

## Nuclear capable Prithvi-2 missile successfully test fired at night

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Balasore: India successfully test fired on Wednesday night its indigenously developed nuclear capable surface-to-surface Prithvi-2 missile as part of a user trial by the Army from a test range off Odisha coast, an official of the ITR said.

"Two Prithvi-2 missiles were test fired consecutively and both tests met all parameters," the official said from the Interim Test Range (ITR) at Chandipur.

The trial of the missile, which has a strike range of 350 km, was carried out from a mobile launcher from launch complex-3 of the ITR between 7 pm to 7.15 pm, he said.

It was a routine trial, he said adding "The missile trajectory was tracked by radars, electro optical tracking systems and telemetry stations by the DRDO along the coast of Odisha".

The missile was randomly chosen from the production stock and the entire launch activity was carried out by Strategic Force Command (SFC) of the Army and monitored by scientists of Defence Research and Development Organisation (DRDO) as part of the training exercise, official sources said.

The downrange teams on board a ship deployed near the designated impact point in the Bay of Bengal monitored the terminal events and splashdown.

The last night time test fire of Prithvi-2 was conducted successfully from the ITR on February 21, 2018. Two missiles were successfully test fired in quick succession from the same base in salvo mode on November 21, 2016, they said.

Prithvi-2 is capable of carrying 500-1,000 kg of warheads and is powered by liquid propulsion twin engines, the sources said.

The state-of-the-art missile uses advanced inertial guidance system with maneuvering trajectory to hit its target, they said.

Already inducted into the armory of Indian defence forces in 2003, nine-meter tall 'Prithvi' was the first missile to have been developed by DRDO under the Integrated Guided Missile Development Programme (IGMDP).

<https://economictimes.indiatimes.com/news/defence/nuclear-capable-prithvi-2-missile-successfully-testfired-at-night/articleshow/72147446.cms>



## Indian Army to soon get longest range 'Advanced Towed Artillery Gun System'

*The 155 mm and 52 calibre Advanced Towed Artillery Gun System with automated ammunition handling facility is the world's longest range gun system in its class*

*By Hemant Kumar Rout*

Bhubaneswar: India's first indigenously built Advanced Towed Artillery Gun System (ATAGS) with automated ammunition handling facility will be inducted in the Army soon. The 155 mm and 52 calibre howitzer is the world's longest range gun system in its class.



**18**  
tonne weight

**>3**  
minute time to deploy

**FIRE POWER**

**6975** MM BARREL LENGTH

**48**  
KM RANGE

6 round automated magazine capable of firing in 30 seconds

Developmental trials held at Balasore, Pokhran and Sikkim

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PXE has the distinction of testing the gun and making it certified. Armed Forces have given their consent for induction of a number of such guns

G Satheesh Reddy,  
Union Secretary,  
Defence R&D Dept

Union Secretary of Defence R&D Department G Satheesh Reddy on Thursday said the gun has cleared all developmental tests successfully and will be inducted in the Armed Forces after a couple of more trials.

Reddy was attending the 125th anniversary of Proof and Experimental Establishment (PXE), a laboratory of Defence and Development Organisation (DRDO), at Chandipur in Balasore district. "ATAGS is the pride of the nation. The gun has now the world's longest range in 155 mm class. PXE has the distinction of testing the gun and making it certified. The Armed Forces have already given their consent for induction of a number of such guns," he informed.

Developed by Armament Research and Development Establishment of DRDO in a consortium model, the ATAGS comes with six round automated magazine capable of firing in 30 seconds. The existing 155 mm and 52-calibre guns have standard three-round magazine. Since the magazines need to be loaded manually, it leads to casualties during the exercise.

The project was taken up in 2013 to replace older guns in service with modern 155 mm artillery gun. Configured with an all electric drive the hydro lateral gun has a maximum firing range of 48 km and can be deployed in less than three minutes. It was first showcased publicly during the Republic Day parade in 2017.

The advanced gun system that weighs around 18 tonne with an elevation up to 70 degrees has undergone developmental trials at Balasore, Pokhran and Sikkim. While the ballistic internal trial and proofing were done at PXE and strength and design were validated during summer trials at Pokhran, winter trails were conducted in Sikkim.

Reddy, who is also the Chairman of DRDO, urged the scientists working with the PXE and Integrated Test Range (ITR) to come up with modern technologies, equipment and infrastructure to ensure that the test range is one the most modern ranges in the world.

He also warned to remain alert for future warfare. It is just not land, water or sky, threats related to space and cyber world have entered into the warfare spectre in a big way, he said.

“When gadgets have become part and parcel of life, we are always vulnerable to cyber attacks. Measures need to be taken by all to ensure that cyber security is insured. Advisories have been sent to all laboratories. It can be detrimental if not adhered to properly,” he added.

<https://www.newindianexpress.com/nation/2019/nov/22/indian-army-to-soon-get-longest-range-advanced-towed-artillery-gun-system-2065240.html>

## Made in India LCA for Indian Navy gets ready for more trials

*This has been a major success for all the agencies including the Defence Research and Development Organisation (DRDO), state-owned Hindustan Aeronautics Limited (HAL), Aeronautical Development Agency (ADA) and the Indian Navy which has been part of all these trials*

*By Huma Siddiqui*

New Delhi: After successfully carrying out its first-ever night-time ‘arrested’ landing at Shore Based Test Facility INS Hansa, Goa, the naval version of the indigenous Light Combat Aircraft is getting ready for the Deck Landing trial soon. This has been a major success for all the agencies including the Defence Research and Development Organisation (DRDO), state-owned Hindustan Aeronautics Limited (HAL), Aeronautical Development Agency (ADA) and the Indian Navy which has been part of all these trials.

Since 2012, when the first LCA (Navy) took off two prototypes (NP 1 & 2) which have been built by the state-owned HAL are already under flight testing. After the end of successful tests, the way was paved for the indigenous aircraft to undertake Aircraft Carrier landing demonstration on board the Indian Naval Aircraft Carrier, INS Vikramaditya soon.



Team LCA with scientists and designers from DRDO, ADA and Indian Navy has been working behind the scenes in not only conceptualising the project but also in the experiments related to the complex software modes which are involved in this. Besides the structural expansion in the LCA Naval version, several experiments with multiple software options and hardware configurations have been carried out. These are related to avionics tools, display symbols to help the pilots and aerodynamic surfaces.

In September this year, the naval version of the aircraft had achieved short landing with arrestor wires on the SBTf and joined a select group of countries including the US, Russia, the UK, and France which have the capability to design such an aircraft which lands on a carrier.

### **What is Arrested Landings?**

It is an essential part of aircraft carrier flight operations and helps with high-strength wires which has a hook used in decelerating the aircraft and stop it on an aircraft carrier with a limited space of 100 meters unlike the 1 Km runway for land-based aircraft.

For the arrested landing there has to be a close coordination with crew on the flight deck combined with the pilot’s skill, as the speed gets reduced considerably from 250 kmph to just zero in just a few seconds.

And in the night when there is no light the landing becomes more difficult.

<https://www.financialexpress.com/defence/made-in-india-lca-for-indian-navy-gets-ready-for-more-trials/1771020/>

## **DRDO offers 450 patents for free access to industries**

*By Somasekhar*

Hyderabad: In a bold move, the Defence Research and Development Organisation (DRDO) has put its over 450 patents for free access to industries for commercial exploitation. The unprecedented move is intended to provide a boost to domestic industries, especially in the strategic sector through free access to patents held by the DRDO, which has a network of over 50 national laboratories, involved in research and development. As per a new policy, the DRDO, under the Ministry of Defence will offer complete access to its patents filed in India without any licensing or royalty fees. It has displayed both the procedure and the complete list of technologies on its website.

The technologies, relating to missiles, life sciences, electronics and communications, naval and aeronautics systems, combat engineering, electronics, armaments. among others, have military applications and some have spin offs that can be transferred to commercial market.

The DRDO has taken the lead as other leading R&D bodies like the Council of Scientific Industrial Research (CSIR), Department of Space, National Research and Development Corporation (NRDC), Indian Council of Medical Research (ICMR), Indian Council of Agricultural Research (ICAR), which have portfolios of national and international patents offer them for a fee and royalty.

It is welcome step for start ups, entrepreneurs and industries. “It’s better to offer some patents free than keeping them in the shelf and pay hefty protection fee for its lifetime. After all, commercial exploitation is the key factor that should determine patents”, experts told *BusinessLine*.

### **‘Not the first time’**

In 2000, when George Fernandes was the Defence Minister and Dr APJ Abdul Kalam was the Principal Scientific Advisor to the Government, the DRDO in collaboration with the Confederation of Indian Industry (CII) organised a major industry meet to transfer technologies in the DRDO laboratory network. The CII members were given access to potential technologies of the DRDO labs for commercial exploitation. The move was promising, but did not yield much result.

Over 15 years ago, Dow Chemicals, the global multinational chemical giant had in a similar move put out thousands of its patents for access to Universities in a bid to encourage further developments and commercial utilisation.

### **How to Apply:**

The industry must apply with a fee of ₹ 1000, along with relevant technical and financial details. It will then be screened by an expert committee and if eligible a non-exclusive license for one year will be granted. Earlier, the Defence Ministry had formulated Transfer of Technology Policy, Make in India initiative, and Defence Production Policy to encourage domestic industries.

### **DRDO-Industry Synergy Meet**

A one day “DRDO-Industry Synergy Summit 2019” will be held at the Research Centre Imarat (RCI) Hyderabad on Friday. Nearly 300 small, medium and large industries are expected to take part.

The topics of discussions include latest policy framework and opportunities created, high technology collaborations and defence manufacturing, defence export and a Panel discussion on challenges and opportunities for Indian industries.

<https://www.thehindubusinessline.com/news/drdo-offers-450-patents-for-free-access-to-industries/article30035856.ece#>