

## **IAF expects to induct air-to-air missile Astra next year**

*Astra will be on display at IAF's fire-power demonstration Iron Fist in Pokhran, Rajasthan, on March 18*

With the indigenous beyond visual range air-to-air missile Astra set to be fired in public view for the first time, the Indian Air Force (IAF) expects to induct the high-tech weapon into its inventory next year.

The missile, which took more than a decade to develop, is undergoing trials which are likely to finish by the year end, an official from the IAF told IANS on condition of anonymity.

Astra will be on display at IAF's fire-power demonstration Iron Fist in Pokhran, Rajasthan, on March 18, where a Sukhoi-30 MKI jet will fire the missile. Prime Minister Narendra Modi is scheduled to witness the fire-power demonstration.

According to scientists, the technology for this missile is more sophisticated than that of ballistic missile Agni, as it works on a terminal active radar-seeker and an updated mid-course internal guidance system that helps the missile in locating the target.

The seeker, said the official, was one reason why the missile, being developed by the Defence Research and Development Organisation (DRDO), was delayed for so long.

"The trials are going on well and the missile has given a great performance," the official said.

The missile can be fired from beyond visual range, honing in and locking on to the target with the help of the seeker. With high-energy propellant, it has the capability to follow it, despite complicated manoeuvres.

"The missile has given high performance, even intercepting a target which was making high-G manoeuvres in more than one trials," the official said, adding this showed its enhanced capability.

The tests ahead include full configuration firing at actual manoeuvring targets that will mimic enemy fighters. The missile also has the critical ability to overcome jamming by hostile aircraft.

The Astra is a single-stage solid-propellant missile that is 3.57 m long and 178 mm in diameter, with a 154 kg launch weight and a 15 kg conventional explosive payload.

It has active radar terminal guidance, anti-electronic countermeasures features and smokeless propulsion.

The missile has been designed to engage high-speed targets at short range, up to 20 km in tail chase mode and long range, up to 80 km in head-on chase mode, according to the DRDO.

At sea level, it has a range of up to 20 km but has a range of 44 km if launched from an altitude of 8,000 metres and 80 km when fired from an altitude of 15,000 metres.

Except for failure in one test, the missile has completed all tests successfully.

## Develop positive attitude, women scientists told



Director General of DRDO S. Christopher presenting a memento to Gayatri Sankaran, a differently-abled artiste, at SWADHARM workshop, organised as part of the DRDO Women's Day celebrations, at NSTL in Visakhapatnam on Saturday. NSTL Director C.D. Malleswar is at right. — Photo: C.V. Subrahmanyam

Secretary in the Department of Defence R&D S. Christopher called upon young women scientists in the DRDO to develop a positive attitude towards their work to achieve high positions in their careers.

He participated as chief guest at the National Workshop SWADHARM (Scientific Women And DRDO...Harnessing Research and Management), organised as part of the International Women's Day celebrations-2016, at the Naval Science and Technological Laboratory (NSTL) here on Saturday.

In an inspiring address, laced with humour, Dr. Christopher, who also heads the DRDO as its Director- General, gave various examples from history as also from his own experience as to how women took the lead and proved themselves in achieving their goals. Women have both IQ and EQ and some also have SQ (Spiritual Quotient).

Dr. Christopher said that analysis has revealed that more women, i.e., about 34 per cent, were going for careers in the IT sector. Mr. Malleswar spoke on the amazing role played by women in balancing their work at home and in the office. He called upon them to be prepared for greater challenges to achieve high positions.

Director-General (NS & M) S. Sati, Chairperson of DRDO Women's Forum Nabneetha Radhakrishnan and Chairperson of SWADHARM-2016 Rajeswari Devi spoke. Distinguished artiste Gayatri Sankaran, who is the first to achieve the Padmashri in her category, performed.

Mr. Christopher handed over prizes to winners in various categories. Chief Controller R&D (HR) DRDO C P Ramnarayan, CC R&D (R&M) G.S. Mallik, former chairperson NABARD & Indian Bank Sheila Sri Prakash were present.

## **Made up in India? Many 'Indigenous' Arms of DRDO Have Imported Parts**

New Delhi: Even as Prime Minister Narendra Modi keeps talking about his “Make in India” campaign, the country’s domestic defence industry is yet to make it count.

Even though the country’s premier defence research agency, DRDO, is tasked with developing indigenous military hardware, it is still dependent on imported components. Thus, the question on the authenticity of the “indigenous” armoury remains. Despite the government spending crores of rupees over three decades, the country’s first indigenous light combat aircraft (LCA), Tejas, still has nearly half of its components imported. Even the engine is imported from the US. The engine (GE F 404), ejection seat (Martin Baker), missile (R 73 E) and the multi-mode radar (Elta) are among the prominent imported contents on board the Tejas now. Only the control system and the airframe are indigenous. The DRDO still depends on foreign suppliers of over 35 per cent to manufacture the Combat Free Fall System for special forces troops. The story is nothing different for the main indigenous battle tank, Arjun. Sanctioned in May 1974, 55 per cent of the tank is still made of imported elements, and the fire control system has been developed by Elbit Systems in Israel. Though the DRDO claimed to have developed `1,90,000 crore’s worth of military hardware inducted into services or in the process of induction, the key missiles systems and airborne early warning and control systems still have a majority of foreign components, despite being called “indigenous”.

Defence Minister Manohar Parrikar recently revealed the percentage of imported content in major DRDO systems. The list includes its Nag Missile, which has 35 per cent of imported stuff, while the supersonic cruise missile BrahMos has 65 per cent and the long-range surface-to-air missile has 60 per cent of imported components. The Nag anti-tank missile had recently failed in the trials.

The CAG had stated that 70 per cent of DRDO products are rejected by the armed forces. Others are delayed for decades. India continues to be the on the list of the largest arms importers of the world, accounting to 14 per cent of global arms imports.