

# India To Use Russian GLONASS Navigation System - Minister

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Russia and India are planning to cooperate in the sphere of satellite navigation, Indian Defense Minister Pranab Mukherjee announced at a Moscow press conference Wednesday, RIA-Novosti reports.

The minister said this was a momentous decision for India, but that the specifics of cooperation in the area had yet to be discussed.

Russia's satellite navigation system, called GLONASS, is operated for the Russian government by the Russian Space Forces.

Like the GPS system developed and launched by the U.S. military forces, the GLONASS constellation consists of 24 satellites, 21 in operation, and three backups on station.

According to the Russian news website MosNews.com, GLONASS orbits the Earth at an altitude of 19,100 km (slightly lower than that of the GPS satellites). Each satellite completes an orbit in approximately 11 hours, 15 minutes. The spacing of the satellites in orbit is arranged so that a minimum of five satellites are in view at any given time.

All the satellites were launched from Tyuratam in Kazakhstan. The first three test satellites were placed in orbit in October 1982 with the first operational satellites entering service in December 1983. The system was intended to be operational in 1991, but the constellation was not completed until December 1995.

Due to the economic situation in Russia there were only eight satellites in operation in April 2002 rendering it almost useless as a navigation aid.

According to MosNews, eleven satellites were in operation by March 2004, after the economic situation in Russia had improved. Additionally, an advanced GLONASS satellite, the GLONASS-M, with an operational lifetime of seven years, has been developed. A 3-satellite block of this new version was launched on Dec. 26, 2004.

A further improved GLONASS-K satellite, with a reduced weight and an increased operational lifetime of 10-12 years, is due to enter service in 2008. Following a joint venture deal with the Indian government, which will launch two GLONASS-M satellites on its PSLV rockets, it is proposed to have the system fully operational again by 2008 with 18 satellites and by 2010 with all 24 satellites.

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