

Flexing Muscles in Space

The ASAT success

On 27 March 2019 as part of 'Mission Shakti', Indian Scientists destroyed a Low Earth Orbit (LEO) satellite with an Anti-Satellite (ASAT) missile based on Defence Research & Development Organisation (DRDO)

Ballistic Missile Defence (BMD) interceptor. Following the successful test, Prime Minister Narendra Modi announced in a televised address to the nation that "India can now defend itself in space, and not just on land, water, and air, after the success of *Mission*

Shakti". He further stated that the ASAT missile had shot down the Low Earth Orbit satellite within "three minutes of launch", with remarkable precision and technical capability, and India has emerged as the fourth country to have tested such an ASAT weapon after the United States, Russia and China.

A technological mission carried out by DRDO, the 18-tonne ASAT weapon consisting of two solid rocket boosters plus a 'terminal stage' was launched from the complex on Wheeler Island, off the Odisha Coast, the target being one of India's existing LEO satellites. The test, which required an extremely high degree of precision and technical capability was "fully successful and achieved all parameters as per plans and successfully demonstrated its capability to interdict and intercept a satellite in outer space based on complete indigenous technology". The ASAT weapon lifted off at 11:09:30 hrs, the first stage separated at 45 km altitude at 11:10:45 hrs, the second stage separated at 110 km height at 11:11:17 hrs, followed by highly challenging Imaging Infra-Red (IIR) lock on to the target 740 kg Microsat-R satellite at 11:12:10 hrs. The target was eliminated by the Kinetic Kill Vehicle (KKV) at 11:15 hrs at a height of 274 km in hit-to-kill mode. The specific interceptor is reported to be lethal as far as 1,000 km.

Although not specifically stated, valuable telemetry data was possibly contributed by Israel Aerospace Industries (IAI) - developed EL/M-2080 Green Pine (Swordfish) and Super Green Pine radar systems. Developed from the ELTA Music phased-array radar, Green Pine is a dual mode, electronically scanned, solid state, phased array radar operating at L-band in the range 500 MHz to 1,000 MHz, which weighs 60 tonnes and comprises 2,000 transmit-receive modules.

As India's space programme is a critical backbone of the nation's security, economic and social infrastructure, India has undertaken 102 spacecraft missions consisting of Communication Satellites (COMSAT), earth observation satellites,

