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आइआइटी बांबे और मद्रास के साथ शोध करेगा डीआरडीओ

मुंबई, प्रेटर : रक्षा क्षेत्र में शोध को बढ़ावा देने के लिए रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) ने आइआइटी बांबे और मद्रास के साथ समझौता किया है। डीआरडीओ दोनों शीर्ष प्रौद्योगिकी संस्थानों के साथ मिलकर प्रोपल्सन तकनीक के क्षेत्र में काम करेगा। इसके तहत विमान के इंजन और लंबी अवधि वाली उड़ानों के लिए हाइपरसोनिक प्रोपल्सन का विकास किया जाएगा।

रक्षा राज्य मंत्री सुभाष भामरे ने शुक्रवार को

आइआइटी बांबे में सेंटर ऑफ प्रोपल्सन टेक्नोलोजी की आधारशिला रखी। प्रोपल्सन तकनीक से विमान को गति प्रदान की जाती है। इसके ज्यादा सक्षम होने पर विमान की रफ्तार बढ़ती है और समय की बचत होती है। यह केंद्र अगले दो साल में काम करना शुरू कर देगा। आइआइटी बांबे और आइआइटी मद्रास के शोधकर्ता यहां संयुक्त रूप से शोध करेंगे। कोलकाता और दिल्ली के बाद देश का यह तीसरा केंद्र है। भामरे के मुताबिक रक्षा शोध के क्षेत्र में यह केंद्र भविष्य में बड़ा परिवर्तनकारी साबित होगा।

THE ASIAN AGE

Defence reforms decision just months away: Manohar Parrikar

The chiefs of both the Army and the Air Force will retire this year end.

New Delhi: The defence ministry could in the next “few months” finalise higher defence reforms to bring in jointness among the three armed services which will include creation of the post of Chief of Defence Staff (CDS). Defence minister Manohar Parrikar admitted that the services did not want to leave their “turf” but they have “slowly” come to understand that jointness would be much better than individual separate forces.

“I am very clear on it but there were certain aspects which need to be also taken along. I have to take all the three services on board. Let me be very clear, no one wants to leave his turf,” he said during a book launch.

Underlining that he was not speaking in Indian military context alone, Parrikar said across the militaries, the same situation prevailed. He added that the question was whether one will “force it down the throat” or get everyone on board. “I think, I have been discussing with the chiefs and slowly they have also come to understanding that jointness would be much better than individually separate forces,” he said, seeking a “few more months”. However, he said that the final call would be taken by the PM.

The chiefs of both the Army and the Air Force will retire this year end. Without naming any operation, he said though India has not gone for jointness, “recent operations” were quite successful. “The Air Force and the Army integrated so well in recent operations, not saying which operation. There was total synergy and there was no problem in working together,” he remarked.

The post of CDS was recommended in 2001 by a Group of Ministers (GoM) which was set up in April 2000 to review the national security system in the aftermath of the Kargil War. The recommendation, if implemented, would be the first major military reform by the Narendra Modi government, which has already announced significant changes in the procurement process.

रक्षा क्षेत्र में बड़े सुधार की तैयारी

नई दिल्ली, प्रेटर : केंद्र सरकार सैन्य बलों (थलसेना, वायुसेना और नौसेना) में बड़े सुधार करने की तैयारी में है। अगले कुछ महीनों में इस प्रक्रिया को अंतिम रूप दिया जाएगा। रक्षा मंत्री मनोहर पर्रीकर ने खुद इसकी पुष्टि की है। इसके तहत चीफ ऑफ डिफेंस स्टाफ (सीडीएस) का पद सृजित किया जाएगा। सैन्य बलों में सुधार प्रधानमंत्री नरेंद्र मोदी के एजेंडे में शामिल रहा है।

पर्रीकर ने कहा, 'मेरा रुख इस मुद्दे (सेना के तीनों अंगों को एक करने पर) पर शुरूआत से ही स्पष्ट रहा है, लेकिन इससे जुड़े अन्य पहलुओं पर भी विचार करना जरूरी था। मुझे सेना के तीनों अंगों को एक टेबल पर लाना था। मैं एक बात स्पष्ट कर देना चाहता हूँ कि कोई भी अपना विशेषाधिकार नहीं छोड़ना चाहता है। मैं सेना, वायुसेना और नौसेना के प्रमुखों से लगातार इस मसले पर विचार विमर्श करता रहा हूँ।' रक्षा मंत्री ने स्पष्ट किया कि इस मुद्दे पर प्रधानमंत्री नरेंद्र मोदी ही अंतिम फैसला लेंगे। दिलचस्प है कि सेना और वायुसेना के प्रमुख साल के अंत में रिटायर हो रहे हैं। पर्रीकर ने सुधारों के लिए कोई समय सीमा तय करने की बात से इन्कार किया है।

मनोहर पर्रीकर ने किसी अभियान का जिक्र किए बिना कहा कि हाल के कुछ सैन्य अभियान को सेना और वायुसेना ने जबरदस्त तालमेल के साथ अंजाम दिया है।

- ◆ पर्रीकर ने कहा, प्रधानमंत्री लेंगे अंतिम फैसला
- ◆ चीफ ऑफ डिफेंस स्टाफ (सीडीएस) पद को लेकर निर्णय संभव



चंदेल और उड़ी में हमले के बाद म्यांमार और गुलाम कश्मीर में सफल सर्जिकल स्ट्राइक की गई थी। कारगिल युद्ध के बाद 2001 में तत्कालीन वाजपेयी सरकार के दौरान अधिकार प्राप्त मंत्रियों के समूह ने सीडीएस का पद सृजित करने की सिफारिश की थी। सुधार के अमल में आने पर सीडीएस अंडमान एवं निकोबार द्वीप समूह में स्थित तीनों सेना के एकीकृत कमान के प्रमुख होंगे।

रक्षा प्रतिष्ठानों के समीप बसे लोगों को एनओसी देने में ढील : सरकार ने रक्षा प्रतिष्ठानों के आसपास रहने वाले लोगों को अनापत्ति प्रमाणपत्र (एनओसी) देने से जुड़े नियमों में ढील देने का फैसला किया है। पर्रीकर ने बताया कि इसके तहत लीज, संचार ढांचा स्थापित करने, संपत्ति परिवर्तन आदि में छूट दी जाएगी।

THE ECONOMIC TIMES

India, Japan Ink Civil Nuclear Pact to Boost Energy Ties

By DipanjanRoy Chaudhury

Power Of Exchange: Move would enable Japan to export technology & provide finance to nuclear plants; Westinghouse plant in AP also to get boost

India and Japan on Friday signed a landmark civil nuclear cooperation deal -upgrading MoU on the issue signed at the last annual Summit here -a move that will boost bilateral economic and energy ties and facilitate US nuclear major Westinghouse plant in Andhra Pradesh. The two countries had reached a broad agreement for cooperation in civil nuclear energy sector during Japanese counterpart Shinzo Abe's visit to India in December last year, but the deal was yet to be signed as some critical issues were yet to be worked out.

The agreement would enable Japan to export nuclear power plant technology as well as provide finance for nuclear power plants. Japan's Toshiba has majority stakes in US nuclear firm Westinghouse that is building a set of six reactors in Andhra Pradesh and could provide technical assistance for the same. Hitachi also from Japan has stakes in GE which is also proposed to set reactors in India.

It is no secret that Japan does not want nuclear technology transferred to India to be used for military purposes. The pact could include a clause to halt Japanese cooperation with India if New Delhi conducts a nuclear test. Japan is the only country in the world to have suffered nuclear bombing.

Plutonium made by reprocessing spent fuel in a nuclear power plant can be used to make nuclear weapons. It is understood Japan will permit India to reprocess spent fuel at designated facilities on the condition India accepts comprehensive inspections by the International Atomic Energy Agency. Such “advanced consent“ will be withdrawn, however, if threats to national security or issues regarding the protection of nuclear materials arise.

Following Friday's agreement, the Japanese government will seek approval from the Diet to promote Japanese corporate participation in building nuclear power plants in India.

The deal inked after Modi-Shinzo Abe annual Summit made Tokyo first non-NPT signatory to have such a deal with Tokyo. It would also cement the bilateral economic and security ties as the two countries amid an assertive China.

There was political resistance in Japan the only country to suffer atomic bombings during World War II against a nuclear deal with India, particularly after the disaster at the Fukushima Nuclear Power Plant in 2011.

Other nations who have signed civil nuclear deal with India include the US, Russia, South Korea, Mongolia, France, Namibia, UK, Argentina, Canada, Kazakhstan and Australia.

Meanwhile among other issues the two sides signed MoU for infrastructure promotion in India besides strengthening anti-terror & maritime security partnership amid China's aggression in the region.

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Sat, 12 Nov, 2016

Experts question Parrikar's comments ahead of NSG meet

LOWERING HIS DEFENCE

The defence minister is not new to controversial statements. Here are a few:

Aug 2016: Going to Pakistan is the same as going to hell. (On finance minister Arun Jaitley skipping Saarc meet of ministers in Islamabad)

July, 2016: One actor had said that his wife wants to leave India. It was an arrogant statement. If I am poor and my house is small, I will still love my house and always dream to make a bungalow out of it. (In a veiled attack on actor Aamir Khan)

May 2015: We have to neutralise terrorists through terrorists only. Why can't we do it? We should do it. Why does my soldier have to do it?... kaante se kaanta nikalta hai (you remove a thorn with the help of a thorn)

June 2015: Pakistan ko mirchi lagi, woh bhi Andhra ki (A chilli that too from Andhra Pradesh has hit them). (When questioned about Pakistan's reaction to his "terrorist against terrorists" comment)

June 2015: I've found that nowadays the eyes (of Ganesha idols) are becoming smaller and smaller. One day I turned it back and found Made in China



No matter what the minister said, he was speaking in an official capacity and his comments can't be taken lightly. This is part of a wider strategy to inject certain things into the public discourse that fits in with the belligerent, intolerant nationalism this government is pushing. ACHIN VANAIK, founder, Coalition for Nuclear Disarmament and Peace

New Delhi: Defence minister Manohar Parrikar's remarks about when and how nuclear weapons should be used came on the eve of a crucial meeting of the Nuclear Suppliers Group (NSG) in Vienna that is expected to take up India's application to join the elite club. They also came at a time when India's Prime Minister was preparing for a landmark civil nuclear agreement with Japan, whose sensitivities about atomic weapons are no secret. The point of having a credible minimum nuclear deterrent and a nuclear doctrine that is largely out in public is that there is no need to talk about the nukes, or what India intends to do with them.

Parrikar, of course, tried to pass off his remarks

as a personal opinion. “Why a lot of people say that India has (a) No First Use policy... I should say I am a responsible nuclear power and I will not use it irresponsibly... as an individual, I get a feeling sometime why do I say that I am not going to use it first,” he said on Thursday.

Experts, however, argued that the greater the ambiguity about a nuclear doctrine, the greater the deterrence. Some even contend that India erred by making public its draft nuclear doctrine in 1999, almost a year after the blasts in Pokhran, and by releasing parts of the doctrine on its adoption in 2003. “The more ambiguity and opacity there is about a nuclear doctrine, the more it adds to deterrence,” Bharat Karnad, a national security expert at the Centre for Policy Research, told HT.

Karnad, who was part of India’s first National Security Advisory Board that put together the draft doctrine, said the members of the body were “aghast” when the government of the day decided to make the document public. Achin Vanaik, one of the founders of the Coalition for Nuclear Disarmament and Peace, said it had become the norm for some Union ministers and chief ministers to make “outrageous” statements that were later rationalised. “No matter what the defence minister said, he was speaking in an official capacity and his comments can’t be taken lightly,” Vanaik said. “This is part of a wider strategy to inject certain things into the public discourse that fits in with the belligerent, intolerant nationalism this government is pushing.” Vanaik also questioned the nuclear stance of India and China, saying both weren’t “practising what they preach” about No First Use. He said, “No First Use implies these countries should have enough weapons only for a second strike but they’re both expanding their arsenals.” Observers have contended that Parrikar’s remarks were an apparent retort to recent sabre-rattling by Pakistan, but Karnad argued that the neighbouring country did not even pose a “credible threat”. Referring to a country’s capacity to absorb a nuclear strike, he said the “exchange ratio between destruction imposed and destruction absorbed” would be far greater for Pakistan.



Sat, 12 Nov, 2016

Nuclear loose talk

By committing to the NFU, critics have argued, India allows more powerful adversaries, specifically China, to plan large-scale conventional offensives secure in the knowledge India will not reach for its strategic deterrent.

Union Defence Minister Manohar Parrikar’s comments questioning the wisdom of India’s “no first use” commitment on nuclear weapons are breathtaking not for their content, but their irresponsibility. Nowhere in the world do high officials voice their private musings on nuclear doctrine at book-launch functions, and with good reason. The possession of nuclear weapons, which can claim tens of millions of lives, imposes an obligation of great reflection and restraint. That Parrikar’s comments were made while Prime Minister Narendra Modi was in Japan, negotiating a nuclear deal with the only country in the world which has suffered the use of nuclear weapons, speaks volumes. India has sought entry to the global nuclear order saying it is a responsible nuclear power. Now, the world has seen its defence minister discuss grave policy issues in the most casual manner possible. This is cause for obvious concern. Those who use words without care, it could be said, are prone to act without thinking, too.

Though the tenor of Parrikar’s remarks suggests he has only recently arrived at the thought that the NFU might be a bad idea, the debate is an old one. By committing to the NFU, critics have argued, India allows more powerful adversaries, specifically China, to plan large-scale conventional offensives secure in the knowledge India will not reach for its strategic deterrent. Abandoning the NFU, the argument goes, injects uncertainty in the offensive calculations of such an adversary. True, other theorists contend, but abandoning the NFU also has costs. For example, it encourages Pakistan, at the receiving end of the same conventional asymmetry India has with China, to build even more nuclear weapons, since it cannot be sure India will not attempt a pre-emptive first strike to obliterate its arsenal.

Having weighed the debate, India committed to the NFU in 1999, following that up in 2003 with a declaration that it would “not be the first to initiate a nuclear strike, but will respond with punitive retaliation should deterrence fail”. The BJP’s 2014 election manifesto promised to revise India’s nuclear doctrine “to make it relevant to challenges of current times”. The Union government has not announced any review, but, like nation-states across the world, public debate on these grave issues ought to be welcome. If the defence minister had a thought-through contribution to make, he should have offered it. To make throw-away remarks, and then seek to pass them off as “personal”, is a national disservice.



Sat, 12 Nov, 2016

Indo-China army exercise on terrorism from Nov 16

Delegations of both sides meet on border stability

India and China are readying for a joint military exercise and have decided on a trajectory to increase military interactions and ensure stability along the disputed boundary between the two nations.

A two-week joint military exercise begins on November 16 to “understand and practice” methods to tackle the transnational terror. The exercise is being conducted under the Pune-based Southern Army Command.

This will be the sixth edition of the “hand-in-hand” exercise, first since December when Beijing passed a law authorising its military to venture overseas on counter-terror operations and even sent off 5,000 troops to tackle the Islamic State in Syria.

Both countries separately face transnational terror in their respective regions — India in Kashmir and China in Xinjiang (lying north of J&K in India). Both nations also have collective threat of their own youth joining the IS. The scope of the exercise will include evolution of joint drills for conduct of counter-terror operations and include a live drill to neutralise a terrorist.

Besides, a high-level India-China Defence and Security Consultation has been conducted in New Delhi earlier this week. Indian Defence Secretary G Mohan Kumar led the India delegations in talks with Sun Jianguo, deputy chief of the Joint Staff Department of China’s Central Military Commission and the Indian.

The Chinese side expressed its commitment to join hands with the Indian Army to maintain the exchanges on border defence, improve the mechanism of communication and strengthen border management and control so as to safeguard peace and stability in their border areas, he added. The two are working to introduce better measures to boost communication and coordination between border guarding forces.



Sat, 12 Nov, 2016

INS Vikramaditya completes its first dry-dock refit in Kochi

‘Aircraft carrier at a high level of operational competence’

The aircraft carrier, *INS Vikramaditya*, has successfully completed its first routine maintenance, a 43-day short refit, at the Cochin Shipyard.

It is at a high level of operational competence and preparedness, according to the ship’s Commanding Officer Captain Krishna Swaminathan. The maiden dry-docking of the vessel after its induction into the Navy in November 2013, had put to rest apprehensions about the feasibility of carrying out its first cycle of underwater maintenance within India, he told the media on board *INS Vikramaditya*. The ship arrived in Kochi in early September, and was dry-docked at the Cochin Shipyard on September 23. *INS Vikramaditya* was docked after the undocking of the soon-to-be-retired aircraft carrier *INS Viraat*.

“After the first cycle of preventive maintenance, which involved a thorough inspection of the carrier’s underwater package, was over, the vessel was undocked on November 5. Vikramaditya, a steamship, has a large number of pipes and underwater openings. The hull plates that are in contact with the corrosive medium of seawater – all got inspected,” said Capt. Swaminathan.

The vessel added a great national capability, enhancing the image of the Navy.

Capt. Swaminathan said there were initial apprehensions about dry-docking the vessel in Kochi as there were technical challenges posed by the depth of the channel, which was eventually dredged to a desired level, and the length of the carrier overshot the yard’s dry-dock. “We had to do a lot of calculations and the Cochin Shipyard has done a good job.”

THE ASIAN AGE

Sat, 12 Nov, 2016

NASA telescopes spot elusive brown dwarf

Washington, Nov. 11: In a first-of-its-kind collaboration, Nasa’s Spitzer and

Swift space telescopes have joined forces to unveil an elusive brown dwarf — thought to be the missing link between planets and stars, with masses up to 80 times that of Jupiter. Researchers observed a microlensing event, when a distant star brightens due to the gravitational field of at least one foreground cosmic object.

This technique is useful for finding low-mass bodies orbiting stars, such as planets.

In this case, the observations revealed a brown dwarf. Brown dwarfs are thought to be the missing link between planets and stars, with masses up to 80 times that of Jupiter. But their centres are not hot or dense enough to generate energy through nuclear fusion the way stars do.

Scientists have found that, for stars roughly the mass of our sun, less than 1 per cent have a brown dwarf orbiting within 3 AU (1 AU is the distance between Earth and the sun). This phenomenon is called the “brown dwarf desert.” The newly discovered brown dwarf, which orbits a host star, may inhabit this desert. Spitzer and Swift observed the microlensing event after being tipped off by ground-based microlensing surveys, including the Optical Gravitational Lensing Experiment (OGLE). “It’s possible that the ‘desert’ is not as dry as we think,” said Shvartzvald.

THE ASIAN AGE

Sat, 12 Nov, 2016

Mars funnel may have microbial life

Houston, Nov. 11: A strangely shaped depression on Mars could be a new place to look for signs of life on the Red Planet, according to a new study. The depression was probably formed by a volcano beneath a glacier and could have been a warm, chemical-rich environment well suited for microbial life, researchers said.

“We were drawn to this site because it looked like it could host some of the key ingredients for habitability — water, heat and nutrients,” said lead author Joseph Levy, a research associate at the University of Texas, US.

The depression is inside a crater perched on the rim of the Hellas basin on Mars and surrounded by ancient glacial deposits.

In 2009, Mr Levy noticed crack-like features on pictures of depressions taken by the Mars Reconnaissance Orbiter that looked similar to “ice cauldrons” on Earth, formations found in Iceland and Greenland made by volcanos erupting under an ice sheet. Another depression in the Galaxias Fossae region of Mars had a similar appearance. “These landforms caught our eye because they’re weird looking. They’re concentrically fractured

so they look like a bulls-eye. That can be a very diagnostic pattern you see in Earth materials,” said Mr Levy, a postdoctoral researcher.



Sat, 12 Nov, 2016

ISRO starts tests on moon lander

Ahmedabad: At its Challakere's facility in Karnataka, Isro has begun tests on its moon lander of the Chnadrayaan-2 mission.

Tests are being carried out on an artificially created moon surface, complete with craters and uneven terrain. Isro chairman A S Kiran Kumar, who was at an award function at the Physical Research Laboratory(PRL) in the city on Friday morning, said that tests were crucial for the study of the impact on instruments that are going to piggyback on the lander.

Kumar said that a set of engines or thrusters on the lander would work against lunar gravity. "The functionality of crucial scientific instruments on board will be conducted after the landing, he said.

"An aircraft carrying some of the instruments is being flown over this simulated area." He also said that after Pakistan's exit from the SAARC satellite project, it has been renamed South Asia Satellite, which will be launched in March next year.

Kumar was at the PRL to attend 'Shri Hari Om Ashram Prerit Dr. Vikram Sarabhai Research Awards-2015' and 'PRL Award-2015'.

As for civil applications of space technologies, Kumar said that monitoring of Mahatma Gandhi National Rural Employment Guarantee (MGNREGA) project works is being made possible with space applications. "Onsite pictures of the project are taken and are coupled with satellite information like the amount of construction and resources inputs," he said. "This provides real-time monitoring of MGNREGA projects."

Kumar also pointed out that satellite data is being used to provide information on the potential of inland fisheries for tribal populations.

"The inland fisheries project is being undertaken as part of alternative livelihoods," he said. Kumar said that over the past few years Isro had entered into 39 active collaborations with space agencies in the country. "The latest Isro ScatSat and NISAR are the results of such collaborations," he said. "We also have collaborative research data sharing agreements with the European space agency."



Sat, 12 Nov, 2016

Soon, DNA-based nanowires may power gen-next computers

Scientists have successfully created gold-plated nano-wires assembled from single DNA strands that can conduct current, an advance that may pave the way for tiny electronic devices made from genetic material.

Currently the circumference of the smallest transistors is tinier than the AIDS virus. The industry has shrunk the central elements of their computer chips to fourteen nanometers in the last sixty years.

Conventional methods, however, are hitting physical boundaries. Researchers around the world are looking for alternatives. One method could be the self-organisation of complex components from molecules and atoms.

Researchers at the Helmholtz-Zentrum Dresden-Rossendorf (HZDR) and Paderborn University in Germany combined a long single strand of genetic material with shorter DNA segments through the base pairs to form a stable double strand."Our measurements have shown that an electrical current is conducted through these tiny wires," said Artur Erbe from HZDR's Institute of Ion Beam Physics and Materials Research.

"With the help of this approach, which resembles the Japanese paper folding technique origami and is therefore referred to as DNA-origami, we can create tiny patterns," said Erbe. "Extremely small circuits made of molecules and atoms are also conceivable here," he said.

This strategy, which scientists call the "bottom-up" method, aims to turn conventional production of electronic components on its head.

"The industry has thus far been using what is known as the 'top-down' method. Large portions are cut away from the base material until the desired structure is achieved. Soon this will no longer be possible due to continual miniaturisation," Erbe said.

The new approach is instead oriented on nature molecules that develop complex structures through self-assembling processes. The elements that thereby develop would be substantially smaller than today's tiniest computer chip components.

"Genetic matter doesn't conduct a current particularly well," said Erbe.

Researchers have therefore placed gold-plated nanoparticles on the DNA wires using chemical bonds. Using electron beam lithography they subsequently make contact with the individual wires electronically.

"We could demonstrate that the gold-plated DNA wires conduct energy. We are actually still in the basic research phase, which is why we are using gold rather than a more cost-efficient metal," said Erbe. —PTI



Sat, 12 Nov, 2016

Novel way to develop better, faster, stronger heart cells

New York: In a major breakthrough, a team of researchers, including one of Indian origin, has identified two chemicals that can help develop heart cells that can beat harder, faster and stronger, bringing technology one step closer to regenerating damaged hearts.

Scientists from Gladstone Institute of Cardiovascular Disease, in San Francisco, US, tested 5,500 chemicals, and identified two that can potentially transform a scar tissue into healthy beating heart muscle -- a discovery that can help find new and effective treatments for heart failure.

The two chemicals increased eightfold the number of heart cells created, as well as sped up the process of cell conversion, achieving in one week what used to take six to eight weeks, the study said.

"The study discovered that chemically inhibiting two biological pathways active in embryonic formation improves the speed, quantity, and quality of the heart cells produced from our original process," said senior author Deepak Srivastava, Director of the Gladstone Institute of Cardiovascular Disease.

After suffering a heart attack, the connective tissues develop scar tissue, which then contribute to heart failure.

When the heart muscle gets damaged, the body is unable to repair the dead or injured cells. According to researchers, the first chemical inhibits a growth factor that helps cells grow and divide and is important for repairing tissue after injury.

The second chemical inhibits an important pathway that regulates heart development.

By combining the two chemicals with the current method -- of reprogramming connective tissue cells into heart muscle cells using certain proteins -- the researchers successfully regenerated heart muscle and greatly improved heart function in mice that had suffered a heart attack. In addition, the chemicals were also used to improve direct cardiac reprogramming of human cells, which is a more complicated process that requires additional factors, the researchers noted in the paper published in the journal *Circulation*.

चांद पर यान उतारने का अभ्यास जमीन पर

अहमदाबाद, प्रेट्र : भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) महत्वाकांक्षी चंद्रयान-2 अभियान को सफल बनाने में जुटा हुआ है। चंद्रयान-2 के लैंडर पर लगे सेंसर और अन्य उपकरणों की जांच की प्रक्रिया शुरू कर दी गई है, ताकि चांद पर यान आसानी से उतर सके। कर्नाटक के चल्लाकेरे में चंद्रमा के माहौल के अनुरूप कृत्रिम क्रेटर (ज्वालामुखी के मुहाने जैसी आकृति) तैयार किए गए हैं। यहां यान को उतारने का अभ्यास किया जा रहा है।

इसरो के अध्यक्ष एस किरण कुमार ने शुक्रवार को यह जानकारी दी। भौतिक अनुसंधान प्रयोगशाला में आयोजित एक कार्यक्रम से इतर बातचीत में कुमार ने कहा, कुछ क्रेटर चांद जैसी जमीन के समान हैं। यह परीक्षण जोखिम से बचने और यान की सफल लैंडिंग का अभ्यास है। हमें यह सुनिश्चित करना होगा कि जिस जगह पर बहुत ज्यादा ढलान नहीं हो वहीं यान को उतारा जाए। अन्यथा लैंडर क्रेटर में फंस सकता है।' मालूम हो चंद्रमा

- ◆ चंद्रयान-2 की सफलता के लिए अभ्यास में जुटा इसरो
- ◆ कर्नाटक के चल्लाकेरे में तैयार किए कृत्रिम क्रेटर



और पृथ्वी के गुरुत्वाकर्षण में काफी अंतर हैं।

इसरो की वेबसाइट के अनुसार, चंद्रयान-2 चांद के लिए भारत का दूसरा अभियान है। यह पूर्व के चंद्रयान-1 अभियान का उन्नत रूप है। इसमें एक उपग्रह, लैंडर और रोवर शामिल होगा। इस अभियान के तहत उपग्रह भी भेजा जाएगा जो चंद्रमा की परिक्रमा करते हुए उसके अनछुए पहलुओं को सामने लाएगा।