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# Army successfully test-fires advanced version of Brahmos

PNS ■ NEW DELHI

The Army on Wednesday successfully test-fired the advanced version of Brahmos supersonic cruise missile, known as “steep dive and top attack”, in the Andaman and Nicobar Islands. The missile hit a land-based target with an accuracy of less than one metre. The Navy had tested the land version of the Brahmos two weeks back. The Brahmos is capable of hitting a target at more than 290kms.

South Western Command's Strike One Corps successfully carried out the firing of the advanced Brahmos Block III land attack cruise missile system in the Andamans on two consecutive days including Tuesday and Wednesday, officials said here. The successive launches reinforced the weapon's precision strike capability.

The latest tests were carried out in full operational land-to-land configurations from Mobile Autonomous Launchers (MAL) at its full-range. Meeting all flight parameters in a copybook manner while conducting high level and complex manoeuvres, the multi-role missile successfully hit the land-based target with desired precision, in both the trials demonstrating its accuracy of less than one metre, they said.

In plain terms, it means that the missile can take out a target in a built up area without minimum collateral damage, officials said adding the range of the missile can be increased from 290 km after India joined the Missile Technology Control Regime(MTCR) group. It enables India to have supersonic missiles of more than 290 km and the range can now go



**South Western Command's Strike One Corps successfully carried out the firing of the advanced Brahmos Block III land attack cruise missile system in the Andamans on two consecutive days, including Tuesday and Wednesday**

beyond 450 km.

The Navy recently tested the land attack version of the missile and it hit a dummy on the land after launched from a

ship in the Bay of Bengal. So far, the Navy had anti-ship Brahmos missiles and the latest capability the increased the capabilities of the Navy.

Meanwhile, the Army test was the fifth consecutive time when the Block-III version of Brahmos, jointly manufactured by India and Russia, was successfully launched and hit the land-based target in “top-attack” mode, an incredible feat not achieved by any other weapon system of its genre, officials said.

At present, the Army has four regiments of Brahmos missiles since induction into service in 2007.

India now has land, sea and sub-sea versions of Brahmos while tests are on to have the air version of the missile. It will be fitted on to the frontline fighter jet SU-30.

# Indian Army flexes 'missile muscle'



South Western Command's Corps 'Strike One' successfully carried out the firing of the advanced Brahmos Block-III missile system in the Andaman and Nicobar Islands on the May 3 for the second consecutive day. The successive launches reinforce the formidable weapon's precision strike capability. The long-range tactical weapon was successfully tested from the same location on the May 2. These successful firings of the supersonic cruise missile were carried out in full operational land-to-land configurations from Mobile Autonomous Launchers (MAL) at its full-range.



## Business Standard

### Strategic alliance with pvt firms on the cards

#### *Defence manufacturing policy*

Defence Minister Arun Jaitley's statement last week about a new defence manufacturing policy has raised hopes the ministry will finally approve the long-pending strategic partnership policy.

“Private companies will be chosen for strategic partnerships in six broad areas ranging from aircraft and warships to tanks and guided missile systems. The strategic partnership model will replace the existing system of awarding contracts to the lowest bidder,” said a person with direct knowledge of the policy.

The proposed policy may pave the way for companies to enter into long-term commitments for complex technology programmes, according to industry sources. “With a long-term commitment in place, Indian companies are expected to make higher financial and human resource investments. These could include projects like fighter aircraft, helicopters, submarines and strategic materials,” said a second person with knowledge of the ongoing discussions.

Larsen & Toubro, Reliance Defence, Punj Lloyd and Bharat Forge could emerge as immediate beneficiaries once the policy is in place. These companies refused to comment on the proposed policy.

“A trust-based model was missing all along in defence procurement, which did not allow repeat buying from a vendor. This made it unviable for anyone to make long-term investments and resulted in India’s import dependence,” the second person quoted earlier said.

According to the latest report of the Stockholm International Peace Research Institute, India is the world’s largest arms importing country, accounting for 13 per cent of global arms imports between 2012 and 2016.

Between 2007 and 2016, China had the biggest growth in military spending, with an increase of 118 per cent, followed by Russia (87 per cent) and India (54 per cent).

The strategic partnership policy has also seen discussions over issues related to limiting companies to specific verticals. If restricted, companies with presence across defence sub-segments may see a limited upside. However, industry sources added not all sub-segments would be under the strategic partnership policy.

## **Business Standard**

*Thu, 04 May, 2017*

# **Govt orders payment of 7th pay panel scales to military**

*By Ajai Shukla*

*Also approved retention of percentage-based regime of disability pension implemented after 6th CPC*

Soldiers, sailors and airmen of the three defence services will be paid salaries recommended by the 7th Central Pay Commission (7CPC). The new scales will be paid with effect from January 1, 2016.

In June 2016, the Cabinet had approved 7CPC scales for civilian employees with effect from January 1, 2016, resulting in additional financial outgo of Rs 84,933 crore. However, the three service chiefs had requested that payment be made to defence personnel only after an anomalies committee resolved the military’s representations against the 7CPC recommendations.

While the military’s three key requests have not been addressed in this award, Defence Minister Arun Jaitley revealed two significant concessions in a press briefing in New Delhi on Wednesday. First, disability pension for soldiers would henceforth be paid at the same scales as civilians. The generals had protested the 7CPC order that disability pensions be paid to the military at a flat slab rate, rather than as a percentage of salary. This had sharply reduced the disability pensions almost across the board.

“The Cabinet also approved the retention of percentage-based regime of disability pension implemented after 6th CPC, which the 7th CPC had recommended to be replaced by a slab-based system,” said a government notification.

This would involve an additional outgo of Rs 130 crore a year.

Second, a modified method of calculation will increase the pension of servicemen who retired before 2016, benefiting over 5.5 million pensioners. This involves an additional payout of Rs 5,031 crore for 2016-17, which would increase this year’s pension allocation of Rs 85,740 crore.



*Thu, 04 May, 2017*

## **This road is bad news for India**

*The China-Pakistan corridor has geopolitical ramifications*

Beijing has stepped up its arguments in favour of its Belt-Road Initiative in the run up to its global conference on the transcontinental infrastructure programme in mid-May. Chinese officials sought to address Indian concerns about the flagship project of the BRI, the China-Pakistan Economic Corridor (CPEC), arguing it would not affect the territorial status of Pakistan-occupied Kashmir — after all, there is an existing China-built

Karakorum-Kunlun Road going through that region since the 1960s. Beijing's view on Kashmir, they have claimed, has remained unchanged for decades. The BRI is portrayed as a giant Chinese contribution to global economic integration that would help boost growth and even help keep a check on extremism. Beijing's representatives have also noted that over 40 countries have signed up for the BRI. The subtext is that India's continued resistance is futile and self-defeating.

New Delhi is right to remain wary. China's actions on the ground indicate a far less benign ambition. The China-Pakistan corridor has increasingly become about providing funds to the Pakistan military to the point Pakistani industry has complained it is receiving no contracts. In Sri Lanka, China has not only built a number of economically unviable ports and roads, it has also left Colombo with \$8 billion in Chinese debt at onerous rates of interest. Beijing's use of economic blockades or boycotts against Mongolia recently and the Philippines and Japan earlier are warnings about what could follow from signing up for an infrastructure web centred on China. Beijing has been tying its Kashmir policy ever closer to the position taken by Islamabad to consider the stapled visa crisis of 2009, the ban on Indian generals of the Northern Command visiting China and the support at the UN for terrorist Masood Azhar.

All of this makes it difficult for India to accept the underlying Chinese claim that the BRI is an economic project with no geopolitical connotations. Under the BRI, all roads would lead to Beijing. Inevitably, Chinese power will flow along the supply chains and logistical paths that it will create and control.

## THE ASIAN AGE

*Thu, 04 May, 2017*

### **Are we heading to World War III?**

*By Gurmeet Kanwal*

President Donald Trump of the United States came out all guns blazing and, in the course of one short week in April, stamped the early contours of his Administration's foreign policy on the geo-strategic landscape. On April 6, 2017, he ordered the US Navy to fire on al-Shayrat airfield in Syria. 59 Tomahawk cruise missiles were launched from ships in the Mediterranean Sea as retribution for the use of Sarin gas, a chemical weapon, by Bashar al-Assad against his own people in Idlib two days before.

On April 8, 2017, the US Navy announced that a task force led by the aircraft carrier Carl Vinson was being despatched to the Korean Peninsula.

Apparently the aim was to deter North Korea from carrying out another nuclear test and, possibly, a missile test. Mr Trump said, "We are sending an armada. Very powerful." That the aircraft carrier was sailing towards Indonesia and will take a long time to get to the Korean Peninsula is another matter.

Later, Mr Mike Pence, the US Vice President, said during a visit to Seoul that the US stood "shoulder to shoulder" with its ally South Korea. He declared that the era of US "strategic patience" in dealing with Pyongyang was over. It was also leaked out that the President was considering a pre-emptive strike on North Korea.

On April 13, 2017, the US dropped the Mother of All Bombs on a cave and tunnel complex in Afghanistan believed to be used by the ISIS's Khorasan module. The 10-tonne MOAB (Massive Ordnance Air Blast) is the largest non-nuclear weapon anywhere in the world. Dozens of ISIS fighters are reported to have been killed in the attack. With these three moves, Mr Trump has graduated rather rapidly from the isolationism he had advocated during the campaign to global power projection.

#### **Russia's Concerns**

America's vigorous military moves were being watched closely by President Vladimir Putin and his team. They were like a red rag to a bull. Moscow was taken by complete surprise, but reacted angrily and quickly. Besides condemning the missile strikes against Syria and calling them an act of aggression against a sovereign nation, Russia called an emergency meeting of the UN Security Council. Mr Putin ordered the

Russian Navy's frigate Admiral Grigorovich to move to the Mediterranean forthwith. He also suspended Russia's memorandum of understanding on flight safety with the US for operations in Syria

Elsewhere in the world too the jockeying for power and influence continues unabated. In West Asia, the completion of the recapture of Mosul by Iraqi forces, supported by the US and its allies, is imminent. Though it will be the second successive major setback for the ISIS militia after the fall of Mosul in December 2016 to the Syrian army, backed by Russia and Iran, the Islamic State will not wither away anytime soon.

Since Russia annexed Crimea, a Ukrainian province, in March 2014, almost 10,000 people have been killed in fighting between government forces and Russia-backed rebels in eastern Ukraine. The Russian move came soon after Poland and Romania approved the deployment of US ballistic missile defence (BMD) systems on their soil.

The deployment was ostensibly intended to intercept Iranian missiles but was vehemently opposed by Russia. The region has become a potential flashpoint.

### **Instability in Asia**

The single greatest cause of instability in South Asia is the long-drawn conflict in the Af-Pak region. Tensions between India and Pakistan show no signs of abating as the Pakistan army and the ISI continue to wage war against India by asymmetric means and the Indian government's response grows more vigorous. By undertaking to build the China-Pakistan Economic Corridor (CPEC) through the disputed Gilgit-Baltistan area, part of J&K under illegal Pakistani occupation, China has opted to fish in troubled waters. Another hotspot is the war being fought with Yemen by its neighbours, mostly through proxies.

In the South China Sea, where the disputed Spratly and Paracel groups of islands are located, China continues its single-minded pursuit to extend its administrative control up to the limits of the 'nine-dash line'. China's coast guard constantly patrols the Luconia Shoals off the coast of Malaysia's Sarawak State on the island of Borneo. President Rodrigo Duterte of the Philippines has ordered the military to occupy and fortify all Philippine-held islands to assert his country's claims and oppose China's moves. And, at the beginning of April, Indonesian authorities destroyed 81 foreign ships that had been seized for fishing illegally in the country's waters.

The polycentric new world order, which had begun to emerge gradually from the ashes of the Cold War, after a brief unipolar moment, has begun to fray at the edges. The primary cause of strategic uncertainty is the growing friction and distrust among the major powers. Other causes include the triumphant rise of strident right wing political parties, dilution in the forces of globalisation and free market economies and the world's inability to comprehensively defeat the Islamic State. The arc of instability is expected to gradually spread to new areas.

### **Korean Imbrolio**

To come back to Korean Peninsula, China would not like to see conflict break out and the US increase its forces in its neighbourhood again. China has considerable influence over North Korea, but if the country is pushed into a corner, Kim Jong Un's actions would be hard to predict.

Even as President Trump was preparing to call the leaders of China and Japan over the weekend to discuss measures to reduce tensions, North Korea threatened to sink the USS Carl Vinson, the aircraft carrier leading the US task force. While the rhetoric may yet be ratcheted up a few notches by both sides, the probability of actual conflict breaking out remains low as neither side one will gain.

North Korea is an unstable nuclear-armed nation ruled by a ruthless tyrant. In case Mr Trump launches an air-to-ground and missile attack on North Korea, Kim Jong Un can be expected to retaliate with a vengeance. While some of his retaliatory strikes will be aimed at the Carl Vinson task force, the bulk of the counter effort will be directed against South Korean forces and the people. Seoul is within the range of North Korean artillery. An hour's shelling would cause a blood bath.

In case hostilities escalate and North Korea with its large army threatens to overrun the South, Trump is likely to consider the use of nuclear weapons. Many of his statements as a candidate had not inspired confidence. Joe

Scarborough of MSNBC had reported that Trump had repeatedly asked an international foreign policy expert (whom he did not name) why the US could not use nuclear weapons. The report was denied by the Trump campaign.

In an interview with the New York Times in March 2016, Trump had said, "Japan and South Korea might need to obtain their own nuclear arsenal to protect themselves from North Korea and China if the US is unable to defend them" –

While campaigning for Hillary Clinton, President Obama said that a man who could be provoked by a Tweet ought not to have his finger on the nuclear button. But, after becoming President, Mr Trump has acted with maturity and responsibility. Conflict between nation states causes colossal damage and has seldom resolved disputes. The only direct beneficiary of conflict is the military-industrial complex. If large-scale conflict is to be avoided, the world's leading powers will have to work together in a concerted manner. Statesmanship of a very high order is called for.

**1. Syria & Iraq** | An estimated half a million people have been killed, 12 million uprooted in fighting involving different factions and groups.

**2. Turkey** | In addition to spillover from the wars in Syria and Iraq, Turkey is in a spiralling conflict with the PKK. At least 2,500 militants, security forces and civilians have been killed and 3,50,000 civilians displaced. The events after the referendum arming Erdogan with sweeping powers add another dimension.

**3. Yemen** | A huge human catastrophe in one of the poorest parts of the Arab world. Millions of people are now on the brink of famine. At least 4,000 civilians have been killed, mostly in Saudi Arabia-led coalition airstrikes. Al-Qaeda and other militant groups are thought to be having a free run here.

#### **4. Afghanistan** |

The Taliban are gaining ground. The Haqqani network is responsible for attacks in major cities and the Islamic State has claimed attacks on Shias. The US dropped the "Mother of all Bombs"

**5. Ukraine** | Three years of war and 10,000 deaths later, Russian intervention defines all aspects of political life in Ukraine. Trump's professed admiration for Russian President Vladimir Putin scares Kiev, as do rumours that the United States may decide to scrap sanctions against Russia although the latter annexed Crimea in 2014.

#### **Doomsday Clock ticking down**

A statement from the Science and Security Board which runs the Doomsday Clock reads, "The probability of global catastrophe is very high, and the actions needed to reduce the risks of disaster must be taken very soon." For the last two years, the minute hand of the Doomsday Clock stayed set at three minutes before the hour, the closest it had been to midnight since the early 1980s.

#### **Chances of accidental war**

Missiles with millimetre precision and hypersonic speed mean that for most countries the only viable defence is a pre-emptive strike – get in the first blow. Nuclear armaments are sufficient to destroy the whole Earth several thousand times over.



*Thu, 04 May, 2017*

## **US airplanes those are ready for doomsday**

Wherever Air Force One is in the world, an E-4B Doomsday plane isn't far away. There are four E-4B "nightwatch" planes in the fleet that are made up of specially modified Boeing 747s that follow the President of the United States, particularly when he goes overseas. The planes are outfitted as complete command centers for the president and his top officials including the secretary of defense and the joint chiefs of staff in cases of nuclear war or national emergency.

These aircraft have unique capabilities that cannot be duplicated by any other aircraft that the Air Force use. The planes, also called "National Airborne Operation Centers" when they are on flight, have special equipment and have the capability to communicate with anyone from anywhere in the world and support analysts and strategists on the flight. The design of the plane is meant to survive an electromagnetic pulse with all the systems intact, even down to the fact that they still use traditional analog flight instruments because they are less vulnerable. It is capable of operating with the largest crew of any aircraft in US Air Force history, at 112 people, both flight and mission personnel. The planes all have three decks.

The planes also have in-flight refueling and has been able to remain airborne and operational up to 35.4 hours. Although it has been designed to be able to operate in-flight for a full week. The E-4Bs are operated by the First Airborne Command and Control Squadron of the 595th Command and Control Group, are coordinated by the United States Strategic Command and are stationed near Omaha, Nebraska, at the Offutt Air Force Base. One of the planes is kept running at all times, with the engine running 24 hours a day at the Offutt base when the president is in the US. If an emergency happens, the plane is ready to meet with the presidents almost immediately. If he goes abroad, the E-4Bs follow and are known to the crews as "Air Force One When It Counts" according to Politico. The planes are outfitted with wire antennas that keep the president in communication with the nuclear submarine fleet, even if ground-based communications are destroyed.

The E-4Bs were first operated in the 1970s during the Cold War. And through to the end of the war, one of the flying war rooms was kept constantly on alert at Andrews Air Force Base, ready to lift off with the president in just 15 minutes. It was believed that these planes were the best way to keep the president safe in case of nuclear attack. In 2006 there was talk that the E-4B fleet would be retired in 2009 when then-secretary of defense Donald Rumsfeld announced his plan. Instead, just one of the fleet was retired in February of 2007. When Robert Gates took over as secretary of defense, he reversed the decision in May 2007 and the plane returned to the fleet because the planes have such unique capabilities.



Thu, 04 May, 2017

## Space Games

By Ananth Padmanabhan

### *ISRO's South Asia satellite is a move towards using technology for diplomacy*

As technological capabilities and innovation-led growth become important facets of economic and military power, countries have started integrating techno-diplomacy as a major piece in their broader international diplomacy edifice. Technological capabilities can serve both hard power (in military and economic terms), and soft power.

While this is not an entirely new phenomenon, and has been used especially with nuclear technologies and military hardware and weapon systems, the role of civilian technology solutions in diplomacy has taken on a sense of urgency in the last decade or so. Due to technological and diplomatic constraints, India has generally been unable to wield its technology as an effective tool of diplomacy. This is set to change with the launch of the South Asia satellite by ISRO on May 5.

The origins of the South Asia satellite date back to the 18th SAARC Summit, in 2014 in Nepal, when Prime Minister Narendra Modi put forward the idea of a common satellite serving the needs of all SAARC members. There were numerous delays, primarily as negotiations among the various countries of the South Asia region stalled over ownership and data access issues. With Pakistan officially opting out of the project by March 2016, the decks were cleared for an expedited launch.

The satellite has been designed and built by ISRO, with the full cost of the mission being borne by India. PM Modi stated that the satellite will be India's "gift" to its neighbours. The satellite will carry 12 ku-band transponders allotted to the participating countries. Each country can use a dedicated transponder for its own

use, which would primarily be communication and disaster management support. The satellite is similar to previous communication satellites designed and launched by ISRO, and technologically does not constitute a major breakthrough. However, diplomatically, the South Asia satellite is significant for three reasons.

First, it showcases India's growing technological prowess. Along with previous missions such as Chandrayaan and the Mars Orbiter Mission, the South Asia satellite underscores the strength of Indian indigenous technological development. Though the satellite is not very challenging technologically, a two-year turnaround for building and deploying a satellite is impressive.

Second, that the satellite has been launched without any specific quid pro quo shows that India is willing to use its technological capabilities as a tool of diplomacy. India has begun realising that domestic technologies have now reached a level of maturity that allows India to confidently brandish its capabilities to other countries. It also serves as a marketing tool for future launches at a time when ISRO is building a strong niche for itself in the international satellite launch market.

Third, it reveals both India's ambition and capability to create what can be termed 'technological commons'. By 'gifting' this satellite to its neighbours, India has created an open access resource that can be leveraged by the latter to address some of their critical domestic concerns. Building such commons is essential not only to address immediate problems but also spur research, innovation and economic growth in the region.

Technology is the calling card of our times. India must make a concerted effort to expand the range of technologies it can use as part of its diplomatic arsenal. India could also look at including biotechnology and green energy. Unfortunately, there has been a critical lag in the evolution of robust scientific and research institutions in these areas, particularly from a funding standpoint. The South Asia satellite is emblematic of a more confident and assertive India, but it is necessary to ensure that such actions are not one-off.

*Reddy is researcher and Padmanabhan is fellow, Carnegie India*



Thu, 04 May, 2017

# Humans must leave Earth in 100 years to survive: Hawking

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Humans will need to colonise another planet within the next 100 years to survive climate change, asteroid strikes and overpopulation, according to renowned British physicist Stephen Hawking.

In a documentary, Expedition New Earth - part of the BBC's new science season Tomorrow's World - Hawking and his former student Christophe Galfard will travel the world to find out how humans could survive in outer space.

In the series, Hawking claims



that time is running out for the Earth and humanity will need to leave the planet for its survival. The show aims to find Britain's greatest invention, by asking the public to vote on the innovation which has been the most influential in their lives, 'The Telegraph' reported.

Last month, Hawking had

**The scientist claims that time is running out for the Earth and humanity will need to leave the planet for its survival.**

warned that the aggressive instincts of humans, coupled with the fast pace of growth in technology may destroy us all by nuclear or biological war, adding that only a 'world government' may prevent this impending doom.

Hawking had said that humans may lack the skills as a species to stay alive.

Thu, 04 May, 2017

## ISRO unveils solar car made of desi resources

*By Srinivas Laxman*

The Indian Space Research Organisation (ISRO) recently demonstrated a solar hybrid electric car, designed and developed using in-house resources, at Vikram Sarabhai Space Centre (VSSC) in Thiruvananthapuram. ISRO made an announcement about this environment-friendly car on Monday.

VSSC is Isro's centre for making various types of rockets like the Polar Satellite Launch Vehicle and the Reusable Launch Vehicle. The demonstration of the green friendly vehicle, held in the last week of March, included a successful uphill drive. Isro is now researching ways to cut down the car's cost.

Isro said vehicles using fossil fuels cause problems to environment and life. "An ideal transportation system should envisage zero emission without any pollution," it said. The car is run using highenergy lithium ion batteries, which can be recharged using sunlight, said sources. The main challenges in developing the vehicle included designing a solar panel on top of the car and also control electronics for the battery and solar panel interface and, what is known as, "drive electronic" to run the car smoothly.



Thu, 04 May, 2017

## NITI Aayog for more research, less teaching

*Favours hiring of faculty from abroad*

To ensure that investments in research better translate to more products and bolster "innovation and development" The National Institution for the Transformation of India (NITI) Aayog has recommended that faculty at "world class" institutions prioritise research and be allowed to "reduce their teaching responsibility," if required. Such universities also ought to be allowed to recruit research staff from abroad and be encouraged to compete for research projects from industry. The so-called "world class universities" are part of a government-outlined plan to raise funding for 10 public and 10 private universities and mould them into institutions that rank among the world's best.

The names of these institutions are expected to be made public later this year.

**Vision document** - The NITI Aayog suggestions stem from a three-year vision document that outlines targets and goals the Ministries "from railways to environment" ought to achieve by 2020.

Universities ought to be ranked according to metrics such as teaching, research output and funding won from the private sector.

"Gradually, this model may be extended to bring other universities in the fold," the report adds.

The NITI Aayog also pitches for a new "National Science, Technology and Innovation Foundation" headed by a distinguished scientist. This will coordinate with science and technology departments, ministries, governments and private sector bodies and deliberate on national issues and recommend interventions.

Such an organisation will review progress of projects every six months and propose "course corrections" for achieving these goals.

**Database of schemes** - The organisation also proposes a database of all existing schemes related to science and technology across ministries and departments. This will have information on the coordinating ministry, its objectives and available funds. Its key purpose would be to avoid "duplication of efforts, reduce approval times, increase accountability and collaboration between entities and measured outcomes," the report adds.

The organisation has also pushed for more public private partnerships.

S&T projects, the report notes, are "different than those" in infrastructure primarily because they are riskier and take longer to fructify.

"We should develop clear guidelines for implementing these projects" and administer a clear funding mechanism for government financing," it notes.

Given the government's "limited funds" the NITI Aayog recommends research priorities to water management, agriculture, energy, waste management, health, connectivity and security.