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भारत-रूस एमआइ-17 हेलीकॉप्टर के लिए मार्च में करेंगे समझौता

नई दिल्ली, आइएनएस : भारत और रूस के बीच एमआइ-17वी-5 हेलीकॉप्टर के लिए जल्द समझौते को अंतिम रूप देने की उम्मीद है। इस संबंध में पिछले साल ही समझौता होने वाला था।

हेलीकॉप्टर बनाने वाली रूस की कंपनी रोसटेक स्टेट कॉर्पोरेशन के सीईओ सर्जेई चेमेजोव ने विशेष बातचीत

में कहा कि 48 एमआइ-17वी-5 हेलीकॉप्टरों की डिलीवरी के लिए भारत के साथ बातचीत पूरी हो चुकी है। हमें इस संबंध में मार्च तक समझौता होने की उम्मीद है। उन्होंने कहा कि एमआइ-17 और एमआइ-8 हेलीकॉप्टर में काफी आधुनिकीकरण की संभावना है। ऐसा एमआइ-171ए2 के विकास से साबित

हो गया है। एमआइ-171ए2 हेलीकॉप्टर एमआइ-8 और एमआइ-17 सीरीज का उन्नत मीडियम मल्टीरोल हेलीकॉप्टर है। चेमेजोव ने कहा कि इसमें करीब 80 नए सुधार किए गए हैं। मौजूदा समय में भारत के पास करीब 151 एमआइ-17वी-5 हेलीकॉप्टर हैं। जनवरी 2016 में अंतिम बार इनकी डिलीवरी की गई थी।

The Tribune
[VOICE OF THE PEOPLE]

5 yrs on, IAF's special aircraft shelters yet to get Cabinet nod

By Vijay Mohan

Over five years after the Air Force projected the requirement of specialised shelters for protection of combat aircraft at strategic airfields, the idea is yet to get past the Cabinet Committee on Security (CCS).

The IAF had taken up a case for construction of 108 new generation hardened aircraft shelters (NGHAS) in 2012, the cost of which was then pegged at Rs 5,400 crore. Acceptance of Necessity (AoN) for the same was accorded by the Defence Research and Development Organisation in December 2012.

The NGHAS is a specialised structure designed to protect combat aircraft from a direct hit by a 2000-pound bomb. All IAF airbases have aircraft shelters spread over a large area where aircraft are parked. Also called "blast pens", these are tunnel-shaped concrete structures covered with a layer of earth and protective walls near their openings, which are supposed to protect aircraft from the effects of blasts in case of an attack. Most of these have specifications which may not be able to mitigate damage by attacks from the present or future generation of guided missiles or precision munitions that have high penetration capability.

The case for NGHAS is under process for obtaining sanction of the CCS, a recent report by Parliament's Standing Committee on Defence observed, while underlining that with the IAF already being short of combat strength, protection of the existing fleet becomes even more crucial.

A proposal to rework the project in three phases by categorising airfields within a distance of 100 km, 200 km and beyond 200 km from the border, respectively, with a gap of two years in each phase, is under consideration. The first phase would involve construction of 36 NGHAS requiring a cash outflow of Rs270 crore. Pathankot, Srinagar, Udampur, Bagdogra, Naliya, Hasimara, Jaisalmer and Uttarlai are some of the bases that are located within 100 km of the border.

Army officers in peace stations in CI areas to get daily rations

By Dinakar Peri

Army officers posted in peace stations in Counter Insurgency (CI) areas will now get daily rations. The latest order reverses the Seventh Pay Commission (SPC) orders for cash instead of rations for some officers.

“It is clarified that units deployed in Peace (CI) will be treated at par with units deployed in forward areas. Therefore, officers can draw entitled rations as hither-to-fore...” the Quartermaster General’s branch in the Integrated Defence Staff (IDS) said in a letter dated January 08, 2018.

This means that officers posted in places like Srinagar will get daily rations as it is a peacetime CI location, one officer explained.

This letter is a clarification to an earlier letter issued on November 29, 2017 which said that “post implementation of SPC report officer’s rations in peace stations in kind has been discontinued.” Instead an allowance per fixed was fixed to paid in the monthly salary.

An exception to continue rations in peace stations was made for officer patients in military hospitals, special rations issued to air crew and personnel performing duties with the Air Force and officer cadets undergoing training at various training academies of the three services. Officer messes were also allowed to draw rations on payment for officers during exercises and training. However, the November 2017 had specifically stated that officers rations “in peace stations in CI and remote areas has been discontinued.”

“However, if required, Command Headquarters are requested to identify such areas and forward a case for change of status of such areas from peace stations to forward with Adjutant General’s (AG) branch,” the letter had stated. One official said that it was widely felt a blanket exemption was required as there were to many such cases.

Pakistan missile test to disrupt flight movement

Close to 120 international flight movements in the Mumbai and Karachi Flight Information Regions specified region of airspace where flight information and alerting services are provided - will be affected between 11 a.m. and 2.30 p.m. on January 28 and 29, when Pakistan will test fire a longrange missile.

This was relayed in a Notice to Airmen, that informs pilots of changes to airports, airways, and local procedures that affect safety.

Wed, 24 Jan, 2018

North Korea, U.S. clash at disarmament forum over nuclear arms

By Stephanie Nebeha

North Korea said on Tuesday it had a “powerful and reliable” nuclear deterrent to thwart any attack and accused the United States of deploying military assets nearby under the pretext of ensuring security at the Pyeongchang Winter Olympics.

Han Tae Song, North Korea’s Ambassador to the United Nations in Geneva, called on the United States to permanently halt its joint military drills with South Korea, suspended ahead of the Games that open on Feb. 9 amid an easing of tensions.

Han said contrary to the trend toward “detente”, U.S. forces were engaging in a “precarious military maneuver” by bringing their strategic assets near the divided Korean peninsula ahead of the competition.

“This is a dangerous act of throwing a wet blanket over the current positive atmosphere of inter-Korean relations, which could drive the situation again into an extreme phase of confrontation,” Han told the U.N.-sponsored Conference on Disarmament.

South Korean President Moon Jae-in said on Monday a thaw in relations between the two Koreas ahead of the Winter Olympics presented a “precious chance” for the United States and North Korea to discuss the North’s weapons programs.

North Korea is developing missile and nuclear technology amid regular threats to destroy the United States and Japan and in defiance of U.N. Security Council resolutions. ---©Reuters



Wed, 24 Jan, 2018

US diplomats to travel to Europe for talks on Iran nuclear deal: Tillerson

The US will send diplomats to Europe to discuss the Iran nuclear deal with their European counterparts, Secretary of State Rex Tillerson said on Monday.

"We have a team traveling, actually. They're coming to Europe. A team that will meet with counterparts," Xinhua quoted Tillerson, who was en route to France, as saying. Tillerson's words came over a week after US President Donald Trump threatened a withdrawal from the Iran nuclear deal if the US Congress and his European allies cannot fix the alleged "disastrous flaws."

European top diplomats reasserted their commitments to Iran nuclear deal ahead of Trump's decision. Tillerson said that the US diplomatic team will discuss US concerns about the accord with the European officials "in a package."

Trump has constantly criticised the Iran nuclear deal inked between the six world powers, namely China, Russia, Britain, France, the US and Germany, and Iran in 2015, in which the West promised to relieve sanctions on Tehran in exchange for a halt in Iran's efforts to develop a nuclear weapon.

Apart from engaging with its European partners, the Trump administration is also working with Congress on a legislation, which seeks provisions to permanently prevent Iran from acquiring nuclear weapons and subject Iran's long-range missile programme to severe sanctions.

IIT Roorkee researchers devise new cancer cure

The new cure aims to provide controlled and targeted treatment to specific body organs while protecting the rest of the body from the harmful effects of currently existing radiation based methods

New Delhi: A team of researchers at IIT Roorkee have developed a new technique for cancer cure. The team led by Dr. Kaushik Ghosh from the Department of Chemistry and Dr. Prabhat Mandal, Department of Biotechnology at IIT Roorkee who have created a NORM, nitric oxide releasing molecule.

Nitric oxide (NO) is a known toxic molecule produced in the human body through the nitric oxide synthase, a set of enzymes. "However, these are not very actively produced and NO is released only the body only when there is a need," explains Ghosh. "While it has known applications in blood pressure regulation and the cardiovascular system, their role in cancer cure had not been explored so far."

Ghosh explains that NO is a concentration-dependant phenomenon which means that its applications vary based on the quantity administered and thus a micro-molecular use of the compound will have a different impact than a milli-molecule use.

Given that this may not be a very actively produced component within the body, an external agent is required for the delivery of the NO compound to the body. The molecule which acts as the external agent is what the team has devised.

Since NO is an extremely reactive component, its usage and delivery needs to be monitored and controlled. "The NORM which holds the molecule will not liberate NO unless visible light is thrown on it," he explains.

This is known as photo module therapy where light helps deliver molecules to the body and the drug will not activate till it receives light rays.

Further, controlling the intensity of light will also help control the amount of drug administered.

Currently anti-cancer drugs affect all parts of the body wherever there is cell proliferation and this is why chemotherapy leads to hair loss.

"Given that NO is diffusible through skin, the molecule can be applied on the skin through an ointment for instance and activated using visible light," said Ghosh. "Thus, a targeted and controlled use of the drug can be undertaken while shielding other body parts from the toxic effects of the drug." He adds that this can also be used along with microsurgery where there is a focus on reducing invasive procedures while targeting a location-specific treatment within the body.

The team took three kinds of cancer cells and tried to treat them in light as well as dark conditions. "While all cells were killed in light conditions, very few cells died in dark conditions," says Ghosh. "While creating NO in the laboratory is easy using a simple reaction, the holding molecule used is a simple, cheap dye called azo.

So far NO's usage in light involved ultraviolet rays which are extremely harmful for the human body and thus remained a major obstacle in its use for medical purposes. The researchers countered this by employing an organometallic ruthenium nitrosyl complex that produced positive result in visible lights very quickly.

मानव अंतरिक्ष उड़ान कार्यक्रम अधर में

हैदराबाद, (भाषा): संसाधनों के अभाव ने इसरो के मानव अंतरिक्ष उड़ान कार्यक्रम को लंबे समय से अटका रखा है क्योंकि यह शीर्ष प्राथमिकता सूची में नहीं है। इस संबंध में एक प्रस्ताव पर एक दशक पहले विचार किया गया था, लेकिन इसपर बहुत अधिक प्रगति अब तक नहीं हो सकी है। इस महीने की शुरुआत में इसरो के अध्यक्ष पद से सेवानिवृत्त हुए ए एस किरण कुमार ने कहा कि अंतरिक्ष एजेंसी की प्राथमिकता अब भी अपने अवलोकन, संचार और नौसंचालन क्षमताओं को मजबूत बनाने की है। उन्होंने कहा, “इस समय आप कह सकते हैं कि यह (मानव अंतरिक्ष उड़ान) प्राथमिकता में काफी ऊपर नहीं है।

इसरो द्वारा एक दशक से अधिक समय पहले बुलाई गई एक बैठक में वैज्ञानिकों ने इस तरह के मिशन में उसके द्वारा किये गए अध्ययन की सराहना की थी और उन्होंने सर्वसम्मति से सुझाव दिया था कि इस कार्य को शुरू करने का यह उचित समय है। कई अंतरिक्ष विज्ञानियों का कहना है कि इस तरह का मिशन अच्छी प्रतिभाओं को आकर्षित करने में मदद करेगा और गौरव बढ़ाने के अतिरिक्त भारत के अंतरिक्ष कार्यक्रम को बिल्कुल अलग स्तर पर ले जायेगा। जो जबर्दस्त सकारात्मक प्रभाव यह पैदा करेगा उससे किरण कुमार ने सहमति जताई लेकिन साफ कर दिया कि पर्याप्त संसाधनों का

- पर्याप्त संसाधनों का अभाव बना प्रमुख बाधा
- इसरो ध्यान अवलोकन, संचार और नौसंचालन क्षमताओं को मजबूत बनाने पर

अभाव इसमें प्रमुख बाधा है। उन्होंने कहा-आपको इसके लिये संसाधन की आवश्यकता है।

एक दशक पहले परियोजना की अनुमानित लागत आठ हजार से 10 हजार करोड़ रुपये होने की खबरों के बारे में पूछे जाने पर उन्होंने कहा-यह उससे कहीं ज्यादा है। यह पूछे जाने पर कि क्या यह लागत अब 20 हजार करोड़ रुपये तक चली गई होगी तो उन्होंने कहा कि एक दशक पहले भी यह उसी रेंज में था, लेकिन उन्होंने यह बात जोड़ दी कि वह अनुमान लगाना नहीं चाहते हैं और वास्तविक खर्च पर काम करना होगा। उन्होंने कहा, “इस समय प्राथमिकता के मामले में अगर आप देखते हैं तो हमें अब भी इस बात को सुनिश्चित करना है कि अवलोकन, संचार और नौसंचालन की हमारी बुनियादी क्षमताएं उल्लेखनीय रूप से बढ़ाने की हमें आवश्यकता है और यह उच्च प्राथमिकता में रहेगा।

Slowing down

By S Ananthanarayanan

The smallest celestial objects sometimes change their state of orbit or spin. The night sky has been long regarded as unchanging and even planets, the objects that move, are remarkably regular in their motion. We do know that the Earth has been gradually slowing in its rate of spin and gently closing in towards the Sun in its orbit. But the change is imperceptible and the cosmos has been a legendary ideal of constancy.

The smallest celestial objects sometimes change their state of orbit or spin. The night sky has been long regarded as unchanging and even planets, the objects that move, are remarkably regular in their motion. We do know that the Earth has been gradually slowing in its rate of spin and gently closing in towards the Sun in its orbit. But the change is imperceptible and the cosmos has been a legendary ideal of constancy. This is, however, more true of large objects, like planets and stars, than of smaller objects, like comets.

Smaller objects are affected by the gravitational pull of larger objects that they pass, by impacts with dust or even of changes in their own structure. A major earthquake would not affect the movement of Earth but that is not true of an object only a few kilometres across. Dennis Bodewits, Tony L Farnham, Michael SP Kelley and Matthew M Knight from the department of astronomy, University of Maryland, report in the journal, *Nature*, the changes in the spin state of a Jupiter family comet, 41P/Tuttle-Giacobini-Kresák, known since 1858 and named after its three independent discoverers.

The spin of celestial objects arises from the way they were formed. Matter in the universe started from just gas, mainly hydrogen, and formed when the gas collapsed on itself due to gravity. Any motion within the gas or which was introduced during the collapse got magnified as dimensions reduced, and all the stars, galaxies or planets that we know of have a rate of spin.

Even objects that broke away from other objects are ejected with spin. Objects that are in stable orbits also owe their stability to their spin, in the same way that a rifle bullet is imparted spin to keep it steady during its flight to the target. Spinning objects, however, can change their rate of spin if they change the distribution of the spinning mass within themselves. We may be familiar with the ballerina, or the figure skater, who spin faster or slower by moving their arms towards or away from themselves. Movement of large masses in the crust of or within a planet can bring about a change in the rate of spin.

The time it takes for such shifting of mass, however, is in centuries and we have not observed instances in recent history. Things are different with small objects in space, like comets. In low mass objects, which are just kilometres in dimensions, the forces of gravity are not strong and the structure of the objects is not firm. A flow of material, erosion, et al, can hence bring about collapse or re-alignment of large parts of the object and this would affect its rate of spin. Another effect with objects of long orbits is that they are sometimes close to a mother star and most of the time very far away.

Material hence vaporises during the time the object is near the star but freezes when it is far away. We can imagine that this would cause flow of matter and changes in the shape of the object. 41P/Tuttle-Giacobini-Kresák goes around the sun once every four and a half years. It is only 1.4 km in diameter and can be seen only through a telescope. A particular feature of the comet is that it has been periodically flaring up. In 1973, the flare was dramatic and the comet became visible to the naked eye. The University of Maryland researchers report another feature in their paper, that the rotation of 41P has been slowing down, over measurements made just two months apart, and they suggest the processes in the comet that may be responsible.

The first measurement was in March 2017 using the 4.3 metre and 36 megapixel imager at the Lowell Observatory, Arizona. From 6 to 9 March, the time taken for a rotation was found to increase from 19.75 hours to 20.05 hours. The next measurement was in May 2017, using the ultra violet telescope aboard the robotic spacecraft, Swift, from some 7,000 km above the earth.

The time of rotation in May was found to be between 46 and 60 hours. By and large, there seems to be a slowing down by about half an hour every day! Measuring the period of rotation of a comet, when it is near the sun and covered with gas and vapour has its own challenge. There is no visible feature that can be seen to be going round, to help discover the time taken. In the measurements of March 2017, the feature used was plumes of cyanogen gas that the comet emits. When the comet rotates, the gas comes out in spirals.

These can be detected, as cyanogen and the products of its exposure are fluorescent in sunlight. The measurements in May were of the light that came from a large area around the comet, with the rise and fall of the intensity indicating the speed of rotation. This kind of indirect measurement is used even to assess the rotation of the gas giant planets, Jupiter and Saturn, where physical features cannot be seen.

The case of Jupiter is simpler, as the magnetic axis of the planet is a pointer that rotates. In the case of Saturn, however, the magnetic axis is almost along the axis of rotation. It is with the help of faint radio emission of charged particles in the atmosphere, and the variation in the planet's gravitational field, that the speed of rotation could be worked out.

While the speed of rotation of many comets has been measured, it is in just a few cases that there has been a conclusive change, the paper says. The rapidity of slowing of 41P, however, outstrips the others by a wide margin. The paper notes the small size of 41P, and the indications that water production is active in about 50 per cent of its surface, in contrast with just three per cent in other comets, may be the reason.

But then, there are similar instances that have not shown comparable slowing of rotation. Further analysis shows the reason could be that the much of the gases emitted by the comet is in the direction opposed to the rotation. Emission of gases along the axis of rotation, or where the emission from different places cancel out, would not affect the speed of rotation."The active regions on the surface of comet 41P are probably oriented in such a way that its torques are highly optimised in comparison to many other comets," the paper says.

The team has extrapolated backwards the fall in the speed of rotation and the find that the speed must have been very high in the not so distant past. When an object rotates fast, its surface material experiences high centrifugal or "centre-fleeing" forces. It is like how we are thrown towards the far side of a car when it takes a sharp turn.

Now, in a small celestial object, the force of gravity is feeble and the material at the surface is not strongly bound. A fast rate of rotation would thus cause disturbances, fragmentation and landslides. It could have been such events that led to the high luminosity seen in 1973 and again in 2001.

It could even be that these events exposed new areas to emit gases and oppose spin, leading to slowing of rotation, the paper says.

The writer can be contacted at response@simplescience.in.



Wed, 24 Jan, 2018

Look up for rare 'super blue blood moon' on January 31

New Delhi: Don't forget to look at the moon during the lunar eclipse on January 31 because it won't be any regular phenomenon this time. It will be a super moon, a blue moon and a blood moon, all-in-one.

The event is happening after 35 years and was last seen in Asia on December 30, 1982. The next total lunar eclipse visible from India will be on July 27, 2018 but it will not be a blue moon or super moon.

"Such a coincidence of three special features of the moon all happening on one day is rare. It is happening after many years," said Rathnasree Nandivada, director of the Nehru Planetarium in New Delhi.

According to space.com, the upcoming eclipse will be the "first total eclipse of a Blue Moon in nearly 152 years."

"The Internet is abuzz with the statement that it is happening after 152 years, the last time it happened was in 1866. But this was for the Americas, not for everywhere on the globe. In Asia, the last Bluemoon Total Lunar Eclipse happened in 1982," said Debiprosad Duari, director (research and academic) of MP Birla Planetarium in Kolkata.

In India, the eclipse will start around 5.18 pm. It will be total at 6.21 pm and will remain so till 7.37 pm. After the total eclipse ends, the moon will gradually come out of the Earth's shadow. The partial eclipse will end around 8.41pm.

The January 31 lunar eclipse, differently termed as blood moon, blue moon and super moon, will be visible from large parts of USA, north-eastern Europe, Russia, Asia, Indian Ocean, the Pacific and Australia. For Africa and South America, it will be a miss, since the eclipse will occur during the local daytime.

“It can be seen from across India. Unlike the solar eclipse, which can cause damage if seen with a naked eye, there is no harm in watching the lunar eclipse (directly),” said Duari.

On January 31, when the full moon is in its perigee – closer to the earth – it will be under a total eclipse.

It is also the first total lunar eclipse of the year.

“During a total lunar eclipse, the moon gets shadowed by the

earth. But sunlight while passing through the earth’s atmosphere gets broken down into its constituent colours. The red part of sunlight gets least scattered by the atmosphere and falls on the moon’s surface, giving the moon take a reddish copper hue,” he said. For this reason, from antiquity, a totally eclipse moon is called a blood moon,” he added.

Since this is the second full moon of the month it is popularly called the blue moon – a rare phenomenon . The first full moon occurred on January 2.

“The time period between two full moons is 29.5 days. So if a month has 31 days and the first full moon appears in the beginning of the month, only then there are chances there would be a second full moon at the end of the month.

The moon goes around the earth in an elliptic orbit. As a result, during its journey around the earth, it comes closest to the earth in its orbit, the closest point being termed as “perigee” and once in orbit it goes to the furthest point, which is called “apogee”.

If, by chance, a full moon occurs during a perigee or near the perigee position in its orbit, it will definitely look bigger and brighter than a full moon at the apogee, the farthest point in its orbit. A perigee full moon can be 14% bigger and 30% brighter than an apogee full moon.

“This time the moon is in its perigee and would hence appear brighter and

bigger. That is why it is being called by many as super moon,” said Nandivada.



■ Different phases of moon during lunar eclipse. PTI

Watch out for the unusual lunar event in 152 years

This total lunar eclipse, it will be a blood moon, blue moon and supermoon all at the same time

Total eclipse time: 6:21 pm – 7:37 pm

What is Lunar eclipse: Lunar eclipse occurs when the Sun, Earth and Moon are so aligned that for a period of time, the Full Moon passes through the shadow of Earth on space (called Earth’s Umbra)

<p>SUPERMOON The moon will be in its perigee – closer to the earth – and would look around 14% bigger and 30% brighter. The moon goes around the Earth in an elliptical orbit. The closest point is called perigee and farthest point is called apogee.</p>	<p>BLUEMOON This is the second full moon of the month. The first one occurred on January 2. This phenomenon of two full moons appearing in one month is commonly known as “Bluemoon”.</p>	<p>BLOODMOON Even though the moon remains shadowed during the full lunar eclipse some light passes through the earth’s atmosphere and falls on the moon’s surface. It gives the moon a reddish copper hue.</p>
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HOW RARE: In Asia, the last Bluemoon Total Lunar Eclipse happened on December 30, 1982.