



China, Russia joint Mars Mission

By CK Wong 2006.08.23

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Introduction

According to Reuter, China and Russia is planning a joint unmanned mission to Mars in 2009. China and Russia will be the second countries after American to send mission to Mars. The implication is important.

The mission

According to the Reuters report [1], a joint mission is planned in 2009 with Russian to provide the launching and Chinese will provide the survey equipment to carry out the exploration.

Technical Implications

From this arrangement, we know that the financial strapped Russian space program is not totally dead. Since the suspension of the delivery to the Soviet Space Station, the supply and astronauts are carried by the space shuttle. It has been suspected the critical mass of the space staff has been lost. Some has joint the Europa space program and some joins the American. The Russian had a few attempts to revitalize the program but due to some unknown reason the space program has not been a priority. I believe that with the denuclearization, i.e. dismantling of nucleus warhead for civilian usage, the ICBM is not a requirement on the agenda. Now Putin would like to prove to the world that Russia is a super power again, he would prioritize the space program to demonstrate his point other than energy supply contract. Although it would be a good challenge for China to advance its space vehicle launching technology it may want to pick up a few more pointer from the previous super space program.

For a mission like Mars, one of the most difficult tasks is the remote control of the exploration vehicle. In the late Twentieth century, most of the mission has converted from direct remote control to semi-remote control. The communication delay from Mars ranges from 6.5 minutes 44 minutes due to the distance between Mars and earth. Direct control becomes unrealistic for a moving vehicle. The last two American Mars Exploration Rovers, Spirit and Opportunity, they are autonomous machine that has a planned route using a map. The driving of the rovers is controlled by the onboard computer. The Control Center provided goal level decision and direction only. The technologies involves artificial intelligent, numeric control, real-time sensor based (visual and telemetric) feedback control. Russian has been excelled on the space health and medicine but has not demonstrated these technologies. What Chinese going to demonstrate will be the cutting edge which American has been embargoing the export. It would be interesting to find out the source of these technologies. Should it be home-grown, the number of cutting edge monopolized by the American will diminish.

The communication link is the embryo cord of the Mars vehicle. It could be maintained by a number of ground stations or a number of tracking satellites that relay the signal to the ground. With all the friends around the world, Chinese could create the network. This would be a window to see the data communication technologies employed by the Chinese.

Other than the prestige, it is also the demonstration of homegrown research which American has been continued to suppress the advancement of China. The success will make China much stronger on the negotiation of international standards to become more Chinese friendly. For years, standards have been developed using existing technologies with patterns dominated by a few major international supplier. Some of these technologies slow down the advancement of science. Some of them do not applicable to China. For example, the DVD technology will impose heavy royalty on China for its adaptation. With the ability to demonstrate superb technologies in the space program, it would be more convincing to other countries to accept the Chinese proposal.

Hidden Agenda

2008 is a major showcase year for China using the Beijing Olympic. To stop its success, some organization already started to propose a boycott. I do not believe this will happen but it has shown someone believe the Chinese image has advance to fast on the world stage. However, China would not be stopped. This Mars mission could be one of the opportunities. It could happen in two ways depending on the advancement of this mission. If time allows, Chinese would very much prefer to have a success landing during the Olympic. If not, major supporting facility or the launching may help to escalate the height of the success.

Military Implication

Space program always has the military flavor because it involves the same technologies associated with the ICBM. At one point, American refused Russian's participation on the International Space Station project (ISS) was stemmed from the worry of the space monitoring secrete leaked to Russian. But I would not go into the detail for a technologies commentary.

Resources

[1] *China, Russia plan joint Mars mission*, Reuters, 2006.08.23,

http://www.chinadaily.com.cn/china/2006-08/24/content_672692.htm

[2] *Colonization of Mars*, Wikipedia, http://en.wikipedia.org/wiki/Colonization_of_Mars