

समाचार पत्रों से चयित अंश Newspapers Clippings

दैनिक सामयिक अभिज्ञता सेवा

A Daily Current Awareness Service



रक्षा विज्ञान पुस्तकालय
Defence Science Library
रक्षा वैज्ञानिक सूचना एवं प्रलेखन केन्द्र
Defence Scientific Information & Documentation Centre
मेटकॉफ हाऊस, दिल्ली 110054
Metcalf House, Delhi-110054

Indigenously built LCH shows rocket-firing ability at trials

After successful completion of high-altitude flight testing and outstation trials last year, the Light Combat Helicopter (LCH) being developed by HAL has achieved another milestone by satisfactorily firing rockets (70 mm) from its prototype, TD-3 (technology demonstrator-3), in weaponised configuration.

“The rocket firing trials carried out in Jaisalmer have showed satisfactory integration of hardware and software, structural integrity and safe separation of rocket ammunition. Integration of weapons such as rocket, turret gun (20 mm) and air-to-air missile on LCH will further continue,” T Suvarna Raju, CMD, Hindustan Aeronautics Limited (HAL), said.

“The trials have given us confidence for carrying out firing certification trials planned during April-May 2016,” Raju added, disclosing that LCH would participate in IAF’s ‘Iron Fist 2016’ exercise at Pokhran, Rajasthan, on March 18.

‘Iron Fist’, a day-night combat exercise involving more than 181 IAF aircraft, including frontline fighters, not only shows the battle preparedness of IAF but also sends a message to the enemy.

The LCH TD-3 is integrated with an electro-optical (EO) system, a solid state digital video recording system (SSDVR) and a 70mm rocket system in conjunction with an updated glass cockpit software to help in firing of rockets. LCH, a 5.5-ton class attack helicopter, is powered by two Shakti engines and inherits many technical features of the Advanced Light Helicopter “Dhruv” developed successfully by HAL. The features that are unique to LCH are its sleek and narrow fuselage, tri-cycle crashworthy landing gear, crashworthy and self-sealing fuel tanks, armour protection, etc. The helicopter, meant for the Army and IAF, will have day-night targeting systems for the crew including the helmet pointed sight and electro-optical pod consisting of camera, laser range finder and other hi-tech devises.

About the chopper

- The indigenously built Light Combat Helicopter (LCH) prototype, a 5.5-ton class attack helicopter, fired 70mm rockets in weaponised configuration, during trials recently
- The LCH prototype has demonstrated the integration of hardware and software, structural integrity and safe separation of rocket ammunition
- The helicopter has unique features such as sleek fuselage, tri-cycle crashworthy landing gear, armour protection

Paris resists taking on liability for Rafale

Around 2004, when the Indian Air Force (IAF) ordered some 40 additional Sukhoi-30MKI fighters from Russia, India’s cabinet exempted Moscow from providing bank guarantees to cover “performance and delivery liabilities” for the new aircraft. Russia had insisted on this exceptional waiver, given its strategic relationship with India and the Su-30MKI’s proven performance. In the years ahead, New Delhi was to regret not binding Moscow to specific liabilities, as the Su-30MKI consistently disappointed the IAF with availability rates of below 50 per cent.

Now, with New Delhi and Paris having inked an inter-governmental agreement (IGA) on January 25 for the purchase of 36 Rafale fighters, France, like Russia in 2004, is resisting sovereign liabilities that would make the government of France, not just Dassault alone, responsible for delivery or performance shortfalls in the Rafale.

India's defence ministry, like weapons buyers everywhere, insists on writing "liabilities" into contracts for defence equipment. These are usually backed by bank guarantees that New Delhi can encash if the equipment's delivery or performance is not according to the contract. On Monday, Indian Express reported that the Ministry of Law and Justice has insisted on sovereign guarantees.

But Paris, like Moscow earlier, wants to provide just a "letter of comfort", the disparaging term for a written (but commercially un-enforceable) government undertaking to enforce the contract provisions.

Added to the already difficult negotiations over the Rafale's cost, which the defence ministry considers exorbitant at Euro 11-12 billion, and wants to bring down to no more than Euro 9 billion, the disagreement over liability further complicates any early conclusion of the Rafale contract.

Knowledgeable insiders speculate that New Delhi might be attempting to help reduce Dassault's cost by shifting liability to the French government. A bank guarantee would cost Dassault 3-4 per cent of its value, while a sovereign guarantee incurs no cost.

Paris and Dassault have even earlier backed away from incorporating liabilities into the Rafale contract. In long-drawn and eventually fruitless negotiations between 2012-15 for 126 Rafales, Dassault had declined to accept liability for 108 fighters that were to be built in India by Hindustan Aeronautics Ltd (HAL). This was one of the thorniest issues that led to a breakdown in negotiations.

"Usually, a written liability that binds the vendor company would prove adequate in a defence contract. However, since the French government has taken a leading role in pushing the Rafale contract, it should not back away from taking on liability", says Amit Cowshish, a former financial advisor for defence ministry acquisitions.

According to the defence procurement procedure (DPP), an aerospace contract should involve a signing amount of no more than 15 per cent, another 70 per cent paid out in step with delivery milestones, and about 15 per cent retained for the warranty period to cover defects, if they arise.

Yet, the defence ministry has been paying as much as 20-25 per cent while signing the contract, and even paying out the 15 per cent warranty amount, satisfying itself with a bank guarantee for that amount.

"Arms vendors and supplier countries are notoriously reluctant to accept liabilities written into contracts. However, it is essential for our defence ministry to demand these, so as to have a mechanism for enforcing multi-billion dollar contracts", says SN Misra, a former defence ministry aerospace contracting veteran.

Interestingly, Washington follows an entirely different system for Foreign Military Sales (FMS) contracts, in which the US Department of Defense (Pentagon) concludes contracts with US arms vendors on behalf of the purchasing country. For purchases like the C-130J and C-17 Globemaster III, India has been depositing 40 per cent of the contract value into an escrow account with the US Federal Reserve. This serves as a "termination guarantee", in case the buyer government unilaterally terminates the contract. The "liability" is negotiated separately between the Pentagon and the vendor company.

Prime Minister Narendra Modi had requested French President Francois Hollande last April for 36 Rafale fighters on a “fast track” basis. In January, the two countries had signed an “inter-governmental agreement” during Hollande’s visit to India. Almost two months later, no contract is in sight.

Deccan Herald
15 Mar, 2016

Cap on defence FDI will deter investors, says Airbus

European aviation and space major Airbus on Monday said the 49% limit on foreign direct investment in military projects would not bring the best foreign vendors to India under the Make in India scheme.

With the 49% FDI ceiling, it would not be easy to get the original equipment manufacturer of quality. "You may get a few but not the right ones," Pierre de Bausset, President and Managing director of Airbus Group India, said here.

Bausset said if an original equipment manufacturer (OEM) was bringing in investment or a product that is part of their own product-line worldwide, the company would like to have some control over it.

"Forty nine per cent is not a good limit as it is at odds with the government's stated policy. But we are faced with a moving environment," he added.

Airbus is the first big firm that expressed doubts on the practicality of the 49% ceiling, though other defence companies too dropped hints against the increase in the limit.

The ceiling was expanded to 49% in 2014 after the NDA government came to power from 26%, which was the limit set by the previous regime.

Owing to red tape, several Airbus projects including A330 multi-role tanker transport and C295W transport aircraft have been stuck for years.

The MRTT project has been stuck for 10 years as the tender was first floated in 2006. Three years later, the A330 platform was chosen, but the government cancelled the tender citing high cost. In January 2013, the same platform was again selected through a new tender. "The acquisition stagnated at the contract negotiation stage. We are awaiting for guidance from the defence ministry," said Venkat Katkuri, President of Airbus Defence and Space division. Airbus officials say the company is on course to match its \$ 2 billion procurement target by 2020, which doesn't include defence deals.

Deccan Herald
15 Mar, 2016

IAF's mega adventure show in Jammu

A mega adventure show of IAF would be organised here on March 22 which would include a display of synchronised arms drill and various skydiving show.

"IAF station Jammu is organising an adventure sports mela at M A Stadium on March 22 with a paratroop by the universally acclaimed IAF Akash Ganga Sky Diving team followed by spectacular display of synchronised arms drill by the Air Warrior Drill Team, aeromodel flying," PRO Defence, Lt Col Manish Mehta said.

A performance by Air Warrior Symphony Orchestra of the IAF will mark the culmination of the event, he said.

Revised pension benefits given to 2 lakh defence pensioners

The Defence Pension Disbursing Offices (DPDOs) functioning under Controller General of Defence Accounts (CGDA) in the Ministry of Defence have released revised pensionary benefits to 2,21,224 Defence pensioners drawing service and disability pension.

The amount along with the first instalment of arrears was released and credited by the Defence Ministry to the accounts of these pensioners on 1 March.

In the case of the remaining 1,46,335 family pensioners drawing pension from DPDOs, payment along with arrears is expected to be released by March end. Banks are under process of revision work.

These steps are a follow-up to Department of Ex-Servicemen Welfare (ESW) of the Ministry of Defence's notification on 7 November last year ordering implementation of One Rank One Pension (OROP) scheme for Defence pensioners.

The total additional annual financial increase for grant of OROP is Rs 7488.70 crore. The total amount on account of arrears to be paid for the period 1 July 2014 to 31 December 2015 is Rs 10,925.11 crore. Out of a total annual liability of Rs 7488.70 crore, PBOR family pensioners shall get Rs.6,405.59 crore, which works out to 85.5% of total expenditure of OROP. Due to increase in defence pension budget, the additional liability for current financial year 2015-16 shall be Rs. 4,721.34 crores which will increase the current defence pension liability of Rs 60,238 crore to Rs 64,959.34 crore for 2015- 16. Detailed implementation orders of OROP with 101 tables containing revised pensions of different ranks and categories were issued by the Department of ESW on 3 February this year through their website www.desw.gov.in. According to the orders, the pension disbursing agencies have been authorised to make payments with arrears as scheduled.

To facilitate the pension disbursing agencies, the Principal Controller of Defence Accounts (P) have also issued implementation instructions through a circular on 4 February. The implementation instructions along with government orders are available on the website www.pcdapension.nic.in

Let's rewrite the script now

Modi should speak candidly at the Washington summit about the irreparable NPT regime and hint at India's options

Animated By A Desire To Join The Causes Dear To The Us, Indian Pms Have Been Ignoring The Wisdom Of Staying Aloof From Such Conferences That Erode India's Freedom Of Strategic Action And Room For Foreign Policy Manoeuvre

United States President Barack Obama, perhaps, to justify his winning the Nobel Peace Prize for just one peroration in Prague in April 2009 initiated the so-called nuclear security summits. Ironically, in the speech, he did not promise any progress towards a “world without nuclear weapons”, but mentioned the need for nuclear governance measures within the confines of the 1968 Non-Proliferation Treaty (NPT) to protect “vulnerable nuclear material”. It is something these summits have pondered, and the last of which — Obama's diplomatic swan song is scheduled in Washington appropriately for Fool's Day (March 31-April 1). Except, measures to keep nukes away from terrorists and madmen only underline the iniquitous nuclear status quo and, where disarmament is concerned, amounts to putting the cart before the horse.

New Delhi's enthusiasm for these summits is incomprehensible. Animated less by national interest than a desire to join the causes dear to the US, Indian prime ministers have been imprudent, ignoring the wisdom of staying aloof from such international conferences that invariably end up eroding India's freedom of strategic action and room for foreign policy manoeuvre. Responsible for negotiating the deleterious nuclear deal with the US, which stymied the country's development of thermonuclear weapons fetched India nothing in return — neither the rights and privileges of a nuclear weapons state nor the membership of the Nuclear Suppliers Group, as assured by the July 18, 2005 joint statement signed between then US President George W Bush and then prime minister Manmohan Singh. Singh, however, attended the first two of these summits.

As if to prove he is no laggard in conceding sovereign nuclear policy ground, Prime Minister Narendra Modi has prepared for the Washington conference by formally committing to join the Convention on Supplementary Compensation (CSC). This gesture, while doubtless pleasing to the US government and Western nuclear industry leaders, who can expect to sell India nuclear power plants worth tens of billions of dollars, violates the 2010 Nuclear Liability Act. This made foreign vendors accountable for accidents sourced to deficient or flawed nuclear reactors and related technologies they supply, and does not limit their compensation to victims, as the CSC does to \$300 million. Modi's flouting the Act means the Indian taxpayer not only pays through his nose for technologically faulty imported nuclear reactors but, in the case of nuclear accidents, also for compensatory payouts in excess of the CSC cap, which could potentially run into billions of dollars.

Nuclear governance presumes a stable nuclear order. But the extant regime has always been roiled by the ongoing strategic force modernisation and augmentation programmes of the five NPT-recognised nuclear weapons states (P5). It has destroyed Article VI of the NPT requiring disarmament negotiations in good faith by the P5 and hence the treaty itself.

The US is investing \$1 trillion to rebuild its strategic triad over 30 years or \$35 billion annually, including the upgrading of the B61 Mod 12 tactical nuclear bomb, designing new “tailored yield” thermonuclear warheads, developing next generation strategic bomber and nuclear-powered submarines in order to achieve, what deputy secretary of defence Bob Work called “technological overmatch” against Russia and China. Russia is spending some \$16 billion a year in sharpening its

nuclear attack capability, stressing the centrality of its modernised arsenal in future wars and as means of compensating for its conventional military inferiority (thereby neatly reversing its thrust of the Cold War when it enjoyed a massive conventional military edge). Moscow has embarked on a new strategic bomber (Tu-PAK DA) project, and deployed the advanced Borei-class ballistic nuclear missile firing nuclear submarine (SSBN), and the Topol-M Inter-Continental range Ballistic Missile (ICBM) that President Vladimir Putin has deemed “indefensible”.

China with an annual expenditure in excess of \$10 billion on its newly named Strategic Rocket Forces is the only P5 state increasing the size of its nuclear arms inventory besides fielding new fusion warheads on DF-21A and DF-31 missiles, and the JL-2 submarine-launched missile from the new Jin-class SSBN. Meanwhile, Britain and France, each with yearly budgets for strategic forces of around \$7 billion, are seeking to modernise their thermonuclear warheads by sharing in fusion weapons advancement infrastructure (Teutates programme), such as the multi-axes hydrographic-radiographic testing EPURE facility at Valduc with second and third laser streams becoming operational by 2019 and 2022, respectively, and the inertial confinement fusion facility in Bordeaux. The British nuclear weapons establishment at Aldermaston has just improved the W76-1Mk-4 hydrogen warhead for hardened targets, and installed the Orion laser that is a thousand times more powerful than the Helen system it replaced.

The militant tilt of the P5 aside, China continues to undermine India’s nuclear security by transferring to Pakistan design expertise to configure new missiles and miniaturise its fission warheads. The Modi government, much like its predecessor, has reacted to the skewing of the international and regional nuclear military “correlation of forces” by actually strengthening the decrepit NPT system that has victimised India by, among other things, reiterating the testing moratorium. Disowning a treaty it is not signatory to, resuming open-ended testing to extend the country’s thermonuclear muscle and reach, and responding, however belatedly, to China’s proliferation excesses with tit-for-tat transfer of critical nuclear missile technologies to countries such as Vietnam, on the Chinese periphery, is the way to go. But New Delhi seems content only with occasionally tom-tomming India’s ICBM and thermonuclear punch when, in fact, absence of evidence indicates evidence of absence of any such capabilities.

It is time Modi departed from the traditional script and spoke candidly at the Washington summit about the irreparable NPT regime and hinted at India’s options. He may win himself and the country leverage and respect by speaking the truth. Bharat Karnad is professor of National Security Studies, Centre for Policy Research the views expresses are personal.

The Economic Times
15 Mar, 2016

Thales Teams up with Rel Defence

French co will have major offset obligations after Rafale deal; targets RS 10K-cr market

French defence company Thales, which has major business plans in the region besides a significant offsets obligation that will kick in after the signing of the Rafale fighter deal, has tied up with Reliance Defence to manufacture a range of underwater systems in India.

Thales, which is a world leader in underwater systems and a close partner of DCNS, is looking at a range of systems with Reliance Defence, including sonar for surface ships and submarines, mine warfare and mine counter-measure equipment, three persons aware of the matter told ET.

While both Thales and Reliance Defence refused to comment on the developments, sources said that the agreement in place would target a potential market of Rs.10,000 crore with several major programmes of the Indian Navy expected to get under way.

There is also a possibility of a future 51:49 joint venture between Reliance Defence and Thales to bid for potential Indian contracts. The market being targeted includes a Rs. 5,000 crore Integrated Anti-Submarine Defence Systems (IADS) project and a Rs. 3,000 crore Hull-Mounted Sonar project.

Several Indian Navy requirements are coming up in the underwater arena, including Towed Array Sonar and Torpedo Decoy Systems and a dipping sonar for the Naval Utility Helicopter and Multi Role Helicopter Programs that are currently being processed.

Reliance Defence, which earlier acquired Pipavav Offshore and Engineering Company (PDOC), has renamed it Reliance Defence and Engineering Ltd (RDEL) to target all maritime programs. Thales is a major partner in two high-value French programmes -the ongoing Scorpene submarine deal, which could have a follow on order for two more boats, and the Rafale fighter, for which it makes most of the avionics.

Besides the naval market, Thales is looking at India as a potential export hub for military projects and has stated that its intention is to double business to 700 million euros in the next five years. The French company, which provides close to 25% of the Rafale fighter, already has a joint venture in India with Samtel for display systems for the Mirage 2000 fighters that are currently undergoing a \$ 2.2 billion upgrade.

The Hindustan Times
15 Mar, 2016

China silent on presence of troops in PoK

DODGING QUERY Neighbour says unaware of deployment, blames Indian media for ‘hype’

China’s position on the Kashmir issue is consistent. The relevant issue is left over from history between India and Pakistan. We hope the two countries can properly resolve the issue through negotiation and consultations. LU KANG, foreign ministry spokesperson

BEIJING: China on Monday did not deny reports that its troops were present in Pakistan-Occupied-Kashmir (POK) along the Line of Control (LoC), with the foreign ministry here saying it was not aware of any such deployment.

The foreign ministry’s stand, however, was clear on the reports of an incursion by Chinese troops across the Line of Actual Control (LAC) – it denied that People’s Liberation Army (PLA) soldiers had crossed it. China’s official media warned India that it cannot afford tense situations along the borders with both Pakistan and China. The foreign ministry blamed the Indian media for “hyping” the issue. “There is no such thing as going beyond the border. We’re regret that the media keeps hyping up the relevant issue,” foreign ministry spokesperson Lu Kang said on Monday.

Asked about the presence of PLA soldiers in PoK, Lu was vague. “I have not heard about the incident mentioned,” he said.

In response to a question on whether the presence of PLA troops was connected to work on the \$46-billion China-Pakistan Economic Corridor (CPEC), over which India has conveyed its protest, Lu merely reiterated China’s stand on the Kashmir issue.

“China’s position on the Kashmir issue is consistent. The relevant issue is left over from history between India and Pakistan. We hope the two countries can properly resolve the issue through

negotiation and consultations,” Lu said. He added, “We hope relevant media will report objectively and truly about the China-India relationship, and do more to improve friendly relations.”

The spokesperson said both countries should note that the bilateral relationship has maintained sound momentum. In the past, China said the CPEC, which is part of its Silk Road initiative, is aimed at improving the people’s livelihoods and in no way affects the status of the Kashmir issue.

पंजाब केसरी
15 मार्च, 2016

मैनहट्टन को हाइड्रोजन बम से उड़ाने की धमकी

सियोल, (एजेंसी): दक्षिण कोरिया और अमरीकी आर्मी के संयुक्त युद्धाभ्यास से बौखलाए उत्तरी कोरिया ने अमरीका के एक खूबसूरत शहर मैनहट्टन को हाइड्रोजन बम से उड़ाने की धमकी दे दी है। सियोल ने रविवार को अमरीका के इस शहर को हाइड्रोजन बम से उड़ाने की धमकी दी। दरअसल दोनों देशों के संयुक्त युद्धाभ्यास के दौरान उत्तरी कोरिया का एक सबमरीन लापता हो गया है और उत्तर कोरिया पूर्व से ही इस अभ्यास के खिलाफ था और दोनों ही देशों पर परमाणु हमले करने की धमकी दी थी। इसी साल जनवरी में उत्तर कोरिया ने अपने तानाशाह किम जोंग के आदेश पर हाइड्रोजन बम का परीक्षण किया है।

गौरतलब है कि 7 मार्च से पोहांग में अमरीका और दक्षिण कोरिया ने एक अभ्यास शुरू किया है, इसमें



आर्मी और नेवी की फौज शामिल है। युद्धाभ्यास में 55 अमरीकी एयरक्राफ्ट के अलावा दोनों देशों के 30 वॉरशिप भी तैनात किये गये हैं। दक्षिण कोरिया और अमरीका के संयुक्त युद्धाभ्यास से उत्तर कोरिया आग बबूला हो गया है।

The Hindu
15 Mar, 2016

Putin orders troop withdrawal from Syria

Russian President Vladimir Putin on Monday ordered the defence ministry to begin the withdrawal of Russian forces from Syria from Tuesday.

“The task that was set before our defence ministry and armed forces has as a whole been completed and so I order the defence ministry to start from tomorrow the withdrawal of the main part of our military contingents from the Syrian Arab Republic,” Mr. Putin told Defence Minister Sergei Shoigu in televised comments.

The Kremlin announced that Mr. Putin had called President Bashar Al-Assad to inform Moscow’s long-standing ally of the surprise move that appears to end the main part of its intervention in Syria’s conflict that began in September. “The leaders noted that the actions of the Russian air force allowed to radically change the situation in the fight against terrorism, to disorganise the fighters’ infrastructure and inflict significant damage on them,” the Kremlin said in a statement.

“Taking that into account, the President of Russia stated that the main tasks set before the armed forces of Russia in Syria had been completed. It was agreed to carry out the withdrawal of the main part of Russia’s air force contingent,” the statement said.

The two leaders, however, also agreed that Moscow would maintain an air force facility in Syria to help monitor the progress of a ceasefire in the war-torn country.

Russia began its bombing campaign in support of Mr. Assad’s forces in September, a move that helped shore up the Syrian regime’s crumbling forces and go on the offensive.

A fresh round of talks to end Syria’s civil war opened in Geneva on Monday.

American ‘IS fighter’ held

Meanwhile, an American fighting for Islamic State was taken into custody in northern Iraq after emerging from territory controlled by the militant group in Syria, media reports said on Monday. CBS News, citing two sources with the Kurdish peshmerga military force, said the American fighter was trying to return to Turkey. He was identified as Muhammad Jamal Amin (27) of Virginia, it said, citing Kurdish news organisations. — AFP, Reuters

The Asian Age
15 Mar, 2016

Mohammad Javad Zarif defends Iran missile tests

Iran’s foreign minister on Monday defended the nation’s right to use ballistic missiles following a test last week, but offered no explanation for anti-Israeli messages reportedly written on them.

Speaking in Wellington, New Zealand, Mohammad Javad Zarif said Iran has always reserved the right to defend itself.

“Anybody who is crazy enough to attack us, we will attack back using conventional weapons,” he said. “We hope that these conventional weapons will never be used because we do believe that in a war, everybody loses.”

Mr Zarif was responding to questions following an address to the New Zealand Institute of International Affairs. He’d earlier met with New Zealand Prime Minister John Key to talk about trade, and on Tuesday will travel to Australia.

Last Wednesday's missile test was aimed at demonstrating that Iran will push ahead with its ballistic programme after scaling back its nuclear programme under the deal reached in 2015 with the US and other world powers.

Iran's Fars news agency reported that the missiles had the phrase "Israel must be wiped out" written on them.

Mr Zarif said he hadn't yet returned to Iran to check out those reports. When pressed about the issue, he said it was Israeli Prime Minister Benjamin Netanyahu and US President Barack Obama who were acting aggressively.

"I ask you to go ask Netanyahu why is he threatening to use force against Iran every day. Go ask Obama why he is threatening to use force against Iran every day," Mr Zarif said. "Why are they saying all options are on the table?"

In another development, Mr Zarif ruled out his country accepting the involuntary return of deported Iranians from Australia, dashing Australian hopes of striking a bilateral deal that could send thousands of failed asylum seekers back to their homeland.

Mr Zarif said his government was prepared to cooperate with Australia by encouraging would-be refugees to return home and by giving assurances that they would not be punished.

The Statesman
15 Mar, 2016

Satellite launch

Science is most useful when it serves the changing needs of society, thus Indian Space Research Organisation's successful launch of the 1425 Kg, IRNSS-1F, the sixth satellite in the Indian Regional Navigation Satellite System is praiseworthy. It is powered by two solar panels generating 1660 Watts and a lithium ion battery of 90 Ampere-hour capacity; with a rubidium clock as a part of its navigation payload. In the words of ISRO Chairman A.S. Kiran Kumar, "It was a precise launch. It has taken the satellite into the right orbit...the signals will be available in one month". With the successful launch of IRNSS-1F, India has made its position amongst a select group of nations with similar scientific achievements. Thus it is the 33rd successful launch of a satellite using the Polar Satellite Launch Vehicle and twelfth in its XL configuration. In the days to come, ISRO will conduct four orbit manoeuvres from its Master Control Facility in Hassan, Karnataka; thus to position the satellite in its geostationary orbit. IRNSS-1F is the sixth satellite, and with IRNSS 1A to 1E will provide information on India's geographical terrain and 1500 km along its periphery. The seventh and last in the series will be launched in April 2016.

These are exciting times for Indian space research. Apart from domestic commitments, ISRO will be launching 25 foreign satellites in 2016-17 using the indigenous Polar Satellite Launch Vehicle (PSLV). Twelve out of 25 planned satellites belong to the United States of America; and the rest are divided between Germany, Canada, Algeria, Japan, Malaysia and Indonesia. PSLV is arguably the most successful launch vehicle in the world. It has been in service for more than twenty years and has launched 57 foreign satellites belonging to 21 countries.

PSLV also has a capability to put small-sized satellites into geostationary orbit; it has launched India's first lunar probe Chandrayaan 1, its first interplanetary mission Mangalyaan and the first space observatory Astrosat. ISRO works in collaboration with foreign clients through its commercial arm Antrix, and has launched 28 foreign satellites in the last three years. India's space policy is largely aligned with its development aims. To gain momentum in international space cooperation it must build not only commercial but also scientific partnerships with nations at the

cutting-edge of space science and research. The US, China and the European Union would be three distinguished partners who could prove to be especially efficacious in promoting research and development in space science. Space-related research and development ought to be an integral part of an evolving scientific temper in a developing society

The Asian Age
15 Mar, 2016

Nasa finds giant ‘bite mark’ on Pluto’s surface

Scientists at the Nasa’s New Horizons mission have discovered what looks like a giant “bite mark” on Pluto’s surface.

Researchers suggest it may have been caused by a process known as sublimation — the transition of a substance from a solid to a gas. The methane ice-rich surface on Pluto may be sublimating away into the atmosphere, exposing a layer of water-ice underneath, Nasa said.

The image captured by Nasa shows the cratered plateau uplands informally named Vega Terra, far in the western hemisphere of Pluto. A jagged scarp, or wall of cliffs, known as Piri Rupes borders the young, nearly crater-free plains of Piri Planitia. The cliffs break up into isolated mesas in several places. Cutting diagonally across the mottled plains is the long extensional fault of Inanna Fossa, which stretches eastward 600 kilometres from there to the western edge of the great nitrogen ice plains of Sputnik Planum.

Compositional data from the New Horizons spacecraft’s Ralph/Linear Etalon Imaging Spectral Array (LEISA) instrument indicate that the plateau uplands south of Piri Rupes are rich in methane ice.

Scientists speculate that sublimation of methane may be causing the plateau material to erode along the face of the cliffs, causing them to retreat south and leave the plains of Piri Planitia in their wake.

Compositional data also show that the surface of Piri Planitia is more enriched in water ice than the higher plateaus, which may indicate that Piri Planitia’s surface is made of water ice bedrock, just beneath a layer of retreating methane ice.

Because the surface of Pluto is so cold, the water ice is rock-like and immobile. The light/dark mottled pattern of Piri Planitia in the left inset is reflected in the composition map, with the lighter areas corresponding to areas richer in methane — these may be remnants of methane that have not yet sublimated away entirely.

The image measures about 450 kilometres long by 410 kilometres wide.

It was obtained by New Horizons at a range of about 33,900 kilometres from Pluto, about 45 minutes before the spacecraft’s closest approach to Pluto on July 14 last year.

The LEISA data was gathered when the spacecraft was about 47,000 kilometres from Pluto.

EU-Russia spacecraft blasts off for Mars in search of life

Europe and Russia launched a spacecraft on Monday in a joint mission to sniff out signs of life on Mars and bring humans a step closer to flying to the Red Planet themselves.

The craft, part of the ExoMars programme, blasted off from the Baikonur spaceport in Kazakhstan on board a Proton rocket, starting a seven-month journey through space.

It carries an atmospheric probe that is to study trace gases such as methane, a chemical that on Earth is strongly tied to life, that previous Mars missions have detected in the planet's atmosphere.

"Why are we so interested in Mars? We are trying to understand how life originated in our solar system," Pascale Ehrenfreund, chair of German space agency DLR's executive board, said at a launch event held by the European Space Agency.

Scientists believe the methane could stem from micro-organisms, called methanogenes, that either became extinct millions of years ago and left gas frozen below the planet's surface, or that some methane-producing organisms still survive.

Another explanation for the methane in Mars' atmosphere could be that it is produced by geological phenomena, such as the oxidation of iron.

The spacecraft will deploy a lander that will test technologies needed for a rover due to follow in 2018, one step in overcoming the practical and technological challenges facing possible future human flights to Mars. "I'm sure in 20 years or 30 years the moment will come when humans will go to the planet," Thomas Reiter, director of Human Spaceflight and Robotic Exploration at the European agency, said. The second part of the ExoMars mission in 2018 will deliver a European rover to the surface of Mars.

It will be the first with the ability to both move across the planet's surface and drill into the ground to collect and analyse samples.

"If there was early life it could have found refuge in the sub-surface, and the methane could be connected to that," ExoMars project scientist Jorge Vago said.

Landing on Mars is a notoriously difficult task that has bedeviled nearly all of Russia's previous efforts and has given US agency Nasa trouble as well.

The United States currently has two operational rovers on Mars, Curiosity and Opportunity.

The cost of the ExoMars mission to the European Space Agency, including the second part due in 2018, is expected to be about 1.3 billion euros (\$1.4 billion). Russia's contribution comes on top of that.

IS MARS ALIVE?

Two robotic spacecraft began a 7-month journey to Mars as part of a European-Russian unmanned space mission to sniff out leads to life on the Red Planet



SNIFFING OUT LIFE
The Russian space agency Roscosmos and European Space Agency (ESA) said the launch of ExoMars took place successfully

The ESA has said the aim was to determine "whether Mars is alive"

MAKING METHANE?
The Trace Gas Orbiter (TGO) with its highly advanced instruments will arrive on Mars in October

A key goal is to analyse methane — on Earth, the gas is created by living microbes

Traces of this gas were observed by previous Mars missions

Methane is normally destroyed by UV radiation within a few hundred years, which means Mars is "must be still producing it today".

In search of the elusive Martian

Baikonur (Kazakhstan), 14 March: Two robotic spacecraft on Monday began a seven-month journey to Mars as part of a European-Russian unmanned space mission to sniff out leads to life on the Red Planet. Russia's Proton rocket carrying the spacecraft launched into an overcast sky at the Russian-operated Baikonur cosmodrome in the Kazakh steppe at 0931 GMT according to plan, the Russian space agency Roscosmos and the European Space Agency (ESA) said.

Roscosmos said the launch had taken place “successfully”. ExoMars 2016, collaboration between ESA and Roscosmos, is the first part of a two-phase exploration aiming to answer questions about the existence of life on Mars.

The ESA has said the aim was to determine “whether Mars is 'alive’”. With its suite of high-tech instruments, the Trace Gas Orbiter (TGO), is expected to arrive at the Red Planet in October after a journey of 496 million kilometres (308 million miles).

TGO will photograph the Red Planet and analyse its air, splitting off from Mars lander dubbed Schiaparelli days before entering. One key goal is to analyse methane, a gas which on Earth is created in large part by living microbes, and traces of which were observed by previous Mars missions.

“TGO will be like a big nose in space,” said Jorge Vago, ExoMars project scientist.

Methane, the ESA said, is normally destroyed by ultraviolet radiation within a few hundred years, which implied that in Mars' case “it must still be produced today”. TGO will analyse Mars' methane in more detail than any previous mission, said ESA, in order to try and determine its likely origin.

Schiaparelli will in turn spend several days measuring climatic conditions on the Red planet including seasonal dust storms and pave the way for the rover's later arrival. Space has been one of the few areas of cooperation between Moscow and the West that has not been damaged by geopolitical tensions stemming from the crises in Ukraine and Syria. AFP

Deccan Herald
15 Mar, 2016

Nanoparticle can prevent heart attack

Scientists, including those of Indian-origin, have developed a nanoparticle that can light up and treat deadly plaques that clog arteries and could help prevent heart attacks and strokes.

Atherosclerosis, a disease in which plaque builds up inside arteries, is a prolific and invisible killer, researchers said.

Researchers from University of Georgia, Athens have now developed a nanoparticle that functionally mimics nature's own high-density lipoprotein (HDL).

The nanoparticle can simultaneously light up and treat atherosclerotic plaques that clog arteries.

"Other researchers have shown that if you isolate HDL components from donated blood, reconstitute them and inject them into animals, there seems to be a therapeutic effect," said Shanta Dhar, from University of Georgia.

"However, with donors' blood, there is the chance of immunological rejection. This technology also suffers scale-up challenges," said Dhar.

"Our motivation was to avoid immunogenic factors by making a synthetic nanoparticle which can functionally mimic HDL. At the same time, we wanted a way to locate the synthetic particles," she said.

Current detection strategies often fail to identify dangerous plaques, which can clog arteries over time or break off from arterial walls and block blood flow, causing a heart attack or stroke.

Magnetic resonance imaging (MRI) offers a potential approach for plaque visualisation, but requires the use of a contrast agent to show the atherosclerotic plaques clearly.

However, the potential for harmful immune reactions still exists with the use of donor-derived HDL.

HDL is widely known as "good" cholesterol because of its ability to pull low-density lipoprotein, or "bad" cholesterol, out of plaques. This process shrinks the plaques, making them less likely to clog arteries or break apart.

To simultaneously identify and treat atherosclerosis without triggering an immune response, Dhar and Bhabatosh Banik, a postdoctoral fellow in her lab, created an MRI-active HDL mimic.

The researchers are applying their synthetic nanoparticle to distinguish between unstable plaques and stationary ones.

To do this, Dhar targeted the new MRI-active HDL mimics to macrophages, which are white blood cells that, along with lipids and cholesterol, make up atherosclerotic plaques.

The researchers targeted macrophages by decorating the nanoparticles' surfaces with a molecule that selectively binds to macrophages.

The team observed that the nanoparticles were engulfed by these white blood cells.

"Then, when the macrophages ruptured, which is a sign of an unstable plaque, the cells spit out the nanoparticles, causing the MRI signal to change in a detectable fashion," Banik said.

The Hindu
15 Mar, 2016

Blueberries may help beat Alzheimer's: study

Researcher says the 'super fruit' can have a real benefit in improving memory and cognitive function in some older adults

Eating blueberries, the well-known 'super fruit', may not only lower the risk of heart disease and cancer, but also provide protection against Alzheimer's disease, a new study has claimed.

The fruit is loaded with healthful antioxidants, and these substances could help prevent the devastating effects of this increasingly common form of dementia, researchers said.

Wonder berry

"Our new findings corroborate those of previous animal studies and preliminary human studies, adding further support to the notion that blueberries can have a real benefit in improving memory and cognitive function in some older adults," said Robert Krikorian from University of Cincinnati in the U.S.

Blueberries' beneficial effects could be due to flavonoids called anthocyanins, which have been shown to improve animals' cognition, he said.

Two human studies conducted

Researchers conducted two human studies to follow up on earlier clinical trials. One study involved 47 adults aged 68 and older, who had mild cognitive impairment, a risk condition for Alzheimer's disease.

Scientists gave them either freeze-dried blueberry powder, which is equivalent to a cup of berries, or a placebo powder once a day for 16 weeks.

Improved memory

"There was improvement in cognitive performance and brain function in those who had the blueberry powder compared with those who took the placebo. The blueberry group demonstrated improved memory and improved access to words and concepts," said Mr. Krikorian.

Researchers also conducted functional magnetic resonance imaging (fMRI), which showed increased brain activity in those who ingested the blueberry powder.

And the placebo group ...

The second study included 94 people aged 62 to 80, who were divided into four groups. The participants did not have objectively measured cognitive issues, but they subjectively felt their memories were declining.

The groups received blueberry powder, fish oil, fish oil and powder or placebo.

“The results were not as robust as with the first study. Cognition was somewhat better for those with powder or fish oil separately, but there was little improvement with memory,” said Mr. Krikorian.

Also, fMRI results were not as striking for those receiving blueberry powder. The effect may have been smaller in this case because these participants had less severe issues when they entered the study, researchers said.

Mail Today
15 Mar, 2016

It's a brave but wild new world for AI

LAST week there were two interesting incidents involving the artificial intelligence (AI). In both cases the company behind the AI was Google. In Seoul, AlphaGo, an AI system created by Google, crushed Lee Sedol, an 18-time world champion regarded as this decade's top player of Go.

And this was not just one of those “AI-calculated-faster-than-a-human” type of victory. Go is an ancient game, invented by humans over 2,000 years ago. It is vastly more complex than Chess and requires intuition. That an AI is now superior at Go is a big deal for better or worse.

The incident happened in San Francisco, the city where Google's driverless cars are running around. They are already very good at driving themselves, following the rules. But now they are trying to figure out the intuitive traffic moves that humans make — like making the eye contact with a fellow driver and yielding to a car on a broken traffic light. On Wednesday, one of the Google cars, scrapped a public bus, apparently because it thought it was ahead of the bus and hence had the right of way, just like a human driver would have thought.

The two incidents show the AI is out of the purely arithmetic realm and is now moving into a space that until now only humans have occupied on the earth. It is calculating, learning and then creating moves that are its own.

No one knows how the future is going to unfold when we will have machines capable of creating many more complex and unique moves, moves that would not be limited to drawing pictures of cat like the Google computers do now. It can surely change the world in untold ways, making it more efficient and creating a better earth.

But as Bill Gates, Tesla founder Elon Musk and scientist Stephen Hawking warn, it could also mean the end of humans. With AI in driving seat, it will be a brave new world and for now we don't know where we as humans will go from there.

Mail Today
15 Mar, 2016

Mystery of Bermuda Triangle solved?

A discovery of giant underwater craters at the bottom of Barents Sea could offer a viable explanation to the disappearance of ships in the Bermuda Triangle.

Scientists have found craters up to half a mile wide and 150ft deep, believed to have been caused by build-ups of methane off the coast of natural gas-rich Norway. The methane would have leaked from deposits of natural gas further below the surface and created cavities which finally bursts, scientists say. "Multiple giant craters exist on the sea floor in an area in the west-central Barents Sea ... and are probably a cause of enormous blowouts of gas," researchers from the Arctic University of Norway told the Sunday Times. "The crater area is likely to represent one of the largest hotspots for shallow marine methane release in the Arctic," they added.

The explosions causing the craters to open up could potentially pose risks to vessels travelling on Barents Sea, they say.

It could also possibly explain the loss of ships and aircraft in the controversial area referred to as the Bermuda Triangle, according to the experts. The area stretches from the British Overseas Territory in the North Atlantic Ocean to the Florida coast, to Puerto Rico.

Russian scientist Igor Yeltsov, the deputy head of the Trofimuk Institute, said last year: "There is a version that the Bermuda Triangle is a consequence of gas hydrates reactions. They start to actively decompose with methane ice turning into gas. It happens in an avalanche-like way, like a nuclear reaction, producing huge amounts of gas. That makes the ocean heat up and ships sink in its waters mixed with a huge proportion of gas."

Deccan Herald
15 Mar, 2016

Teams of tiny robots can move 2-ton car

Archimedes pointed out that with a lever he could move the world. He most likely would have been surprised to learn that a team of six microrobots, weighing just 3.5 ounces in total, could pull a car weighing 3,900 pounds.

A group of researchers at the Biomimetics and Dexterous Manipulation Laboratory at Stanford University has been exploring the limits of friction in the design of tiny robots that have the ability to pull thousands of times their weight, wander like gecko lizards on vertical surfaces or mimic bats.

Now they have pushed biomimicry in a new direction. They have taken their inspiration from tiny ants that work as teams to move massive objects. In this case, they are not just taking ideas from nature -- the movie "Big Hero 6" made a great deal of what swarms of microrobots could do, including tossing cars.

The researchers' approach is counterintuitive. Rather than striking powerful blows like a football player making a tackle or a jackhammer, they have focused on synchronizing the smooth application of very tiny forces. The microrobots work in concert, if slowly.

The researchers observed that the ants get great cooperative force by each using three of their six legs simultaneously.

"By considering the dynamics of the team, not just the individual, we are able to build a team of our 'microTug' robots that, like ants, are superstrong individually, but then also work together as a team," said David Christensen, a graduate student who is one of the authors of a research paper

describing the feat. The paper will be presented this May at the International Conference on Robotics and Automation in Stockholm.

Their new demonstration is the functional equivalent of a team of six humans moving a weight equivalent to that of an Eiffel Tower and three Statues of Liberty, Christensen said. The car is the one he uses for commuting to campus. Part of the magic is the use of a special adhesive that was inspired by gecko toes.

Last month, Christensen, who is a mechanical engineering graduate student, along with the postdoctoral fellow Srinivasan Suresh, the researcher Katie Hahm, and the mechanical engineering professor Mark Cutkosky, published "Let's All Pull Together: Principles for Sharing Large Loads in Microrobot Teams."

Deccan Herald
15 Mar, 2016

Yoga may help people with abnormal heart rhythm

Yoga improves quality of life in patients with abnormal heart rhythm, according to a new study which also found that heart rate and blood pressure decreased in patients who took part in the meditative practice.

Atrial fibrillation (AF) is the most common cardiac rhythm disorder, affecting 1.5 to 2 per cent of the general population in the developed world.

"AF episodes are accompanied by chest pain, dyspnoea and dizziness. These symptoms are unpleasant and patients feel anxious, worried and stressed that an AF episode will occur," said Maria Wahlstrom from Karolinska Institute in Sweden.

There is no cure for AF, and management focuses on relief of symptoms and the prevention of complications such as stroke using cardioversion, ablation and medication, researchers said.

Patients with paroxysmal AF experience episodes of AF that usually last less than 48 hours and stop by themselves, although in some patients they can last up to seven days.

The current study included 80 patients with paroxysmal AF who were randomised to yoga or a control group that did not do yoga.

Both groups received standard treatment with medication, cardioversion and catheter ablation as needed.

Yoga was performed for one hour, once a week, for 12 weeks in the hospital with an experienced instructor. The yoga programme included light movements, deep breathing, and meditation.

Quality of life, heart rate and blood pressure were measured in all patients at the start and end of the study.

Quality of life (physical and mental health) was assessed using two validated questionnaires, the Short-Form Health Survey (SF-36) and the EuroQoL-5D (EQ-5D) Visual Analogue Scale (VAS).

After 12 weeks, the yoga group had higher SF-36 mental health scores, lower heart rate, and lower systolic and diastolic blood pressure than the control group.