



BRAHMOS CRUISE MISSILE READY FOR AIR LAUNCHED TEST

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Brahmos air launched cruise variant on display at Aero India 2013. Photo source: AIN Online "BrahMos Missile Set For Indian Air Force Su-30MKIs" <http://www.ainonline.com/aviation-news/ain-news-live-aeroindia/2013-02-06/brahmos-missile-set-indian-air-force-su-30mkis>

India plans to carry out trials, this year, of the air launched version of the Brahmos supersonic cruise missile, from a SU-30MKI platform. These trials were originally planned to be conducted in 2012 but have been delayed by almost two years. The Brahmos Aerospace CEO & MD, Dr. A Sivathanu Pillai, in an exclusive interview to the Times of India, last month stated "The air-launched version of BrahMos, which at 2.5 tonne is lighter than

the 3-tonne land and sea variants, and its launchers are ready.”ⁱ Brahmos missile has been jointly developed by India’s Defence Research and Development Organisation (DRDO) and Russia’s Military Industrial Corporation NPO Mashinostroyenia (NPOM is Russia’s space and missile research organisation). Brahmos is the “first supersonic cruise missile known to be in service” and flies at supersonic speed throughout up to a maximum speed of Mach 2.8ⁱⁱ (Mach 2.8 speed is roughly 1 km per second). The name BRAHMOS has been derived from the two rivers, **Brahmaputra** in India and **Moskva** in Russia.

The successful trials and planned induction in the Indian Air Force (IAF), of this potent weapon system will significantly enhance IAF’s long range precision strike capability from stand-off ranges. Brahmos has already been inducted in the Indian Navy in 2005 when it was installed in the INS Rajput destroyer. All future ships of the Navy and those coming for mid-life up gradation will be fitted with this missileⁱⁱⁱ. The missile is fully operational with two regiments of the Indian Army, since 2007, and the government has sanctioned the induction of a third regiment in the army. A submarine launched version of the missile has also been developed and submarine trials were completed in March 2013 off the coast of Vishakapatnam. The missile is capable of vertical launch from submarines 40 m to 50 m deep.

The missile has a warhead of 300 kg and a maximum range of 290 km but it’s not clear what will be the maximum range of the air launched version since the weight will have to be reduced. The SU-30MKI airframe structure and the weapon station will also have to be strengthened to accommodate the Brahmos. The required modifications and integration on the SU-30MKI are being carried out in collaboration with the IAF and the Sukhoi design bureau. The IAF plans to modify 40 SU-30MKI’s for this role^{iv}. It has also been reported that IAF plans to buy 200 of these ALCM’s^v.

Pakistan already has a sub sonic land attack cruise missile, the “Babur” Hatf-7 , which was first tested in 2005 and since then has been inducted in the army. The Babur missile has a range of 700 km and is a copy of the American Tomahawk cruise missile^{vi}. Babur has a turbofan engine, WS-500, which has been supplied by China^{vii}. The Chinese also have a

ground launched cruise missile, DH-10, which has a range of 1500 km+ and in addition have developed an air launched cruise missile, YJ-63, which is carried by their H-6K bombers. The challenge for India is to develop long range cruise missiles to counter the Chinese and Pakistani threat. India's subsonic Nirbhay cruise missile was tested in March 2013 but the test failed. India must continue its efforts in this field as cruise missiles have a lot of advantages in terms of costs, mobility, employability and other factors, compared to ballistic missiles.

Brahmos is a two stage missile with a solid propellant booster for the first stage which propels it to supersonic speed and separates. The liquid propellant ramjet engine then accelerates it to its cruise speed of Mach 2.8. The missile has been designed with stealth features and its Doppler inertial navigation platform has been upgraded with advanced Global Positioning System (GPS) and Russian Global Navigation Satellite System (GLONASS) satellite navigation systems. Brahmos works on the "fire and forget" principle, the manufacturers claim it to be a very lethal missile capable of hitting the target with pin point accuracy and nine times the kinetic energy of conventional subsonic cruise missiles.

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The Brahmos Aerospace company has future plans to develop a **Brahmos-2** which will be a hypersonic missile with a speed of Mach 5 to Mach 7, (Hypersonic speed falls in the band of Mach 5 to Mach 10). Dr. Sivasthanu Pillai, in a recent statement said "in supersonic missiles we have taken leadership across the globe. Now we want to be leader in hypersonic missiles.^{viii}" The second plan which the company has in its "Vision 2050" is to make smaller missiles with low weight and advanced technology but with same

characteristics of the larger missile. The third important project of the company is to integrate the weapon system with “space technologies” for long range precision targeting.

Brahmos missile has stirred interest in the world market and there seems to be a lot of potential for exporting the missile. Fourteen countries including Vietnam, South Africa, Indonesia, Malaysia, Brazil, Chile and others have expressed interest in different variants of the system. India’s former President Dr APJ Abdul Kalam feels that India **must** seize this opportunity and export Brahmos missiles to other countries^{ix}. Each Brahmos costs about \$ 3 million and needs approval of both governments for export. India must pursue export sales with vigour and not let our traditional aversion to military sales come in the way. While India is the largest importer of arms in the world, China has moved up as the fifth largest exporter of arms^x. The interest shown by countries in Brahmos gives India a chance to increase our export of arms. According to Dr Pillai, India has the capability to do export business of almost USD **100 billion** in cruise missiles since the Brahmos missile is better than the U.S.’ Tomahawk. Similarly, we need to ramp up on production of other military hardware and export to friendly countries, without any qualms. India also needs to look into possibilities of increasing our limits for foreign direct investment (FDI) in arms industry and producing more weapons in India in joint ventures with foreign companies. This will give India a chance to not only meet domestic requirements but also provide opportunities for **export**.

Endnotes:

(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)

ⁱ “After Army and Navy, IAF gears up for supersonic BrahMos missile punch on Sukhois”, <http://timesofindia.indiatimes.com/india/After-Army-and-Navy-IAF-gears-up-for-supersonic-BrahMos-missile-punch-on-Sukhois/articleshow/30123722.cms> , February 10, 2014, accessed on March 10, 2014.

ⁱⁱ “The Russian-Indian BrahMos supersonic cruise missile” <http://en.ria.ru/infographics/20100715/159821982.html> , accessed on 11mar14.

ⁱⁱⁱ “Brahmos Supersonic Cruise Missile” <http://www.brahmos.com/content.php?id=10&sid=10> , accessed on March 10, 2014.

^{iv} “BrahMos Missile Set For Indian Air Force Su-30MKIs”, <http://www.ainonline.com/aviation-news/ain-news-live-aeroindia/2013-02-06/brahmos-missile-set-indian-air-force-su-30mkis> February 6, 2013, accessed on March 10, 2014.

^v “Indian cabinet clears Rs 8,000-cr plan to fit IAF with BRAHMOS”, <http://brahmand.com/news/Indian-cabinet-clears-Rs-8000-cr-plan-to-fit-IAF-with-BRAHMOS/10281/1/10.html> , October 19, 2012, accessed on March 10, 2014.

^{vi} “Why India needs Nirbhay? Pak has Tomahawk Clones”, <http://news.oneindia.in/2013/03/13/why-india-needs-nirbhay-pak-has-tomahawk-clones-1170505.html> , accessed on March 10, 2014.

vii "Being Ready for any Eventuality" <http://www.dailypioneer.com/columnists/oped/being-ready-for-any-eventuality.html> , June6, 2013, accessed on March 10, 2014.

viii "India to Develop Smaller Missiles : Brahmos Aerospace", <http://www.brahmos.com/newscenter.php?newsid=175> , February 17, 2014, accessed on March 10, 2014.

ix "14 countries interested in Russian-Indian BrahMos missiles: JV Chief", July 30, 2013, http://indian.ruvr.ru/news/2013_07_30/Russian-Indian-BrahMos-missiles/ , accessed on March 10, 2014.

x "India Remains World's Largest Arms Importer, Sipri Says", March 10, 2014. http://www.aviationweek.com/Article.aspx?id=/article-xml/awx_03_18_2013_p0-560119.xml , March 18, 2013, accessed on March 10, 2014.

