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TOWARDS SELF SUFFICIENCY IN MILITARY EQUIPMENT

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India's military forces have been equipped primarily with imported equipment even after India gained independence in 1947. The country was a British colony for close to two hundred years. In this time quite obviously there was not much scope for the setting up of facilities to manufacture military equipment in India. The colonial government preferred to import required military equipment from its own homeland to equip the military forces in the colony. A few Ordnance factories were set up in India by the colonial government. These ordnance factories were tasked to manufacture explosives and ammunition which could not be shipped from Britain as safely and easily as rifles and other non explosive arms could be. These ordnance factories for the most part manufactured ammunition and a few, usually obsolete small arms and a few items of clothing and kitting for soldiers.

Attempts towards Indigenisation Since 1947

Soon after gaining independence in 1947 India started to build up its industrial capabilities. The government undertook the setting up of heavy industries and tried to promote the manufacture of more and more items in India. Whenever some military equipment was bought from a foreign country the Indian government insisted upon licensed manufacture in India. Hence the British Prentice basic trainer, Vampire jet fighter, Gnat light fighter, the British Vickers Main Battle Tank (MBT) called "Vijayanta" in Indian service and even the Belgian FN FAL battle rifle as the Self Loading Rifle (SLR) were manufactured in India under licensing deals. The attempt by the governments was to try and gain inward technology transfer to help the country leapfrog the missed period of armaments manufacture in India. In parallel with these licensed manufacturing efforts Greenfield design and development programs were also launched by the Government through tasking the Defence Research and Development Organisation (DRDO) to develop equipment desired by the Indian armed Forces. Many of these programs succeeded while others did not quite make it. Some



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early success stories are the HAL HT-2 basic trainer, HJT-16 jet trainer and the HPT-32 basic trainer which all saw extensive service with IAF, the HJT-16 remains in service even today. The SLR was finally replaced by the Indian National Small Arms System (INSAS) 5.56 mm calibre indigenous rifle. This rifle can be considered a partial success only as the Indian army finds several shortcomings in it and is looking for an imported replacement. The HF-24 fighter bomber was the first jet fighter designed and developed in India. Though it saw service in three fighter squadrons and did a good job in actual combat in the Indo-Pak war of 1971 it failed to achieve the full design operational envelope due to lack of a suitable power plant. The country's missile program has a less chequered history, with ballistic missiles ranging from the short range Prithvi series to the long range Agni-IV and Agni-V achieving a string of successful development launches and nearing operational induction. The foregoing brings out the near continuous attempts by the Indian Government to enable design, development, and production of military equipment in India. These attempts have met with only partial success over the decades since 1947. However, it can be said that the failures and near successes have led to some amount of learning by the Design and Development (D&D) agencies.

Current Situation Grounds for Optimism

Incorporation of the learning from earlier projects has enabled DRDO and its associated agencies to work towards overcoming lacunae faced earlier. Thus DRDO has been able to field the Rajendra, Swordfish, and Rohini radars made by its laboratories, while the Advanced Light Helicopter (ALH) "Dhruv" is entering service in increasing numbers and the Light Combat Aircraft (LCA) "Tejas" is in the process of delivery for formation of IAF's first LCA squadron. Earlier the Prithvi-I, Prithvi-II, Agni-I, Agni-II and Agni-III ballistic missiles entered operational service. IAF inducted the Akash surface to air missile (SAM) system with as many as eight SAM squadrons being equipped with this indigenous SAMⁱ. The Indian army (IA) is reported to have also finally commenced induction of the Akash SAM system after a period of maintaining that the Akash did not meet its requirementsⁱⁱ.

IA has not inducted any modern artillery system since the Swedish Bofors 155mm howitzers were inducted in the 1980s. A series of scandals thereafter resulted in almost all international



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manufactures of advanced artillery systems being blacklisted and thus barred from defence deals with Indiaⁱⁱⁱ. The drought in induction of advanced artillery systems has been recently broken through successful trials of the Ordnance Factory Board (OFB), DRDO and IA developed Dhanush artillery gun. The Dhanush is based on the original Bofors 155mm/ 39 calibre guns inducted in the 1980s along with transfer of technology. The OFB/IA/DRDO have 'electronically upgraded' the guns to 155mm/45 calibre. The Dhanush is reported to have proved to be more accurate, have larger range, possess better shoot and scoot capabilities than the imported Bofors howitzers. This has led to IA placing an order of 114 guns to commence induction of large numbers of these indigenous artillery systems which are finally expected to reach a number of at least 414 Dhanush artillery systems for the IA^{iv}.

The recent inductions of the indigenous military equipment ranging from ballistic missiles, through aircraft to radars, SAMs, and advanced artillery systems is especially noteworthy in view of the fact that today the country has access to the entire global market to source weapons. Hence the indigenous weapons have to meet stringent performance parameters to be accepted by the Indian armed forces. Some of the indigenous equipment inducted is reported to have undergone the most extensive and rigorous testing possible before being accepted by the Indian military. The plus point is that despite the rigorous testing the indigenous equipment was able to meet the specifications and proceed towards actual induction in service. This first step is no doubt a great morale booster for the scientific and engineering community involved in the development and production of these systems. The success should be a morale booster for these personnel and lead to greater faith in their own capabilities. In future the improved and enhanced variants of current equipment and follow on weapon systems should prove even more capable leading eventually to total self sufficiency in military equipment. This stage could of course reasonably be expected to take at least two to three decades to come about.



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Conclusion

India has made consistent efforts to manufacture arms and ammunition indigenously since 1947. In the early years these attempts met with mixed success. However, persistence and an overall improvement in the technological base in the country has led to several more recent ambitious programs meeting with success to the extent that after rigorous trials the indigenous equipment has been inducted by the military forces. This situation leads to optimism for the future as the personnel involved would be able to build upon their learning so far to develop ever more advanced equipment to meet the country's legitimate defence needs.

(Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the Centre for Air Power Studies [CAPS])

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ⁱ "Indian Air Force may raise six new Akash squadrons", *Airforce-technology.com*, February 18, 2015, <http://www.airforce-technology.com/news/newsindian-air-force-may-raise-six-new-akash-squadrons-4514407>, accessed on May 06, 2015

ⁱⁱ "Army inducts Akash", *The Tribune*, May 06, 2015, Nation Section, Online Edition, <http://www.tribuneindia.com/news/nation/army-inducts-akash/76859.html>, accessed on May 06, 2015.

ⁱⁱⁱ Lt General (Retd) BS Pawar, "Artillery Modernisation Woes", *India Strategic*, July, 2013, http://www.indiastrategic.in/topstories2074_Artillery_Modernisation_Woes.htm, accessed on May 05, 2015.

^{iv} Rajat Pandit, "Trials a hit, desi Bofors outguns Swedish original", *Times of India*, April 28, 2015, <http://timesofindia.indiatimes.com/india/Trials-a-hit-desi-Bofors-outguns-Swedish-original/articleshow/47076413.cms>, accessed on May 05, 2015.