

## India test-fires surface-to-air missiles that can engage multiple targets

*A DRDO official said all the mission objectives were met during the trial*

India Tuesday successfully test-fired two indigenously developed Quick Reaction Surface-to-Air missiles capable of simultaneously engaging multiple targets, officials said.

The missiles, equipped with radars with search on move capability, were test-fired from the Integrated Test Range (ITR) at Chandipur near here on a day when India conducted a major air assault on the biggest training camp of terror outfit Jaish-e-Mohammed inside Pakistan.

Describing the launch as "fully successful", a DRDO official said all the mission objectives were met during the trial.

The two missiles were tested for different altitude and conditions. The test flights successfully demonstrated the robust control, aerodynamics, propulsion, structural performance and high manoeuvring capabilities thus proving the design configuration.

"Radars, Electro Optical Systems, Telemetry and other stations have tracked the Missiles and monitored through the entire flights. All the mission objectives have been met," a defence statement said.

Defence Minister Nirmala Sitharaman congratulated the DRDO for the achievement.

"Smt @nsitharaman congratulates @DRDO\_India and the Defence Industry for successful test-firing of two indigenously-developed Quick Reaction Surface to Air Missiles(QRSAM). The missile have radars with search on move capability. The project was sanctioned by the govt in July 2014," her office tweeted.

Odisha Chief Minister Naveen Patnaik also congratulated the DRDO for the success.

"Congratulate @DRDO\_India for successful test flight of quick-reaction surface-to-air missile off the coast of #Odisha. It will help in strengthening Indian Armys strike capability and nations military might," he said on twitter.

The state-of-the-art missile with a strike range of 30 km is capable of engaging multiple targets. The all-weather weapon system is capable of tracking and firing with precision, said a DRDO source.

This was third developmental trial conducted by the DRDO for the Indian Army.

The first trial was conducted on June 4, 2017 and the last was on July 14, 2018. Both the tests were conducted successfully from the same base.

[https://www.business-standard.com/article/pti-stories/india-test-fires-surface-to-air-missiles-capable-of-engaging-119022601059\\_1.html](https://www.business-standard.com/article/pti-stories/india-test-fires-surface-to-air-missiles-capable-of-engaging-119022601059_1.html)

## India successfully test fires DRDO-developed quick reaction surface-to-air missile

Hyderabad: India has test-fired its Quick Reaction Surface-to-Air Missile (QRSAM) off the Odisha coast. The test firing of the missile twice was successfully, according to sources. The Defence

Research and Development Organisation (DRDO) developed the missile for the armed forces and the missile, in particular, will be of use to the Indian army.

The missile has a strike range of 30 km. The APJ Abdul Kalam Research Centre Imarat (RCI) which is the missile avionics laboratory in Hyderabad was involved among other DRDO institutions like BEL in developing the missile. Bharat Dynamics Limited (BDL) in Hyderabad produced the missile.

QRSAM has already been tested four times in the past with two tests conducted in 2017 itself. In the latest test-firing that was done, DRDO conducted it twice on the same day.

The test-firing of the QRSAM on Tuesday, coming it is, on the day the Indian Air Force (IAF) targeted terror hideouts in Pakistan, also could be indicative of the preparedness of the country to counter any retaliation from across the border. QRSAM is capable of tracking enemy aircraft and also firing.

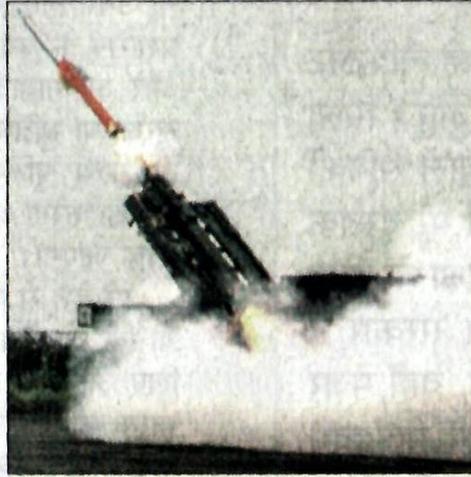
<https://timesofindia.indiatimes.com/india/india-successfully-test-fires-drdo-developed-quick-reaction-surface-to-air-missile/articleshow/68168016.cms>

## पंजाब केसरी

Wed, 27 Feb 2019

### त्वरित प्रतिक्रिया मिसाइलों का सफल परीक्षण

बालासोर (ओडिशा), (भाषा) भारत ने मंगलवार को ओडिशा के तट पर स्थित एक परीक्षण केन्द्र से स्वदेश में विकसित सतह से हवा में मार करने वाली दो त्वरित प्रतिक्रिया मिसाइलों का सफलतापूर्वक परीक्षण किया। रक्षा सूत्रों ने कहा कि रक्षा अनुसंधान एवं विकास संगठन



(डीआरडीओ) ने यहां चांदीपुर में एकीकृत परीक्षण रेंज के लांच कांप्लैक्स तीन से परीक्षण किये।

प्रक्षेपण को "पूरी तरह से सफल" बताते हुए डीआरडीओ के एक अधिकारी ने कहा कि परीक्षण के

दौरान मिशन के उद्देश्यों को पूरा किया गया। अलग अलग ऊंचाइयों और स्थितियों से दो मिसाइलों का परीक्षण किया गया।

एक रक्षा बयान में कहा गया, "रेडार, इलेक्ट्रो ऑप्टिकल सिस्टम्स, टेलीमेट्री और अन्य स्टेशनों ने मिसाइलों पर नजर रखी। पूरी उड़ान के दौरान उन पर निगरानी रखी गई। मिशन के सभी उद्देश्यों को हासिल किया गया।"

रक्षा मंत्री निर्मला सीतारमण और ओडिशा के मुख्यमंत्री नवीन पटनायक ने इस उपलब्धि पर डीआरडीओ को बधाई दी।



Wed, 27 Feb 2019

## **DRDO AEW&C: India's airborne surveillance radar to track enemy locations, repulse air strikes**

*The aerial strikes, the first of its kind, were executed 12 days after Jaish-e-Mohammed terror group carried out the dastardly Pulwama attack in Kashmir, government sources said*

New Delhi: The Indian Air Force on Tuesday carried out pre-dawn air strikes on Jaish-E-Mohammad terror camps across the Line Control, well within the Pakistani territory using 12 Mirage 2000 fighter jets. The aerial strikes, the first of its kind, were executed 12 days after Jaish-e-Mohammed terror group carried out the dastardly Pulwama attack in Kashmir, government sources said. They said the IAF jets pounded terror camps Balakot, Muzaffarabad and Chakoti in the well-planned strike involving a fleet of IAF jets and other military jets. Prime Minister Narendra Modi was briefed by Defence Minister Nirmala Sitharaman on the operation.

### **IAF Mirage jets carried out precision strikes on JeM camps inside Pakistan**

Around 1000 kg of explosives were dropped that destroyed the Jaish-e-Mohammad camps in Balakot, Chakoti, Mujhfarabaad. Before the Mirage jets flew across the LoC and carried out precision bombing on JeM camps, the Embraer AWACs were activated to help the IAF carry out the requisite surveillance on enemy Air Defence systems and locate the target locations. The system also helped the Air Force to track any Pakistani fighter jets which could have been deployed to fend off the IAF Mirage planes.

### **What is DRDO Airborne Early Warning and Control (AEW&C) System**

- Airborne early warning and control (AEW&C) system is a multisensor developed by DRDO on a carrier jet which provides an airborne surveillance system in collaboration with CAB (Centre for Airborne Systems) for the Indian Air Force.
- It is the first native AEW system developed by DRDO and CAB.
- It was completely developed and built using the native technology platform, EMB-145.

### **Mission system control (MSC)**

- Mission system control (MSC) is the brain of the AEW&C system, as it incorporates all the data from sensors and other systems to control the whole system.
- It assesses threats using data received from the on-board sensors and other sources, and presents the Air Situation Picture (ASP).

### **How it helps in carrying out the attack**

- The system mainly comprises of a primary radar and secondary surveillance radar (SSR/IFF).
- The SSR provides Electronic Support Measures (ESM) and Communication Support Measures (CSM).
- It identifies and classifies the threats based on the emissions from them, and also serves as a Friend or Foe identification system.
- The Radar Warning Receiver (RWR) which is integrated into the ESM system, Missile Approach Warning System (MAWS) and Counter Measures Dispensing system (CMDS) forms a Self Protection Suite (SPS).

- The Data Handling and Display System (DHDS) will present the Air Situation Picture on Operator Work Station (OWS) and will provide communication facilities to interact with the system.

<https://www.abplive.in/india-news/drdo-aewc-indias-airborne-surveillance-radar-to-track-enemy-locations-repulse-air-strikes-928584>



Wed, 27 Feb 2019

## **Surgical Strike 2.0 was guided by airborne early warning and control aircraft 'Netra'**

*Surgical Strike 2.0: Airborne early warning and control aircraft 'NETRA' guided IAF'S Mirage 2000 to JeM Terror Camp in Pakistan*

*By Roma Das*

New Delhi: When India avenged the Pulwama terror attack by destroying the Jaish-e-Mohammed (JeM) terror camp in Pakistan's Balakot area in the early hours of Tuesday morning, the attack by the Indian Air Force's (IAF) Mirage 2000 was guided by home-made eye in the sky, 'Netra'.

Netra, which was the operational brain, is an airborne early warning and control (AEW&C) aircraft. It provided surveillance and radar coverage for combat fighter jets.

Designed and developed by scientists of the Defence Research and Development Organisation (DRDO), Netra uses the Embraer platform. It alerts pilots of incoming missiles as it has infrared detection capability that can see the hot exhaust of the missiles.

As per DRDO sources, Netra can track targets 450-500 km deep into enemy territory without crossing the Line of Control (LoC). Also, it has an almost 120-degree view of enemy territory while being airborne.

The AEW&C aircraft can eavesdrop and listen to all communications that take place among Pakistan's armed forces. It gathers all the electronic intelligence and beams it back live to commanders on the ground. The national security establishment can also monitor the operations live in New Delhi, using data sent from the Netra.

Netra is capable of flying for five hours at a stretch, but with air-to-air refuelling, it can fly for nine hours. The aircraft can also be patched with satellite-based platforms. The IAF, recently, received its dedicated satellite called GSAT-7A made by the Indian Space Research Organisation (ISRO). The DRDO had earlier tested the Netra by flying it from high-altitude airfields like Srinagar and Leh.

The IAF has received two Netra aircraft while a third is with the DRDO undergoing tests to develop an advanced version. The development of Netra started way back in 2007 at a cost of Rs. 2,460 crore. The final product was delivered in 2017.

<https://www.india.com/news/india/surgical-strike-2-0-airborne-early-warning-and-control-aircraft-netra-guided-iafs-mirage-2000-to-jem-terror-camp-in-pakistan-3589573/>

# दैनिक जागरण

Wed, 27 Feb 2019

## दुश्मन के छक्के छुड़ा देगा 'स्वदेशी' रॉकेट

जागरण संवाददाता, कानपुर : भारतीय वायुसेना की ओर से पाकिस्तान पर की गई सर्जिकल स्ट्राइक का जश्न मना रहे देशवासियों के लिए एक और अच्छी खबर है। देश में एक ऐसा 'स्वदेशी' रॉकेट तैयार किया जा रहा है, जो दुश्मन के छक्के छुड़ा देगा। जमीन से जमीन पर मार करने वाले इस रॉकेट से भारतीय सेना को और मजबूती मिलेगी।

रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) के लिए आइआइटी कानपुर '122 एमएम एक्सटेंडेड रेंज रॉकेट' की तकनीक पर काम कर रहा है। फिलहाल इसका निर्माण अंतिम चरण में है। साथ ही खामियों को दुरुस्त करने के लिए आर्मामेंट रिसर्च एंड डेवलपमेंट एस्टेब्लिशमेंट (एआरडीई) की टीम गठित कर दी गई है। इसके चेयरमैन आइआइटी कानपुर के एयरोस्पेस विभाग के अध्यक्ष प्रो. एके घोष हैं। डीआरडीओ के तहत आने वाले इस रिसर्च विंग ने आइआइटी के साथ मिलकर काम तेज कर दिया है।

'मेक इन इंडिया' के तहत देश में पहली बार स्वदेशी रॉकेट तैयार किया जा रहा है। अभी तक इस तरह के रॉकेट रूस में असेंबल होते थे। इसकी खासियत यह

है कि लांचर से लांच होने के बाद यह हवा में 15 किलोमीटर ऊपर तक जाएगा। इससे मारक क्षमता बढ़ेगी और 80 किमी दूर तक जाने में सक्षम होगा।

लक्ष्य भेदने की अपार क्षमता : रॉकेट में लक्ष्य भेजने की अपार क्षमता होगी। जीपीएस आधारित प्रणाली नेवीगेशन के माध्यम से यह दुश्मन के खेमे तक जाएगा और उसे नेस्तनाबूद कर देगा। फिलहाल इसकी खामियों को दुरुस्त कर परीक्षण की तैयारी की जा रही है। प्रयोगशाला के बाद खुले मैदान में भी इसका परीक्षण किया जाएगा।

आइआइटी कानपुर के एयरोस्पेस इंजीनियरिंग विभाग की ओर से तैयार किए गए मानव रहित टोही विमान का सफल परीक्षण कर लिया गया है। स्टेल्थ (अदृश्य) तकनीक पर आधारित विमान दुश्मन को नजर आए बिना ही उनके खेमे में घुसने की ताकत रखता है। एयरोस्पेस इंजीनियरिंग विभाग के विभागाध्यक्ष प्रो. एके घोष ने बताया कि स्टेल्थ तकनीक दुनिया के चुनिंदा देशों के पास ही है। इन्हें अदृश्य इसलिए कहा जाता है क्योंकि यह रडार की पकड़ में नहीं आते। डीआरडीओ ने इसकी तकनीक का परीक्षण कर लिया है।