

ITCM: A significant milestone



On 18 April 2024, India's 1,450 kg Indigenous Technology Cruise Missile (ITCM) was successfully tested from Integrated Test Range (ITR) powered by Gas Turbine Research Establishment (GTRE) developed Manik Small Turbo Fan Engine (STFE). ITCM's solid-propellant booster engine took the missile vertically to a height of 800 m when a mechanism in the missile tilted it horizontally subsequently jettisoning the booster. This was followed by ignition of the Manik STFE fed by a submerged air intake and 'deployment' of wings enabling ITCM to cruise at sea level with a 300 kg dummy warhead. The missile displayed very low altitude subsonic (Mach 0.7) sea skimming flight and used way point navigation to follow the intended course. The GTRE developed Manik STFE has proven to be dependable, as demonstrated by this successful flight test. To provide improved and dependable performance, the missile was additionally outfitted with updated avionics and software. The missile was followed by one of Indian Air Force (IAF) Sukhoi Su-30MKI jet for observation and recording.

ITCM is developed by Defence Research and Development Organisation (DRDO) that can carry both nuclear and conventional warheads over 1,000 km. The 7.8 metre long ITCM with a diameter of 520 mm was designed by the Aeronautical Development Establishment (ADE), Bangalore, a DRDO facility and shares a similar physical profile with the United States Tomahawk and Russian Kh-55 cruise missiles, featuring a slim cylindrical fuselage and a set of folding, pop-out wings for flight

control. The Research Centre Imarat (RCI) contributed the primary navigation system called the ring-laser gyro inertial navigation system (augmented by GPS/NavIC), the redundant navigation system/micro-navigation system, the control actuators and battery systems as well as the all important Radio Frequency (RF) seeker. The Research and Development Establishment (Engineers), Pune, DRDO, specifically designed the mobile launcher. The Advanced Systems Laboratory, DRDO, Hyderabad, contributed the missile's booster motor.

A compact version of ITCM, the Submarine Launched Cruise Missile (SLCM) is a sea skimming missile designed to launch from torpedo tubes of submarines. It has a stated range of 500 km (to be extended to 800 km), with a cruise length of 5.6 metre, diameter of 0.505 metre, all up weight of 975 kg and Mach 0.7 speed. It would feature INS/GPS navigation, with a RF seeker for terminal guidance. It comes with two variants: a Land Attack Cruise Missile (LACM) and Anti-Ship Cruise Missile (ASCM). Being subsonic, the missile will have a lower Infra-Red (IR) signature and will be able to re-attack the targets even if once fooled by decoys. Initially to be tested on Kilo (Sindhughosh) Class submarines, the missile shall be a part of the weapons package of Project 75(I) submarines.

The induction of the Nirbhay LACM in India's Services will open up enormous flexibility of military operations both during wartime and in apparent peace troubled by low intensity conflicts (including terrorism). Flying at an altitude of just 5 metre below ground based radar observation the missile qualifies to be an excellent Suppression of Enemy Air Defence/Destruction of Enemy Air Defence (SEAD/DEAD) weapon striking at enemy's radar and Surface-to-Air Missile (SAM) installations at onset of conflicts. The loitering capability will further complicate the defensive mechanisms of enemy's air defence network plus will also be invaluable in decimating relocated terrorist hideouts. A payload of 450 kg is expected, including a high explosive PCB, Blast cum Fragmentation or small (12-kT) nuclear warhead. 



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