IAF Eyes Astra Mk2 for Mirage-2000s, French Source Code a Key Hurdle

The Indian Air Force (IAF) is seeking to significantly upgrade the long-range air combat capabilities of its aging Mirage-2000 fleet by integrating the domestically developed Astra Mk2 Beyond Visual Range Air-to-Air Missile (BVRAAM). This critical modernization effort, reported in mid-July 2025 by defense sources, aims to extend the operational life and combat effectiveness of the Mirage-2000s until at least 2035. However, a significant obstacle remains: gaining access to the proprietary source code for the French-made aircraft's radar and mission systems.

The Mirage-2000, a versatile multirole fighter, currently relies on the MICA (Missile d'Interception, de Combat et d'Autodéfense) missile, which has a range of approximately 80 kilometers. This range is increasingly deemed insufficient against modern adversaries equipped with advanced BVRAAMs like China's PL-15 (200-300 km) and Pakistan's AIM-120C-7 (120 km). The Astra Mk2, developed by India's Defence Research and Development Organisation (DRDO), is designed to address this shortfall, boasting a reported range of 160-180 kilometers. This indigenous missile, powered by a dual-pulse solid rocket motor, offers enhanced kinematics and accuracy, positioning it as a competitive alternative to global standards like the European Meteor.

Integrating the Astra Mk2 with the Mirage-2000 fleet is crucial for maintaining the aircraft's relevance in beyond-visual-range combat, particularly along India's sensitive borders. The challenge, however, lies in modifying the Mirage-2000's RDY radar to seamlessly interface with the Astra Mk2's guidance system. This necessitates access to the radar's complex source code, a highly sensitive piece of intellectual property that French aerospace giant Dassault Aviation has historically been reluctant to share.

Past upgrade programs for the Mirage-2000 fleet, notably between 2011 and 2021, focused on avionics and electronic warfare systems but did not fully resolve the BVRAAM gap. Discussions with Dassault Aviation regarding the source code for the current integration are ongoing. France's stringent export controls and its commercial interests, including pushing its own MICA-NG missile, present considerable hurdles. The cost associated with obtaining such access is also a concern, potentially mirroring the substantial expenses of previous upgrades.

The IAF's push for Astra Mk2 integration reflects India's broader "Atmanirbhar Bharat" (self-reliant India) initiative in defense. While the path to full integration remains complex due to the source code issue, the move highlights India's determination to equip its frontline fighters with advanced, domestically developed weaponry, reducing foreign dependency and ensuring strategic autonomy in its air power capabilities.