IAF Beyond Visual Range Air–to–Air Missiles

Su–30MKI with a large missile load

"Whoever has the longest reach controls the engagement," comments fighter analyst Ben Lambeth of the Rand Corporation. In modern aerial warfare, the ability to look/track first Beyond Visual Range (BVR) and strike decisively defines the outcome of battles. The Russian semi–active radar homing (SARH) R–23R (AA–7 Apex) was the first beyond visual range air–to–air missile (BVRAAM) to enter Indian Air Force (IAF) service and was carried by MiG–23MF interceptors. The missile had an impressive "snap up" capability and thus could destroy targets far above the launch platforms.

However, the French Matra Super 530D (D for doppler) carried under the wings of IAF operated Mirage 2000H/TH provided IAF for the first time a decent capability against hostile low flying targets. Until the present millennium the inventory was further complemented by Russian R–27R (AA–10 Alamo) under the wings of MiG–29B/S. From 2002 onwards the Sukhoi Su–30MKI appeared with active radar homing (ARH) RVV–AE (AA–12Adder) empowering the IAF for the first time a "fire–and–forget" capability.

Subsequently, IAF BVRAAM stock was diversified by highly sophisticated MBDA MICA (Missile d'Interception, de Combat et d'Autodefense) and Meteor BVRAAM with the service entry of Dassault Rafale multi–role strike fighters and upgradation of Mirage 2000H/TH to Mirage 2000I/TI standards. 350 MICA RF/IR and 200 MBDA Meteor BVRAAM were procured for Rafale platforms plus 493 MICA RF/IR for upgraded Mirage 2000I/TI. For Rafale, to decimate hostile airborne platforms, BVRAAM missiles load usually include six MBDA MICA RF/IR for air defence–oriented missions. 3.1 metre long, 112 kg weight, the MICA was originally designed as a 'multi–aircraft' missile that could easily be integrated onto any

MBDA MICA

modern fighter aircraft, without significantly reducing the aircraft speed or negatively affecting its aerodynamic characteristics. MICA is capable of both BVR (60km+) and close range interception thanks to its dual active radar (as in MICA RF) and Imaging Infra–Red (as in MICA IR) seeker and Lock On Before Launch (LOBL) as well as Lock On After Launch (LOAL) capability. Minimum range is said to in the region of 500 metres.

Carried under the aircraft's fuselage or under wings, and fired by ejection or by rail, MICA is 'permitted' to be ejected from the airframe up to 4g while wing pylons can release MICA up to 9g. Products of research and development during the 1990s, both MICA RF and MICA IR have a range in excess of 60 km as the MICA IR version receives mid–course update commands from the radar to compare target location with the location of its seeker's