile they found the shape of the gases are typical indicators of a ring of gas.

Lead author Dr Boris Gaensicke, from the University of Warwick, said: "At first, we thought that this was a binary star with an accretion disc formed from mass flowing between the two stars.

"However, our observations show that it is a single white dwarf with a disc around it roughly 10 times the size of our sun, made solely of hydrogen, oxygen and sulphur.

"Such a system has never been seen before, and it was immediately clear to me that this was a unique star."

Analysis of the data suggests the composition of the disc matches what scientists expect for the deeper layers of our own solar system's ice giants, Uranus and Neptune.

Dr Matthias Schreiber from the University of Valparaiso calculated that the 28,000C hot white dwarf is slowly evaporating this hidden icy giant by bombarding it with high energy photons.

It is pulling its lost mass into a gas disc around the star at a rate of more than 3,000 tonnes per second.

Dr Gaensicke said: "This star has a planet that we can't see directly, but because the star is so hot it is evaporating the planet, and we detect the atmosphere it is losing.

"There could be many cooler white dwarfs that have planets but lacking the high-energy photons necessary to drive evaporation, so we wouldn't be able to find them with the same method.

"This discovery is major progress because over the past two decades we had growing evidence that planetary systems survive into the white dwarf stage.

"We've seen a lot of asteroids, comets and other small planetary objects hitting white dwarfs, and explaining these events requires larger, planet-mass bodies further out."

He added that having evidence for an actual planet was an "important step".

Dr Schreiber added: "In a sense, WDJ0914+1914 is providing us with a glimpse into the very distant future of our own solar system."

The white dwarf was once a star similar to the sun but eventually ran out of fuel, and swelled up into a red giant, a few hundred times the size of the sun.

During that phase of its life, the star will have lost about half of its mass and what was left has shrunk, ending up size of the Earth.

It is essentially the burnt-out core of the former star.

Once the Earth's sun runs out of fuel in about 4.5 billion years it will shed its outer layers, destroying Mercury, Venus, and probably the Earth, eventually exposing the burnt-out core - the white dwarf.

In a companion paper led by Dr Schreiber and Dr Gaensicke, published in Astrophysical Journal Letters, they detail how this will radiate enough high energy photons to evaporate Jupiter, Saturn, Uranus and Neptune.

https://www.independent.co.uk/life-style/gadgets-and-tech/news/planet-neptune-star-white-dwarf-a9233186.html