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Prithvi-II missile test-fired

India on Friday successfully test-fired its indigenously developed nuclear-capable Prithvi-II missile from a test range in Odisha as part of a user trial by the Army.

The trial of the surface-to-surface missile, which has a strike range of 350 km, was carried out from a mobile launcher from launch complex-3 of the Integrated Test Range (ITR) at Chandipur near here at 9.50 a.m., sources said.

The Prithvi-II missile is capable of carrying 500 kg to 1,000 kg of warheads and is thrust by liquid propulsion twin engines. It uses advanced inertial guidance system with manoeuvring trajectory to hit its target with precision.

The launch was carried out by the specially formed Strategic Force Command and monitored by the scientists of the Defence Research and Development Organisation, a DRDO scientist said.



पृथ्वी-2 मिसाइल का सफल प्रायोगिक परीक्षण

बालेश्वर (ओड़ीशा), 2 जून (भाषा)।

भारत ने देश में निर्मित व परमाणु आयुध ले जाने में सक्षम पृथ्वी-2 मिसाइल का ओड़ीशा में एक परीक्षण रेंज से शुक्रवार को सफल प्रायोगिक परीक्षण किया। सेना ने इस्तेमाल के दौरान इसका परीक्षण किया। आधिकारिक सूत्रों ने बताया कि सतह से सतह पर मार करने में सक्षम और 350 किलोमीटर की मारक क्षमता वाली इस मिसाइल का परीक्षण सुबह करीब नौ बजकर 50 मिनट पर यहां निकट स्थित चांदीपुर में एकीकृत परीक्षण रेंज (आइटीआर) के परिसर तीन से मोबाइल लांचर के माध्यम से किया गया। उन्होंने कहा कि इस अत्याधुनिक मिसाइल का परीक्षण सफल रहा और मिशन के लक्ष्य पूरे हुए।

पृथ्वी-2 मिसाइल 500 किलोग्राम से 1000 किलोग्राम वजनी आयुध ले जाने में सक्षम है और यह दो तरल प्रणोदन इंजनों से संचालित होती है। यह अपने लक्ष्य को सटीकता से निशाना बनाने के लिए अत्याधुनिक प्रणाली का इस्तेमाल करती है। रक्षा अनुसंधान व विकास संगठन (डीआरडीओ) के एक वैज्ञानिक ने कहा कि इस अत्याधुनिक मिसाइल को परीक्षण के लिए उत्पादन भंडार से चुना गया और यह परीक्षण गतिविधियां विशेष रूप से गठित सामरिक

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बल कमान (एसएफसी) ने की और डीआरडीओ के वैज्ञानिकों ने इस पर नजर रखी।

सूत्रों ने कहा कि मिसाइल के प्रक्षेपण पथ पर ओड़ीशा के तट के निकट स्थित टेलीमेट्री स्टेशनों, डीआरडीओ रडारों और इलेक्ट्रो ऑप्टिकल ट्रैकिंग सिस्टम्स ने नजर रखी। बंगाल की खाड़ी में निर्धारित प्रभाव बिंदु के निकट तैनात पोत पर सवार टीम ने र्थमिनल गतिविधियों व मिसाइल के समुद्र में उतरने की निगरानी की।

इससे पहले 21 नवंबर, 2016 को इसी जगह से दो पृथ्वी-2 मिसाइलों का एक के बाद एक परीक्षण किया गया था। इस नौ मीटर लंबी मिसाइल को वर्ष 2003 में भारतीय सशस्त्र बल में शामिल किया गया था। यह पहली ऐसी मिसाइल है, जिसे डीआरडीओ ने एकीकृत निर्देशित मिसाइल विकास कार्यक्रम के तहत विकसित किया है।

Soon, Khanderi to Add Teeth to Navy

Having sailed out from Mumbai harbour for her maiden sea sortie, Khanderi, the second of the six Scorpene-class submarines being built at the Mazagon Dock Shipyard Limited (MDL) here in collaboration with DCNS of France, has moved a significant step closer to her induction into the Indian Navy later this year.

In her first major trial for her propulsion plant, Khanderi sailed out on Thursday from Mumbai harbour for her maiden sea sortie. It was a very important milestone in the construction programme. "The successful trial moved the submarine a significant step closer to her induction into the Indian Navy later this year. She will now be put through her paces via a rigorous set of trials, which are designed to test her operating envelop to the maximum," a Navy spokesperson said here on Friday.

Earlier on January 12 this year, Khanderi had been launched at the MDL here, a launch that had paved the way for her sea trials. Six Kalvari-class submarines are being built by the MDL in collaboration with Messrs DCNS of France. These submarines, post induction, would form the core of Navy's conventional Submarine Arm.

The state-of-art features of the Scorpene-class submarines include superior stealth and the ability to launch a crippling attack on the enemy using precision guided weapons. The attack can be launched with torpedoes, as well as tube launched anti-ship missiles, whilst underwater or on surface. The stealth features will give it invulnerability, unmatched by many submarines. They are designed to operate in all theatres including the tropics. All means and communications are provided to ensure interoperability with other components of a Naval Task Force. Currently, the first Scorpene-class submarine 'Kalvari' is being readied for delivery in July or August this year, after having been put through a grueling set of trials over the past one year, including successful live missile and torpedo firings.

Named after ferocious deep sea predators, the Scorpenes, which operate very silently and are capable of multifarious roles, will add teeth to the might of the Indian Navy by strengthening its crucial Submarine Arm.

नवभारत टाइम्स

Sat, 03 June, 2017

रूस देगा 36 मिसाइलें मार गिराने वाला सिस्टम

पीएम मोदी के रूस दौरे में कई समझौते हुए हैं जिनमें से सबसे अहम रहा एस-400 डिफेंस सिस्टम को लेकर। इस पर डील पक्की हो गई है और जल्द ही यह भारत को मिल सकता है। बता दें कि यह डिफेंस सिस्टम एक साथ 36 मिसाइलों को मार गिराने में सक्षम है।

दोनों देशों के बीच मिसाइल डिफेंस सिस्टम को लेकर एक साल से बातचीत चल रही थी। इसके लिए दोनों सरकारें शर्तों पर 'सामान्य चर्चा' कर रही हैं। रूस के उप प्रधानमंत्री

दिमित्री रोगोजिन ने पत्रकारों से कहा कि भारत को विमान भेदी मिसाइल प्रणाली S-400 की आपूर्ति को लेकर प्री-कॉन्ट्रैक्ट तैयारियां जारी हैं। समझा जा रहा है कि रूस की हामी के साथ ही यह डील अब पक्की हो गई है। खासकर पाकिस्तान और चीन से हमले की स्थिति में भारत इस सिस्टम का बेहतर इस्तेमाल कर सकेगा। चीन के पास पहले से ही यह डिफेंस सिस्टम मौजूद है। चीन ने भी रूस से ही यह डिफेंस सिस्टम खरीदा था।

India Pulls out of Shangri La Dialogue, Defence Minister Caught up with Work

By Manu Pubby

Pakistan to speak on the challenges for crisis management in Asia-Pacific region

India has skipped Shangri La Dialogue in Singapore, which is addressed by top defence ministers from across the world. Defence minister Arun Jaitley could not go due to work-related commitments. The annual conference will not have any Indian speaker unlike last year, when the defence minister had delivered an address on the country's security concerns.

Pakistan, however, has got a slot to speak at the conference on the challenges for crisis management in Asia-Pacific region. Chairman of Joint Chiefs of Staff Committee Gen Zubair Mahmood Hayat to speak alongside the defence ministers of Canada and Malaysia. Other speakers at the conference include defence ministers of Australia, Japan, France and the US Secretary of Defence. The Chinese side is also not participating at the defence minister-level.

Officials told ET that initially Arun Jaitley was expected to address the conference. "Due to work-related commitments, the minister was not able to go for the event," defence ministry sources said. Subsequently, the Indian side was in talks with organisers of the conference for a speaking slot for Minister of State for Defence Subhash Bhamre. The junior minister was scheduled to attend the conference as of last week, sources said. While it is still unclear how the talks broke down, India pulled out of the conference at a short notice this week, after the minister was allegedly denied an appropriate speaking slot. There will be no ministerial delegation from India but representatives from the Indian High Commission in India, members of the BJP foreign cell as well as representatives from New Delhi-based think tanks will participate in the event. The Shangri-La Dialogue is held annually by independent think tank International Institute for Strategic Studies (IISS), in Singapore and is attended by defense ministers and heads of armed forces from Asia-Pacific nations. The current dialogue is on from June 2-4.



Iran is complying with key limits of nuclear deal: UN

Iran is sticking to the 2015 nuclear deal with major world powers even as tensions rise with US President Donald Trump, a UN atomic watchdog report showed Friday.

Trump has vowed to "dismantle" the "disastrous" deal and has ratcheted up US sanctions, calling for Iran to be isolated and throwing his weight behind Tehran's arch rival Saudi Arabia.

But the new International Atomic Energy Agency report, seen by AFP, showed Iran's nuclear activities remain reduced, making any push to an atomic bomb much harder than before the agreement.

Iran's stock of low-enriched uranium – used for peaceful purposes, but when further processed for a weapon – remained below the agreed limit of 300 kg, the report said.

The quarterly assessment said Iran "has not pursued the construction of the Arak reactor" – which could give it weapons-grade plutonium – and has not enriched uranium above low purity levels.

Iran's stock of heavy water, used as a reactor coolant, was 128.2 tonnes. Iran has previously inched above an agreed ceiling of 130 tonnes a number of times and has shipped the excess abroad.

The agreement between Iran and the United States, Russia, China, France, Britain and Germany was agreed in Vienna in July 2015, after years of negotiations. It came into force in January 2016.

The accord saw Iran substantially reduce its nuclear programme and submit to ultra-close IAEA oversight, making much tougher any "breakout" attempt to make a bomb before the world can react.

NASA set to launch first-ever mission to neutron-stars

NASA is set to launch the world's first mission tomorrow to study rapidly spinning neutron stars - the densest objects in the universe - nearly 50 years after they were discovered. The same platform will also carry out the world's first demonstration of X-ray navigation in space. The agency plans to launch the two-in-one Neutron Star Interior Composition Explorer (NICER) aboard SpaceX CRS-11, a cargo resupply mission to the International Space Station (ISS) to be launched aboard a Falcon 9 rocket on Saturday. The launch was earlier planned for June 1, but was delayed due to poor weather.

About a week after its installation, this one-of-a kind investigation will begin observing neutron stars, the densest objects in the universe. The mission will focus especially on pulsars - those neutron stars that appear to wink on and off because their spin sweeps beams of radiation past us, like a cosmic lighthouse. Due to their extreme nature, neutron stars and pulsars have engendered a great deal of interest since their existence was proposed in 1939 and then discovered in 1967.

These objects are the remnants of massive stars that, after exhausting their nuclear fuel, exploded and collapsed into super-dense spheres. Their intense gravity crushes an astonishing amount of matter - often more than 1.4 times the content of the Sun or at least 460,000 Earths - into city-sized orbs, creating stable, yet incredibly dense matter not seen anywhere else in the universe.

Just one teaspoonful of neutron star matter would weigh a billion tonnes on Earth. "The nature of matter under these conditions is a decades-old unsolved problem," said Keith Gendreau, a scientist at NASA's Goddard Space Flight Centre in the US. "Theory has advanced a host of models to describe the physics governing the interiors of neutron stars.

With NICER, we can finally test these theories with precise observations," said Gendreau. Although neutron stars emit radiation across the spectrum, observing them in the energetic X-ray band offers the greatest insights into their structure and the high-energy phenomena that they host, including starquakes, thermonuclear explosions and the most powerful magnetic fields known in the cosmos. During its 18-month mission, NICER will collect X-rays generated from the stars' tremendously strong magnetic fields and from hotspots located at their two magnetic poles.

LIGO detects gravitational waves for third time

LIGO scientists, including those from India, have for the third time successfully detected gravitational waves - ripples in space and time - generated by a merger of two massive black holes three billion light years away from Earth. The new black hole, formed by the merger, has a mass about 49 times that of our Sun. The finding confirms predictions made by the general theory of relativity which German scientist Albert Einstein formulated over 100 years ago.

The detection fills in a gap between the masses of the two merged black holes detected previously by The Laser Interferometer Gravitational-wave Observatory (LIGO), with solar masses of 62 (first detection) and 21 (second detection). "We have further confirmation of the existence of stellar-mass black holes that are larger than 20 solar masses - these are objects we didn't know existed before LIGO detected them," said David Shoemaker, spokesperson for the LIGO Scientific Collaboration (LSC), a body of more than 1,000 international scientists.

“It is remarkable that humans can put together a story, and test it, for such strange and extreme events that took place billions of years ago and billions of lightyears distant from us,” said Shoemakers from the Massachusetts Institute of Technology (MIT) in the US. The new detection occurred during LIGO's current observing run, which began November 30 last year. LIGO observations are carried out by twin detectors located in Washington and Louisiana in the US. Sixty-seven scientists from 13 Indian institutions are part of the LIGO Scientific Collaboration, under the umbrella of the Indian Initiative in Gravitational-Wave Observations (IndIGO).

The Indian team in LIGO includes scientists from the Chennai Mathematical Institute, Tata Institute of Fundamental Research (TIFR) Bengaluru, TIFR Mumbai, Indian Institute of Science Education and Research (IISER) Kolkata, IISER Trivandrum, Indian Institute of Technology (IIT) Bombay, IIT Madras, IIT Gandhinagar, and IIT Hyderabad. LIGO made the first-ever direct observation of gravitational waves in September 2015 during its first observing run since undergoing major upgrades in a programme called Advanced LIGO. The second detection was made in December 2015.

The third detection, called GW170104 was made on January 4 this year. In all three cases, each of the twin detectors of LIGO detected gravitational waves from the tremendously energetic mergers of black hole pairs. These are collisions that produce more power than is radiated as light by all the stars and galaxies in the universe at any given time.



Sat, 03 June, 2017

ISRO abuzz over heavy-lift rocket launch on June 5

By Madhumathi D.S.

India eyes slot in 4-tonne club of five developed nations

An anxious Indian space establishment is keeping its fingers crossed over the launch of its new and most powerful rocket on June 5. On that evening, the indigenous GSLV-Mark III makes a bid to breach a heavy-lift rocket club that can put four-tonne satellites into space. The U.S., Russia, Europe, China and Japan are already there. The first development vehicle, called GSLV-MkIII D-1, is slated to fly from the Satish Dhawan Space Centre at Sriharikota at 5.28 p.m., says the Indian Space Research Organisation.

The success of the first full flight of Mk III will mean that soon, Indian communication satellites can be lofted into space from within the country. It will also improve ISRO's ability to reach heavier satellites to both — the higher geostationary transfer orbit or GTO of 36,000 km; and to low-Earth orbit or LEO of up to 800 km.

ISRO Chairman and Secretary, Department of Space, A.S.Kiran Kumar, told *The Hindu*, “MkIII should enable us to launch communication satellites totally in India without going out. That is the primary aim.”

“We are improving our capacity to put higher payloads into GTO and LEO. What we now have with MkII is capability for lifting 2.2 tonnes to GTO. This rocket will give us a higher weight capability than what we now have, for both GTO and LEO. Since 1995, we launch all Earth observation satellites [which are smaller] ourselves on the [lighter lifting] PSLV rocket. Once we are through with GSLV MkIII, we will be able to launch all communication satellites ourselves.”

Independence apart, an indigenous launch vehicle also means lower cost of putting spacecraft to orbit, said K.Sivan, Director of the lead rocket development centre, Vikram Sarabhai Space Centre, Thiruvananthapuram.

Larger payload soon - The first payload, communication satellite GSAT-19, however, has been kept below 4 tonnes — at a safe 3,136 kg. “We will subsequently increase the payload,” Mr. Kiran Kumar said. Communication spacecraft are generally put into GTOs first (the orbit is adjusted over days.) The need for a 4T launcher has become urgent in recent years. The first and second generation Indian communication spacecraft used until the late 1990s were around 2,000 kg (two tonnes) with about 24 transponders. Today they are over 3 tonnes and carry more transponders.