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India a Step Closer to Laser Weaponry

Initial Success: DRDO has successfully tested a laser system mounted on a truck and plans are now afoot to create a more powerful laser

By Shaurya Gurung

New Delhi: In a leap towards building laser weapons capability, India has made a breakthrough in its efforts to develop directed energy weapons, or DEWs, that can potentially end future wars before they begin.

It's not exactly what we saw in Star Wars films or Flash Gordon comics decades ago, but DEWs such as high powered lasers can destroy enemy missiles, aircraft and advanced weaponry based on electronic circuitry.

India's primary defence research organisation Defence Research and Development Organisation (DRDO) recently conducted a successful test of a laser system mounted on a truck, and plans are now afoot to create a more powerful laser with a longer range, people familiar with the development told ET.

Keeping Eye on Future Arms

Directed Energy Weapons destroy enemy missiles, aircraft & other weaponry based on e-circuitry

Their beams travel at the speed of light

Do not need a magazine recharge, but dependant on energy source

NOW FOR BIGGER VERSIONS

HAS A LARGER OPERATIONAL RANGE

Beams are invisible thereby concealing the attacker

But, atmospheric conditions can adversely affect a laser beam

DRDO tested a 1KW laser weapon system mounted on a truck at Chitradurga in Karnataka towards August-end

Private companies such as Kalyani Group and Rolls-Royce are also looking to develop or build DEWs in the country.

DEWs are weapons that produce a beam of concentrated electromagnetic energy. There are mainly two types of DEWs: high powered lasers and microwaves. DEWs are anti-personnel as they can cause intolerable burning of an area in the body and blindness, and anti-material as it can be used to destroy

missiles, ships, UAVs and fry circuitry of equipment deployed in a battlefield.

While information is not available on whether India is developing microwave weapons, DRDO tested a 1KW laser weapon system mounted on a truck at Chitradurga in Karnataka towards August end.

“The laser beam hit a target located 250 metres away,” an official said. “It took 36 seconds for it to make a hole in the metal sheet.” The test was conducted in the presence of then defence minister Arun Jaitley, the person said.

The next step is to test a higher powered laser, 2KW, mounted on the truck against a metal sheet located at a distance of 1 km.

Two DRDO laboratories — Centre for High Energy Systems and Sciences (CHESS) and Laser Science & Technology Centre (LASTEC) — are currently working on developing the source for generating the laser, officials said. At present, the source of the laser, which is the “heart of the system”, is imported from Germany. Other challenges include developing a cooling mechanism for the system that heats up when the laser beam is fired, ensuring a focused beam towards a distant target and optoelectronics, or optronics, involving lenses to create that focus, they said.

“The weapon is not ready yet and it will take years for it to happen,” said an official.

DRDO did not officially respond to a questionnaire on the subject sent by ET to it as of press time Wednesday. Private companies too are looking to enter DEW space.

A senior official at Kalyani Group said Kalyani Centre for Technology and Innovation is in the “initial stages” of developing DEWs. “We are identifying two segments: ‘lethality’ to kill and ‘survivability’ aimed at destroying incoming missiles,” the person told ET. “We will initially be working on the latter and are setting up a lab in Pune.” Rolls-Royce’s global strategic marketing director Ben Story, in a conversation with ET had recently said that there are “conversations” happening between the company and India on DEWs.

A release by Press Information Bureau back in December 2013 had confirmed that DRDO’s CHESS and LASTEC were researching on DEWs and laser technology, respectively. A 2015 DRDO bulletin titled ‘Technology Focus’ stated that LASTEC with the help of a collaborator had developed a unit of 1kW ‘single mode fibre laser’ and work was on for developing 5kW and 9kW fibre laser sources.

LASTEC has also developed a 10kW Chemical Oxygen Iodine Laser (COIL) and is working on developing a 30-100 kW vehicle-mounted COIL system, sources said.



Thu, 07 Dec, 2017

Gallantry medal allowances doubled, but they aren’t still rewarding enough

By Rajat Pandit

New Delhi: Union government has finally doubled the monthly allowances for gallantry medals won during wars and peace, but they are still far away from being substantial. Recipients of the Param Vir Chakra (PVC), country’s highest medal during war, and its peacetime equivalent Ashoka Chakra (AC), for instance, will still get only Rs 20,000 and Rs 12,000 per month, respectively.

Gallantry award winners also get one-time cash awards or plots from their state governments but they vary widely with no uniformity. “They range from a paltry Rs 22,500 (PVC) and Rs 20,000 (AC) in Gujarat to Rs 2 crore and Rs 1 crore in Punjab and Haryana. States like Himachal Pradesh, Kerala, Tamil Nadu, Mizoram and Bihar give between Rs 8 lakh to Rs 50 lakh for ACs and PVCs,” said an officer.

Medals like PVC and AC are awarded — mostly posthumously — for “pre-eminent acts of valour or self-sacrifice”. Only 21 PVCs, for instance, have so far been awarded despite India having fought several wars and conflicts since the 1947-48 J&K operations. Similarly, just 83 ACs have been awarded till now.

“The meagre monthly allowances are embarrassing,” said Subedar Major and Honorary Captain Bana Singh (retd), who was awarded the PVC for “displaying the most conspicuous gallantry and leadership under the most adverse conditions” while dislodging entrenched Pakistani soldiers from a post located at an altitude of 21,000-feet in the Siachen Glacier in 1987.

Colonel D P K Pillay (retd), awarded a Shaurya Chakra for saving the lives of two children despite being injured during counter-insurgency operations in Manipur in 1994, was much more critical about the “raw deal” gallantry medal winners get in India. “While common people have a lot of regard for our heroes, disdain among babus in defence ministry is clearly visible. It’s not just about monetary benefits but honour and respect.” Incidentally, the BJP manifesto for 2009 Lok Sabha elections had promised 10-fold hike in monetary allowances for gallantry medals, which included Rs 30,000 for PVC from the then Rs 3,000 per month, with retrospective effect. But as per the new monetary allowances announced on Wednesday, which come into effect from August 1, a PVC awardee or his widow will get only Rs 20,000 per month.

Thu, 07 Dec, 2017

Canada scraps plan to buy boeing fighters amid trade dispute

Ottawa: Canada is scrapping a plan to buy 18 Boeing Co Super Hornet fighter jets amid a deepening dispute with the US aerospace company, three sources familiar with the matter said on Tuesday.

Instead, the Liberal government will announce next week it intends to acquire a used fleet of older Australia F-18 jets, the same kind of plane Canada currently operates, said the sources, who asked not to be identified because of the sensitivity of the situation.

The move underlines Ottawa's anger at a decision by Boeing to launch a trade challenge against Canadian planemaker Bombardier, which the US giant accuses of dumping airliners on the American market. It also casts into question the future of Boeing's military sales in Canada. Boeing says its commercial operations in Canada support more than 17,000 Canadian jobs. **Reuters**

Thu, 07 Dec, 2017

Chinese paper publishes N-war safety tips

A state-run newspaper in a Chinese province bordering North Korea published a list of tips on Wednesday for how civilians can protect themselves in the event of a nuclear attack. The article comes as tensions soar on the Korean Peninsula over Pyongyang's nuclear ambitions.

A full-page illustrated advisory in the Jilin Daily instructed readers to close their doors and windows and thoroughly wash their belongings to minimise radioactive impact. "Intercontinental missiles could hit any corner of the world," the newspaper said.

Thu, 07 Dec, 2017

North Korea missile test raises flight safety concerns

A North Korean ballistic missile was seen by the crew of several airliners last week, aviation authorities said today, raising concerns about the threat to civilian flights posed by Pyongyang's unannounced tests.

The North has conducted a flurry of missile tests this year in defiance of repeated international protests, including from aviation authorities. Pyongyang fired an intercontinental ballistic missile (ICBM) last week, which reached an altitude of 4,475 kilometres before splashing into the sea 950 kilometres east of its launch site, North Korean state media said.

"A Korean Air jet flying to Incheon from San Francisco reported to Japanese controllers that its flight crew saw a flash from what was believed to be the North Korean missile," a Korean Air spokesman told AFP. Four minutes later another Korean Air plane on a Los Angeles-Incheon flight also reported the same sighting to Japanese control, he said. A South Korean transportation ministry official, who wanted to remain unnamed, said the flight paths of both Korean airlines were some 220 kilometres away from where the missile landed. "In the clean dark sky, you can see flashes from a missile from that long distance," he told AFP. Japan's transport ministry also said air controllers in the country received reports of four such sightings.

A Japan Airlines spokesman said the cockpit crew of one of its airliners, flying from Tokyo to London, “saw a bright flame falling down” over the sea of Japan. The reports from South Korea and Japan come after Hong Kong carrier Cathay Pacific said Monday that the crew of its flight from San Francisco to Hong Kong saw “what is suspected to be the reentry” of the North Korean missile. Cathay said there was no current plan to change air routes, saying its plane was “far from the event location”.

In a message shared with staff, Cathay general manager Mark Hoey said the crew had described seeing the missile “blow up and fall apart”, the South China Morning Post reported. David C Wright, a senior scientist at the Union of Concerned Scientists, wrote in a report Tuesday that the Cathay crew most likely had seen the missile's first stage burn out and fall back to earth.

“Ignition of the second stage rocket engine and separation of the first stage may have looked like an explosion that caused the missile to fall apart,” he wrote. Wright also said the “flash” seen by Korean pilots about an hour after the missile's launch would be consistent with the warhead heating up during reentry, since the missile flew for 53 to 54 minutes.



Thu, 07 Dec, 2017

‘Super Earth’ that may host alien life identified

Toronto: A little-known planet about 111 light years away could be a “scaled-up version of Earth” and may be able to host alien life, according to a study. The exoplanet known as K2-18b has been described as being a potential ‘Super-Earth’ — a large rocky planet with the potential to support life.

Researchers at University of Toronto in Canada made the discovery by scouring data collected by the European Southern Observatory (ESO).

They also discovered a new planet in the same solar system. Both planets orbit K2-18, a red-dwarf star located about 111 light-years away in the constellation Leo. “Being able to measure the mass and density of K2-18b was tremendous, but to discover a new exoplanet was very lucky and equally exciting,” said Ryan Cloutier, a PhD student at University of Toronto.

When the planet K2-18b was first discovered in 2015, it was found to be orbiting within the star’s habitable zone, making it an ideal candidate to have liquid surface water, a key element in harbouring conditions for life as we know it.

“It was not a eureka moment because we still had to go through a checklist of things to do in order to verify the data,” said Cloutier, lead author of the study published in the journal *Astronomy and Astrophysics*.

In order to figure out whether K2-18b was a scaled up version of Earth (mostly rock), or a scaled-down version of Neptune (mostly gas), researchers had to first figure out the planet's mass, using radial velocity measurements taken with HARPS.

After using a machine-learning approach to figure out the mass measurement, Cloutier and his team were able to determine the planet is either a rocky planet with a small gaseous atmosphere — like Earth, but bigger — or a mostly water planet with a thick layer of ice on top of it. PTI

China plans robot station on moon

China is planning to establish a robot station on the moon to conduct bigger and more complicated experimental research on lunar geography, a media report said on Wednesday. The station could slash the costs of returning rock samples to Earth, said Jiao Weixin, a Peking University space science professor. A sustainable robot station would enhance lunar geography studies and “have better energy efficiency than lunar rovers as the station can deploy a much bigger solar power- generator,” he said. PTI