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THE ECONOMIC TIMES
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Fri, 22 Nov 2019

Nuclear capable Prithvi-2 missile successfully test fired at night

The missile was randomly chosen from the production stock and the entire launch activity was carried out by SFC of the Army and monitored by scientists of DRDO as part of the training exercise, official sources said. The downrange teams on board a..

Balasore: India successfully test fired on Wednesday night its indigenously developed nuclear capable surface-to-surface Prithvi-2 missile as part of a user trial by the Army from a test range off Odisha coast, an official of the ITR said.

"Two Prithvi-2 missiles were test fired consecutively and both tests met all parameters," the official said from the Interim Test Range (ITR) at Chandipur.

The trial of the missile, which has a strike range of 350 km, was carried out from a mobile launcher from launch complex-3 of the ITR between 7 pm to 7.15 pm, he said.

It was a routine trial, he said adding "The missile trajectory was tracked by radars, electro optical tracking systems and telemetry stations by the DRDO along the coast of Odisha".

The missile was randomly chosen from the production stock and the entire launch activity was carried out by Strategic Force Command (SFC) of the Army and monitored by scientists of Defence Research and Development Organisation (DRDO) as part of the training exercise, official sources said.

The downrange teams on board a ship deployed near the designated impact point in the Bay of Bengal monitored the terminal events and splashdown.

The last night time test fire of Prithvi-2 was conducted successfully from the ITR on February 21, 2018. Two missiles were successfully test fired in quick succession from the same base in salvo mode on November 21, 2016, they said.

Prithvi-2 is capable of carrying 500-1,000 kg of warheads and is powered by liquid propulsion twin engines, the sources said.

The state-of-the-art missile uses advanced inertial guidance system with maneuvering trajectory to hit its target, they said.

Already inducted into the armory of Indian defence forces in 2003, nine-meter tall 'Prithvi' was the first missile to have been developed by DRDO under the Integrated Guided Missile Development Programme (IGMDP).

https://economictimes.indiatimes.com/news/defence/nuclear-capable-prithvi-2-missile-successfully-testfired-at-night/articleshow/72147446.cms

THE NEW INDIAN EXPRESS

Fri, 22 Nov 2019

Indian Army to soon get longest range 'Advanced Towed Artillery Gun System'

The 155 mm and 52 calibre Advanced Towed Artillery Gun System with automated ammunition handling facility is the world's longest range gun system in its class

By Hemant Kumar Rout

Bhubaneswar: India's first indigenously built Advanced Towed Artillery Gun System (ATAGS) with automated ammunition handling facility will be inducted in the Army soon. The 155 mm and 52 calibre howitzer is the world's longest range gun system in its class.

Union Secretary of Defence R&D Department G Satheesh Reddy on Thursday said the gun has cleared all developmental tests successfully and will be inducted in the Armed Forces after a couple of more trials.

Reddy was attending the 125th anniversary of Proof and Experimental Establishment (PXE), a laboratory of Defence and Development Organisation (DRDO), at Chandipur in Balasore district. "ATAGS is the pride of the nation. The gun has now the world's longest range in 155 mm class. PXE has the distinction of testing the gun and making it certified. The Armed Forces have already given their consent for induction of a number of such guns," he informed.

Developed by Armament Research and Development Establishment of DRDO in a consortium model, the ATAGS comes with six round automated magazine capable of firing in 30 seconds. The existing 155 mm and 52-calibre guns have standard three-round magazine. Since the magazines need to be loaded manually, it leads to casualties during the exercise.

The project was taken up in 2013 to replace older guns in service with modern 155 mm artillery gun. Configured with an all electric drive the hydro lateral gun has a maximum firing range of 48 km and can be deployed in less than three minutes. It was first showcased publicly during the Republic Day parade in 2017.

The advanced gun system that weighs around 18 tonne with an elevation up to 70 degrees has undergone developmental trials at Balasore, Pokhran and Sikkim. While the ballistic internal trial and proofing were done at PXE and strength and design were validated during summer trials at Pokhran, winter trails were conducted in Sikkim.

Reddy, who is also the Chairman of DRDO, urged the scientists working with the PXE and Integrated Test Range (ITR) to come up with modern technologies, equipment and infrastructure to ensure that the test range is one the most modern ranges in the world.

He also warned to remain alert for future warfare. It is just not land, water or sky, threats related to space and cyber world have entered into the warfare spectre in a big way, he said.

“When gadgets have become part and parcel of life, we are always vulnerable to cyber attacks. Measures need to be taken by all to ensure that cyber security is insured. Advisories have been sent to all laboratories. It can be detrimental if not adhered to properly,” he added.

https://www.newindianexpress.com/nation/2019/nov/22/indian-army-to-soon-get-longest-range-advanced-towed-artillery-gun-system-2065240.html

THE FINANCIAL EXPRESS

Fri, 22 Nov 2019

Made in India LCA for Indian Navy gets ready for more trials

This has been a major success for all the agencies including the Defence Research and Development Organisation (DRDO), state-owned Hindustan Aeronautics Limited (HAL), Aeronautical Development Agency (ADA) and the Indian Navy which has been part of all these trials

By Huma Siddiqui

New Delhi: After successfully carrying out its first-ever night-time 'arrested' landing at Shore Based Test Facility INS Hansa, Goa, the naval version of the indigenous Light Combat Aircraft is getting ready for the Deck Landing trial soon. This has been a major success for all the agencies including the Defence Research and Development Organisation (DRDO), state-owned Hindustan Aeronautics Limited (HAL), Aeronautical Development Agency (ADA) and the Indian Navy which has been part of all these trials.

Since 2012, when the first LCA (Navy) took off two prototypes (NP 1 & 2) which have been built by the state-owned HAL are already under flight testing. After the end of successful tests, the way was paved for the indigenous aircraft to undertake Aircraft Carrier landing demonstration on board the Indian Naval Aircraft Carrier, INS Vikramaditya soon.

Team LCA with scientists and designers from DRDO, ADA and Indian Navy has been working behind the scenes in not only conceptualising the project but also in the experiments related to the complex software modes which are involved in this. Besides the structural expansion in the LCA Naval version, several experiments with multiple software options and hardware configurations have been carried out. These are related to avionics tools, display symbols to help the pilots and aerodynamic surfaces.

In September this year, the naval version of the aircraft had achieved short landing with arrestor wires on the SBTF and joined a select group of countries including the US, Russia, the UK, and France which have the capability to design such an aircraft which lands on a carrier.

What is Arrested Landings?

It is an essential part of aircraft carrier flight operations and helps with high-strength wires which has a hook used in decelerating the aircraft and stop it on an aircraft carrier with a limited space of 100 meters unlike the 1 Km runway for land-based aircraft.

For the arrested landing there has to be a close coordination with crew on the flight deck combined with the pilot's skill, as the speed gets reduced considerably from 250 kmph to just zero in just a few seconds.

And in the night when there is no light the landing becomes more difficult.

https://www.financialexpress.com/defence/made-in-india-lca-for-indian-navy-gets-ready-for-more-trials/1771020/

THE HINDU BusinessLine

Fri, 22 Nov 2019

DRDO offers 450 patents for free access to industries

By Somasekhar

Hyderabad: In a bold move, the Defence Research and Development Organisation (DRDO) has put its over 450 patents for free access to industries for commercial exploitation. The unprecedented move is intended to provide a boost to domestic industries, especially in the strategic sector through free access to patents held by the DRDO, which has a network of over 50 national laboratories, involved in research and development. As per a new policy, the DRDO, under the Ministry of Defence will offer complete access to its patents filed in India without any licensing or royalty fees. It has displayed both the procedure and the complete list of technologies on its website.

The technologies, relating to missiles, life sciences, electronics and communications, naval and aeronautics systems, combat engineering, electronics, armaments. among others, have military applications and some have spin offs that can be transferred to commercial market.

The DRDO has taken the lead as other leading R&D bodies like the Council of Scientific Industrial Research (CSIR), Department of Space, National Research and Development Corporation (NRDC), Indian Council of Medical Research (ICMR), Indian Council of Agricultural Research (ICAR), which have portfolios of national and international patents offer them for a fee and royalty.

It is welcome step for start ups, entrepreneurs and industries. “It’s better to offer some patents free than keeping them in the shelf and pay hefty protection fee for its lifetime. After all, commercial exploitation is the key factor that should determine patents”, experts told *BusinessLine*.

‘Not the first time’

In 2000, when George Fernandes was the Defence Minister and Dr APJ Abdul Kalam was the Principal Scientific Advisor to the Government, the DRDO in collaboration with the Confederation of Indian Industry (CII) organised a major industry meet to transfer technologies in the DRDO laboratory network. The CII members were given access to potential technologies of the DRDO labs for commercial exploitation. The move was promising, but did not yield much result.

Over 15 years ago, Dow Chemicals, the global multinational chemical giant had in a similar move put out thousands of its patents for access to Universities in a bid to encourage further developments and commercial utilisation.

How to Apply:

The industry must apply with a fee of ₹ 1000, along with relevant technical and financial details. It will then be screened by an expert committee and if eligible a non-exclusive license for one year will be granted. Earlier, the Defence Ministry had formulated Transfer of Technology Policy, Make in India initiative, and Defence Production Policy to encourage domestic industries.

DRDO-Industry Synergy Meet

A one day “DRDO-Industry Synergy Summit 2019” will be held at the Research Centre Imarat (RCI) Hyderabad on Friday. Nearly 300 small, medium and large industries are expected to take part.

The topics of discussions include latest policy framework and opportunities created, high technology collaborations and defence manufacturing, defence export and a Panel discussion on challenges and opportunities for Indian industries.

https://www.thehindubusinessline.com/news/drdo-offers-450-patents-for-free-access-to-industries/article30035856.ece#

THE NEW INDIAN EXPRESS

Fri, 22 Nov 2019

Kerala science fest to feature India's tech advancements

Another attraction is the promotion of 'Scientoons', an innovative branch of science learning through cartoons

Kochi: Want to see the latest technologies in the underwater surveillance system and a wide variety of such developments in India's science and technology sector developed by various research agencies? Well, a scientific spread has been arranged for those with the scientific temper by the Swadeshi Science Movement in association with Indian Space Research Organisation (ISRO), Defence Research and Development Organisation (DRDO), Cochin Shipyard, Council of Scientific and Industrial Research (CSIR), Rajiv Gandhi Centre for Biotechnology (RGCB) and Indian National Centre for Ocean Information Services (INCOIS).

Swasraya Bharat, the Kerala Science Fest which is to be held from November 23 to 26 at Marine Drive, will throw open the doors to the unseen world of latest developments in science and technology achieved by the premier research facilities in the country. According to V N Sanjeevan, Emeritus Chair of Kufos and president of Swadeshi Science Movement, the science fest would also set a platform for dialogues on the climate crisis and extreme weather events being attended by a panel of stalwarts in the area from across the country.

"Apart from the exhibition, a student-scientist interaction will be a major attraction of the programme on the first day. The interactive programme will focus on climate crisis and alternatives which will be led by a panel of experts," said Sajeevan. Another attraction is the promotion of 'Scientoons', an innovative branch of science learning through cartoons.

There will also be a talk on 'Mission Shakti', an anti-satellite weapon which India tested recently. The talk will be conducted by the man behind 'Mission Shakti' U Raja Babu, programme director of DRDO on Monday.

https://www.newindianexpress.com/cities/kochi/2019/nov/21/kerala-science-fest-to-feature-indias-tech-advancements-2064620.html

hindustantimes

Fri, 22 Nov 2019

A blueprint to revamp India's defence acquisition | Opinion

Distinguish between technologies to be developed independently, with allies, and by private players

By Gurmeet Kanwal

The Defence Acquisition Council (DAC), chaired by defence minister Rajnath Singh, approved the acquisition of indigenously manufactured weapons and equipment worth Rs 3,300 crore in October. The projects which include third-generation anti-tank guided missiles, and auxiliary propulsion units for main battle tanks, will boost India's quest for self-reliance in defence production.

The aim of indigenisation of defence manufacture should be to make India a design, development, manufacture, export and servicing hub for weapons and defence equipment by 2025-30.

No country that is not substantially self-reliant in defence technology can aspire to become a dominant military power. India is hungry for state-of-the-art defence technology but has a low technology base. It can achieve self-reliance by acquiring defence technology through original research. The other option is to gain access to it through the transfer of technology (ToT). This is hard since defence technology is proprietary, guarded zealously by governments.

But here is a possible blueprint.

No country will give India strategic weapons technologies, such as nuclear warhead and ballistic missile technologies, know-how on building nuclear-powered submarines, and ballistic missile defence technology. Defence Research Development Organisation (DRDO) must continue conducting original research and development (R&D) into strategic technologies.

The development of hi-tech weapons platforms like fighter-bomber aircraft and sophisticated defence equipment like over-the-horizon (OTH) radars should be undertaken jointly in conjunction with India's strategic partners. The route adopted should be to form joint venture (JV) companies between Indian private sector companies and international defence multinationals. The role of the DRDO and the Services HQ should be supervision and facilitation. An excellent example is BrahMos missile, jointly developed with Russia.

The design and development of low-tech items should be outsourced to the Indian private sector, with the DRDO monitoring progress. Services headquarters should establish their own design bureaus to inculcate a technology development culture. They should initiate R&D projects in their training institutions, especially for product improvement during the life-cycle of weapons systems and defence equipment.

At present, there are far too many DRDO laboratories. There is a need to close down those whose work can be outsourced to the private sector. Some R&D projects should be outsourced to universities and IITs.

At the policy level, many contentious issues remain to be resolved, including the privatisation of most of the ordnance factories and several defence public sector units. Publicly owned manufacturing facilities are inefficient, seldom meet production targets, and develop a risk-averse professional culture.

Though Foreign Direct Investment in defence manufacture has been increased from 26 to 49%, this is still not attractive enough for multinationals. Given the time and effort that goes into locating a joint venture partner, and the risks, they prefer to have a controlling stake of 51% or more.

The present offsets policy has not worked to India's advantage. The defence industry's ability to absorb hi-tech offsets is still limited. Absorbing 50 or even 30% offsets is difficult at present. It may

be more prudent to consider offsets only in cases where the benefits expected to accrue will outweigh the additional costs, and Indian JV partners can absorb the technology. While the export of defence equipment has been permitted, the regulatory framework need to be streamlined.

The time frame for the acquisition of defence equipment is excessive. From the submission of a Statement of Case for a new acquisition to according approval in principle (Acceptance of Necessity – AON) takes six months to one year. Then the case goes into RFI (request for information) and RFP (request for proposals) stages and prolonged negotiations with the selected bidder. The actual conclusion of the contract takes up to three years. The delivery of the contracted item begins more than two to three years later. Even according to the current Defence Procurement Procedure, this is excessive and must be cut down to less than one-third.

Close supervision during manufacture would help avoid time and cost overruns. As the Services are the main stakeholders, armed forces officers should be positioned in manufacturing facilities for supervision. At present, the Services find quality control to be grossly unsatisfactory. The Directorate of Quality Assurance (DGQA), the organisation responsible, comes under the Defence Secretary. The DGQA must be transferred to HQ Integrated Defence Staff so that it is directly answerable to the Chairman, Chiefs of Staff Committee and, in the future, to the Chief of Defence Staff.

The government has begun the process of establishing Defence Economic Zones (DEZs) to provide incentives for indigenous defence manufacture. There is an inescapable need to establish an Institute of Defence Acquisition under the CoSC where all officers nominated for posts dealing with defence procurement can be trained. In fact, an exchange programme should be instituted with defence acquisition universities and institutions in countries from which India acquires the bulk of its defence equipment.

The Defence Technology Board should undertake a holistic review of the entire gamut of defence procurement, including the DPP, the production process, R&D, the offsets policy, timely conclusion of contracts, quality control and accountability. The procurement of defence equipment is an extremely important facet of preparedness for future conflict and must not be allowed to fester as a permanent sore.

(Gurmeet Kanwal is former director, Centre for Land Warfare Studies (CLAWS), New Delhi, The views expressed are personal)

https://www.hindustantimes.com/analysis/a-blueprint-to-revamp-india-s-defence-acquisition-opinion/story-o5CfqouIWXbU1Mtet5IMDI.html

DefenceNews

Fri, 22 Nov 2019

Is India ready to meet Chinese Air Force threat?

Chinese air force J-11B fighter jets fly in formation during a training session on the outskirts of Beijing.

When Mao Zedong declared the founding of the People‘s Republic of China in Beijing on October 1, 1949, the country had just 17 military aircraft. Legend has it that this little fleet — nine fighters, two bombers, three carriers, one communication plane and two trainers — overflew Tiananmen Square twice each to give the jubilant masses the impression they had an air force.

The next month, on November 11, 1949, Mao proclaimed the People‘s Liberation Army (Air Force) as a separate service.

How things have changed!

The PLA (AF) is now a 400,000 person force that flies some 2,000 combat aircraft — more than thrice the size of the Indian Air Force.

On November 11, a PLA (AF) video, released to celebrate its 70th anniversary, boasted a range of sophisticated warplanes, most developed in China. These include the fifth-generation J-20 stealth fighter that has begun entering service, the J-16 Shenyang fighter (an advanced version of the Sukhoi-30), the H-6N strategic bomber, which reputedly launches the aircraft carrier killer Dongfeng-21D ballistic missile, the Y-20 transport aircraft that takes aloft 66 tonnes of payload, and the KJ-2000 airborne early warning system.

The 1962 Sino-Indian war was fought entirely between land troops, with neither side using its air force or navy against each other. But in a military face-off today, the PLA‘s ungracefully-named military doctrine of ‘limited war under conditions of Informationisation‘ (gobbledygook for a digitally-enabled, highly transparent battlefield) will see a major role for the PLA (AF), operating in numbers from the 10-odd air bases that experts assess have been readied in Tibet. It is, therefore, worth retracing the PLA(AF)‘s journey.

The year after its humble beginnings in 1949, the PLA (AF) got a major boost from the Korean War, when Josef Stalin and Mao reached an unholy bargain: Russia would bulk up the PLA (AF) with the mass-produced, highly-capable MiG-15, and train Chinese pilots and technicians to fly and maintain combat aircraft.

In return, China would serve as a Russian proxy against the United Nations coalition in Korea, especially the United States air force.

Between 1950 and 1953, both sides lost hundreds of fighters and pilots, including dozens of Russian pilots flying in North Korean uniforms. The experience garnered enabled Russia to incrementally develop the MiG-15 into the MiG-17, MiG-19 and the legendary MiG-21; with China eventually building all four fighters under licence.

The USAF, meanwhile, improved the supersonic F-86 Sabre fighters into an advanced version that Washington later supplied to Pakistan, which used them against the IAF in 1965 and 1971.

The Korean War gave China its first fighter aces and — more importantly for Mao — a capable, experienced air force.

According to accounts from that time, when Stalin complained about China‘s reluctance to engage the USAF in air combat more aggressively, Mao expressed his readiness to get a million Chinese killed in combat in Korea, but he would not endanger the existence of his new air force.

It is important to note that China‘s shiny new air force has had very limited combat experience since the Korean War.

Analysts, including those at the USAF-linked RAND corporation, assess that despite the PLA (AF)‘s instructional regime, which seeks to train pilots under ‘actual combat conditions‘, it is ill-prepared to fight and win against well-drilled air forces such as the USAF.

After the Korean war, the PLA (AF) entered a period of steep decline caused by the Sino-Soviet split and by the internal turmoil of the Great Leap Forward and the Cultural Revolution.

After Mao‘s death, Deng Xiaoping began reforming the PLA; Communist party insiders have said he engineered the abortive 1979 invasion of Vietnam only to illustrate the PLA‘s deficiencies and need for reform.

The PLA (AF) also learned lessons from Britain‘s invasion of the Falklands and Israel‘s destruction of Syrian air defence systems in Lebanon‘s Bekaa valley in 1982. Deng realised the importance of air power and space assets. He allowed the PLA (AF), hitherto focused on supporting the land campaign, to begin developing an independent strategy.

The dazzling success of the US ‘AirLand Battle‘ doctrine in the first Gulf War in 1991 caused the PLA to adopt the doctrine of ‘limited war under high-tech conditions‘, which envisioned wars being prosecuted by relatively small, flexible, heavily armed, tri-service troops.

The White Paper of 2004 adopted the current doctrine of ‘Limited war under conditions of informationisation‘, which envisioned real-time advanced communications to digitally integrate land, sea, air and space sensors, and the use of precision munitions to accurately strike the targets thus identified.

Given this doctrinal backdrop, what role would the PLA (AF) play, and what missions would it perform, in a future war with India? These would be limited by a geographical imperative — the Tibetan Plateau, which consists of a 1,000 TO 2,000 kilometre buffer between the Chinese and Indian mainlands.

PLA (AF) aircraft, operating from Chengdu and Kunming in south China — the mainland bases closest to India — would have a one-way journey of 1,000 kilometres to enter the Assam plains. Even with mid-air refuelling, that would leave the aircraft with little mission time, especially for targets deeper inside India.

Consequently, the PLA (AF) would have to operate from Tibet, for which it has created and stocked at least several air bases, including Lhasa, Golmud, Nyingchi and Shigatse. But while these are significantly closer to Indian targets (Lhasa is less than 400 kilometres from Tezpur) PLA (AF) fighters taking off from air bases on the 10,000-feet-high Tibetan plateau would face serious limitations on the weapons and fuel payload they can get aloft with.

To overcome this, they would require mid-air refuelling after take-off, a cumbersome process carried out at high altitude, during which they would be easily detected by Indian radar, providing IAF fighters, air defence guns and missile systems ample time to react.

To degrade the IAF‘s response time and capability, the PLA would very likely begin the war with cruise and ballistic missile strikes on Indian air bases in Assam, such as Tezpur, Bagdogra and Hashimara, using conventional-tipped missiles from the PLA‘s so-called Second Artillery — an arsenal of strategic missiles with either conventional or nuclear warheads.

This might be preceded, or accompanied, by a carefully directed cyber-attack to disable the IAF‘s surveillance network, satellite communications and command and control systems.

Given China‘s demonstrated capability to target and destroy satellites in space, Indian communications and surveillance satellites would be fair game. A high-technology, broad-spectrum attack of this nature would not just be intended to clear the path for PLA (AF) fighter strikes in support of a ground offensive.

Given that Beijing would stage-manage any attack on India as a global demonstration and warning of its Great Power military capabilities — the philosophy of ‘killing the monkey to scare the chickens‘ — a full-spectrum attack is a near certainty.

In the 1950s, the Red Army‘s legendary Marshal Zhu De had famously said, ‘The kind of war we will fight depends upon what kind of arms we have.‘ That is now history.

New China‘s aggressive doctrine now is: ‘Build the weapons to fight the war that we have to fight.‘ It is this attitude and the capabilities it has spawned that India‘s military must diligently prepare for.

As recently as 1999, facing the prospect of a war in Kargil, then Indian Army chief General Ved Prakash Malik was bravely echoing Marshal Zhu.

It would be worth recalling the famous comment of French Marshal Pierre Bosquet after he witnessed the suicidal Charge of the Light Brigade in 1854 in Crimea: ‘C‘est magnifique, mais ce n‘est pas la guerre (It is magnificent, but it is not war)‘.

https://www.defencenews.in/article/Is-India-Ready-To-Meet-Chinese-Air-Force-Threat-768088

Business Standard

Fri, 22 Nov 2019

ISRO reschedules launch of Cartosat-3, 13 nano satellites to Nov 27

The space agency had earlier announced that the launch is tentatively scheduled at 09:28 hrs IST on November 25, subject to weather conditions

Bangaluru: Indian Space Research Organisation (ISRO) on Thursday said the launch of its earth imaging and mapping satellite Cartosat-3 along with 13 commercial nano satellites from the US, has been rescheduled to November 27.

The space agency had earlier announced that the launch is tentatively scheduled at 09:28 hrs IST on November 25, subject to weather conditions.

"The launch of PSLV-C47 carrying Cartosat-3 scheduled on November 25, 2019 at 09:28 hrs is rescheduled to launch on November 27, 2019 at 09:28 hrs from second launch pad of Satish Dhawan Space Centre SHAR, Sriharikota," ISRO has said in an update.

The satellites would be launched by India's Polar Satellite Launch Vehicle, PSLV-C47 into Sun Synchronous Orbit from Satish Dhawan Space Centre (SDSC) SHAR at Sriharikota in Andhra Pradesh.

The Cartosat-3 is a "third generation agile advanced satellite" having high resolution imaging capability, it said, adding the satellite would be placed in an orbit of 509 km at an inclination of 97.5 degree.

With overall mass of 1,625 kg and mission life of five years, Cartosat-3 shall address the increased user's demands for the large scale urban planning, rural resource and infrastructure development, coastal land use and land cover etc.

PSLV-C47 is the 21st flight of PSLV in 'XL' configuration (with 6 solid strap-on motors).

PSLV-C47 would also carry 13 commercial nano satellites from the United States of America as part of commercial arrangement with NewSpace India Limited (NSIL), Department of Space.

Among the 13 commercial nano satellites are FLOCK-4P, 12 in numbers, with mission objective of earth observation, and one satellite named MESHBED, whose mission objective is communication test bed.

ISRO has said this would be the 74th launch vehicle mission from SDSC SHAR, Sriharikota.

https://www.business-standard.com/article/pti-stories/isro-reschedules-launch-of-cartosat-3-13-commercial-nano-119112100709_1.html

पंजाब केसरी

Fri, 22 Nov 2019

13 नैनो उपग्रहों का प्रक्षेपण अब 27 को

बेंगलुरु, (भाषा) भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) ने बृहस्पतिवार को कहा कि उसके अर्थ इमेजिंग और मानचित्रण उपग्रह के साथ ही अमेरिका के 13 वाणिज्यिक नैनो उपग्रहों का प्रक्षेपण 27 नवम्बर के लिए पुनर्निर्धारित किया गया है।

अंतरिक्ष एजेंसी ने पहले घोषणा की थी कि प्रक्षेपण 25 नवम्बर को भारतीय समयानुसार सुबह करीब नौ बजकर 28 मिनट पर निर्धारित किया गया है और यह मौसम की परिस्थितियों पर निर्भर करेगा।

इसरो ने जारी एक नवीनतम बयान में कहा, ''25 नवम्बर 2019 को सुबह नौ बजकर 28 मिनट पर कार्टोसैट..3 को लेकर जाने वाले पीएसएलवी-सी 47 का प्रक्षेपण 27 नवम्बर को सुबह नौ बजकर 28 मिनट पर श्रीहरिकोटा के सतीश धवन अंतरिक्ष केंद्र एसएचएआर के दूसरे लांच पैड से करना पुनर्निर्धारित किया गया है।''

● उपग्रहों को पीएसएलवी द्वारा श्रीहरिकोटा के सतीश धवन अंतरिक्ष केंद्र से प्रक्षेपित करके सूर्य समकालिक कक्षा में स्थापित किया जाएगा

उपग्रहों को भारत के पोलर सैटेलाइट लांच व्हीकल, पीएसएलवी..सी47 द्वारा आंध्र प्रदेश के श्रीहरिकोटा के सतीश धवन अंतरिक्ष केंद्र (एसडीएससी) एसएचएआर से प्रक्षेपित करके सूर्य समकालिक कक्षा में स्थापित किया जाएगा।

उसने कहा कि कार्टोसैट..3 तीसरी पीढ़ी का दक्ष उन्नत उपग्रह है जिसमें 'हाई रिजॉल्यूशन इमेजिंग' क्षमता है। उसने कहा कि उपग्रह को 509 किलोमीटर की कक्षा में 97.5 डिग्री के झुकाव पर स्थापित किया जाएगा। कार्टोसैट का समग्र वजन 1625 किलोग्राम और मिशन पांच वर्ष का है। यह व्यापक पैमाने पर शहरी योजना, ग्रामीण संसाधन और आधारभूत ढांचे का विकास, तटीय भूमि उपयोग आदि की बढ़ती मांगों को पूरा करेगा। पीएसएलवी..सी47 पीएसएलवी की 'एक्सएल' कान्फिग्रेशन में 21वीं उड़ान है।

पीएसएलवी..सी47 अमेरिका से 13 वाणिज्यिक नैनो उपग्रहों को भी लेकर जाएगा। ऐसा अंतरिक्ष विभाग के न्यूस्पेस इंडिया लिमिटेड (एनएसआईएल) के साथ वाणिज्यिक व्यवस्था के तहत हो रहा है।

13 वाणिज्यिक नैनो उपग्रहों में 12 एफएलओसीके...4पी हैं जबकि एक उपग्रह का नाम एमईएसएचबीईडी है। इसरो ने कहा है कि यह एसडीएससी एसएचएआर, श्रीहरिकोटा से 74वां प्रक्षेपण यान मिशन होगा।

पंजाब केसरी

Fri, 22 Nov 2019

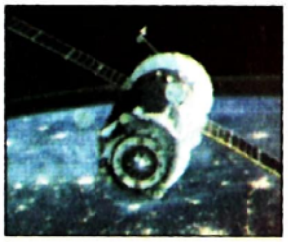
चंद्रयान मिशन को विफल कहना गलत

नई दिल्ली, (भाषा): सरकार ने चांद की सतह पर 'सॉफ्ट लैंडिंग' कर अहम जानकारियां जुटाने से जुड़े, इसरो के चंद्रयान अभियान को तकनीकी तौर पर सफल बताते हुये कहा है कि चंद्रयान के लैंडर द्वारा सॉफ्ट लैंडिंग नहीं कर पाने के कारण इस अभियान को विफल मानना न्यायोचित नहीं होगा।

अंतरिक्ष विज्ञान विभाग में राज्यमंत्री जितेन्द्र सिंह ने राज्यसभा में बृहस्पतिवार को प्रश्नकाल के दौरान चंद्रयान मिशन की नाकामी से जुड़े एक सवाल के जवाब में कहा, 'इस अभियान पर सभी देशवासियों की नजरें टिकी थीं। विक्रम लैंडर की सॉफ्ट लैंडिंग नहीं हो पाना थोड़ा निराशाजनक हो सकता है लेकिन इसकी व्याख्या में अभियान को विफल करार देना न्यायोचित नहीं होगा।'

सिंह ने वैज्ञानिक दृष्टिकोण का हवाला देते हुये कहा कि समूचे

- **ऑर्बिटर के वैज्ञानिक लक्ष्यों, चांद की सतह की मैपिंग करना और भौगोलिक स्थितियों का विश्लेषण करने सहित अन्य काम पूरे कर लेने का दावा**



अभियान में एक साथ कई लक्ष्यों को समाहित किया जाता है। उन्होंने कहा कि दुनिया का कोई देश ऐसा नहीं है जिसने दो से कम प्रयासों में चांद पर सॉफ्ट लैंडिंग की हो, यहां तक कि अमेरिका को भी आठवें प्रयास में कामयाबी मिल सकी।

चंद्रयान के दूसरे हिस्से ऑर्बिटर की मौजूदा कार्यप्रणाली से जुड़े पूरक प्रश्न के जवाब में सिंह ने कहा कि इस अभियान के वैज्ञानिक पहलू से जुड़े ऑर्बिटर के वैज्ञानिक लक्ष्यों को हासिल कर लिया गया है। इनमें चांद की सतह की मैपिंग करना और भौगोलिक स्थितियों का विश्लेषण करने सहित अन्य काम पूरे कर लिये गये हैं।

अभियान के तकनीकी पहलुओं की कामयाबी के बारे में उन्होंने बताया कि चंद्रयान की लॉचिंग सफल रही। पृथ्वी की कक्षा और फिर चांद की कक्षा में चंद्रयान का प्रवेश सफलतापूर्वक हुआ और ऑर्बिटर ने बखूबी अपना काम किया। उन्होंने कहा कि सटीक प्रक्षेपण और कक्षीय गति के कारण ऑर्बिटर की मिशन अवधि बढ़कर सात साल हो गयी है। सिंह ने कहा, ''सिर्फ चांद की सतह से 30 किमी पहले विक्रम लैंडर का इसरो से संपर्क टूट गया जिसे मैं इस अभियान की विफलता नहीं कहना चाहता।''

अन्नाद्रमुक की विजिला सत्यनाथन ने पूरक प्रश्न में पूछा कि विक्रम की चांद पर लैंडिंग के दिन ही मोदी सरकार के सौ दिन पूरे होने का इस अभियान से क्या कोई संबंध था और सरकार के सौ दिन पूरे होने के दिन ही विक्रम लैंडर की चांद पर सॉफ्ट लैंडिंग के लिये वैज्ञानिकों पर क्या दबाव डाला गया था?

सिंह ने इस तरह की किसी भी आशंका को नकारते हुये कहा, ''हम सब को यह मानने में कोई हर्ज नहीं होगा कि अंतरिक्ष अभियान के कार्यक्रम खगोलीय स्थितियों के मुताबिक तय होते हैं। इसलिये यह संभव नहीं है कि इस तरह के अभियान के कार्यक्रम इस प्रकार तय किये जा सकें।''