

## This black box ejects, helps save vital data

By Ayyappan V

*DRDO Floating Device Will Make Retrieval Of Debris, Info Easier*

Several aircraft have gone missing in mysterious circumstances - some never to be traced again, others found only after decades, like the remains of two airplanes that an amateur investigator found on Mont Blanc in the French Alps last week, which experts believe could be those of one of the aircraft that Air India lost in two crashes in 1950 and 1966.

But military R&D agency Defence Research Development Organisation (DRDO) has now developed a self-ejectable black box for airplanes. The device ejects from aircraft when it sinks after an accident and self-activates when it comes in contact with water, with a homing signal that can help rescuers easily locate the device. Built as part of 'Make in India' initiative, the product, aimed for use on planes and submarines, has received "notice of allowance for patent" in the US and Russia.

The product can prevent situations like the 2016 AN32 crash where in spite of using deep-sea probes, authorities were not able to trace debris in the sea.

**HOMEGROWN SOLUTION**

DRDO has developed the floating black box as part of the 'Make in India' initiative. It will export the device after getting approvals

**DRDO's device**

Name | BSAT  
 Weight | 1.03kg  
 Diameter | 151 mm  
 Endurance | 48hours,  
 To be patented in Russia and the US  
 Other uses | Can be used for submarines, automatic underwater vehicles, torpedoes

**Why floating black box**

- > Most air routes are over water
- > Ejectable black box will not get damaged from the impact after hitting water
- > Easier to find since it will float
- > Conventional boxes sink, are heavier and susceptible to damage if it hits deep depths

**AFTER A PLANE CRASHES INTO SEA, CURRENTS TAKE THE DEBRIS MILES AWAY**

**HOW IT WORKS**

- Black box ejects when aircraft hits water. Floats on the water and emits signals
- Powers itself on contact with water. Box can be tethered to parts the aircraft to locate debris
- Satellites, search planes can pick it up and home in on the crash site in the sea

Imaging: Shinod Akkaraparambi

BSAT Ejectable Black Box Recorder with Satellite Transmitter -has been developed and tested by Naval Science and Technology Laboratory of DRDO in Visakhapatnam. It attracted attention from experts at an exhibition "Science for Soldiers & Society" organised in Chennai at the CVRDE in Avadi.

Officials said the black box was developed based on the tracking technology currently used to detect torpedoes. DRDO decided to develop it further and has perfected it for an aircraft. It aims to export the product after receiving approvals.

“In most of the air crashes in the sea, the conventional black boxes fail probably because they sink to the bottom of the ocean which could be thousands of metres deep and also get affected by the currents or damaged in the impact of the crash,” an official said. “BSAT is designed to overcome all these hassles. It will eject the moment an aircraft touches the water and floats on the surface. It can also be tethered to the flight so that some portion of the debris be retrieved,” the official added.

The floating black box has a good use in defence as it can send out signals when a submarine goes below its prescribed depth and sinks, but its chief use would be in civil aviation. “The invention is good because it can locate the crash site and save flight information,” said air safety expert and former pilot Captain Mohan Ranganathan.

A black box stores data including speed, altitude and other parameters of the flight of an aircraft. The information is crucial to piece together the cause of an accident. Airbus and European aviation regulator are planning to have ejectable black boxes on commercial airliners in the next two years.

Ranganathan said implementation of the new technology has to be hastened. Retrofitting of such equipment in aircraft will require permission and certification from Federal Aviation Agency.