

# China Maps Out Next Five Years in Space

by Marsha Freeman

The most closely watched space program in the world today is that being carried out by the People's Republic of China. For decades, China's activities were largely an internal project, with little information available outside the country, leaving ample room for speculation. In 2000, China published and circulated in English, a White Paper, "China's Space Activities," English, which outlined its plans. The most stunning goal was for human spaceflight: Early in the 21st Century, China was planning to become the third nation in the world to send a man into space.

Since that first manned flight, in October 2003, the world space community's attention has been rivetted on China's emerging space capabilities.

Many space enthusiasts in the West are impatient with the seeming slow pace of China's manned flights, with two-year intervals between missions. But China is not in a space "race." Its approach is not to duplicate the U.S. and Soviet experience, by taking frequent incremental steps; it is to "leapfrog" with fewer, larger steps, taking advantage of the dramatic developments in technology since the first manned missions of the 1960s.

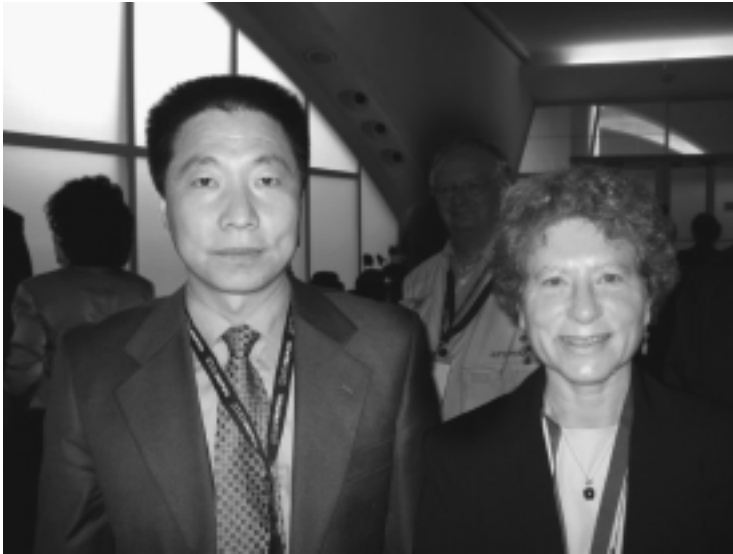
Over the past five years, China has applied its policy of "opening up to the outside world" in the space arena, concluding cooperation agreements and memoranda with more than 30 countries, international organizations, and space agencies. It is confident enough in the capabilities it has independently developed in space to now play an international leadership role, especially in Asia, and to share technology with other nations.

On Oct. 12, the State Council of the P.R.C. released a ten-page report titled, *China's Space Activities in 2006*, "in order to give people around the world a better understanding of the development of China's space industry over the past five years, and its plans for the near future." The paper outlines an ambitious, broad, space technology development program.

Judging from its performance over the past five years, reviewed in the paper, the next five years will see China progress in space science, satellite technology, launch vehicles, deep-space exploration, and manned space flight.

## **Economic Development Strategy**

The major area of support in China's space program is not its high-profile manned space projects, but the space applica-



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*China's first astronaut, Yang Liwei, was a great attraction at the annual Congress of the International Astronautical Federation, held in Valencia, Spain. He is seen here at the conference, on Oct. 4, with the author.*

tions that bring direct economic benefit to its population. Over the past five years, China has developed and launched 22 different types of Earth-orbiting satellites. These provide China with the full range of space capabilities, which include meteorology, communications, remote sensing, navigation and positioning, and scientific research. Under current development is a series of ocean observation satellites. The deployment of a "constellation of small satellites for environment and disaster monitoring and forecasting" has been accelerated.

China places its space program within the context of the "country's overall development strategy." Data from its remote-sensing satellites are being applied to major state projects, the paper reports, such as the South-North Water Diversion Project, the Three Gorges Dam Project, and the Project to Transmit Natural Gas from West to East.

By the end of 2005, China had more than 80 international and domestic telecommunications and broadcasting Earth stations, and 34 satellite broadcasting and TV link stations, with the goal of giving "every village access to broadcasting and TV" and "to give every village access to telephones." A satellite-based distance education network and satellite telemedicine network have been established.

One of the goals of the next five years, is to "accelerate the industrialization of space activities." The purpose is to "upgrade traditional industries," or what is generally described as technology transfer. In order to improve the quality of research, development, and infrastructure for space development, China puts emphasis on "sparing no efforts for the education and cultivation" of young people. While hoping to attract outstanding people into technical fields, China also

plans to "encourage people from all walks of life to participate in space-related activities," to spread the broadest understanding and support for its space programs.

Next year China will begin its program of deep-space exploration, with the launch of its *Chang'e* lunar orbiter. This will be followed by a multi-step program, to land on, rove over, and return samples from the Moon. The next two-man space mission will take crew members outside the spaceship, for China's first extravehicular activity, in preparation for space stations and other space infrastructure.

As a country facing extraordinary economic challenges, and with the stated strategic goal of "building itself into a well-off society in an all-round way," during the first 20 years of the 21st Century, China's leadership is well aware that it cannot afford to pursue excellence in every possible space activity. The space activities paper states: "In light of the country's actual situation and needs, China will focus on certain areas, while ignoring less-important ones. It will choose some limited targets, and concentrate its strength on making key breakthroughs and realize leapfrogging development."

China sees its space program as "a strategic way to enhance its economic, scientific, technological, and national defense strength, as well as a cohesive force for the unity of the Chinese people, in order to rejuvenate China."

### **International Outreach**

China has followed a two-pronged international cooperation policy: "reinforcing cooperation with developing countries," especially "attaching importance to space cooperation in the Asia-Pacific region," while pursuing cooperation in more advanced projects with established space-faring nations.

Over the past five years, bilateral cooperation agreements have been signed with Argentina, Brazil, Canada, Malaysia, and Pakistan, and exchanges have been conducted with space-related agencies in Algeria, Chile, India, and Peru.

China and France have a Joint Commission on Space Cooperation; regular meetings are held with Russia on exchanges and cooperation in manned space flight, including astronaut training; China and the European Space Agency have carried out the Double Star science satellite program to study the Sun, and the Dragon Program to share data and training in remote sensing. Recently, Ukraine and China have established a Joint Commission to determine space cooperation plans.

In October 2005, representatives of China, Bangladesh, Indonesia, Iran, Mongolia, Pakistan, Peru, and Thailand signed the Asia-Pacific Space Cooperation Organization Convention (APSCO), in Beijing. In June of this year, Turkey signed on to become a member. In 2007, small multi-



Chinese Academy of Space Technology

Next year, China will launch its first deep space mission, *Chang'e*, seen in this artist's drawing of the lunar orbiter.

mission satellites, involving the Republic of Korea and APSCO nations, will start to be launched by China. These projects enable developing countries that are newcomers, to join in the development of space technology.

The obvious and gaping hole in China's international space cooperation activities is any working relationship with the United States.

### War in Space?

Bush Administration officials have stated that cooperating with China in space would be seen as to "reward" that nation for "undemocratic behavior," for example, in human rights. Such concerns did not stop the United States from carrying out a joint manned mission with the Soviet Union in the 1970s, the Apollo-Soyuz Test Project, because it gave the United States its first opportunity to peer through the window of secrecy into a program they knew virtually nothing about.

Charges from the vocal GOP anti-China lobby in the Congress, that China wants space cooperation in order to "steal" American technology, have been reinforced by a policy of unilateral sanctions against Chinese space companies, to "punish" the government for undesirable technology-transfer "proliferation." Such embargoes have only served to give China's technology business to the Europeans, and to encourage China to push research and development breakthroughs on its own.

The real motivation for squelching any space cooperation with China, was revealed in a space policy paper released by the Bush Administration just six days before China's space activities paper was released. That the Administration hoped this provocation would escape public scrutiny was evidenced by the fact that it was released on an obscure government

website, after business hours, on the eve of the Columbus Day holiday weekend.

The misnamed ten-page U.S. National Space Policy paper has virtually nothing to do with "space policy." It is an extension of the Bush Administration's policy of preventive war, and assertion of unilateral military power. It throws out each principle that has been the basis of 50 years of policy for the exploration of space, and it tasks Defense Secretary Rumsfeld and the national intelligence establishment to find ways to protect national interests, homeland security, and "ensure freedom of action in space."

The first goal of space policy is no longer to make discoveries about the Earth, other planets, and the universe, but to "further U.S. national security, homeland security, and foreign policy objectives." The second goal, is to "enable unhindered U.S. operations in and through space to defend our interests there."

The document states that the United States is committed to the exploration of space for peaceful purposes, and "consistent with this principle, 'peaceful purposes' allow U.S. defense and intelligence-related activities in pursuit of national interest." There will be cooperation with other nations, to enhance exploration, but also to "protect and promote freedom around the world."

The policy "rejects any limitations on the fundamental right of the U.S. to operate in and acquire data from space." It asserts that the United States will "preserve its rights, capabilities, and freedom of action in space."

To do this, the United States will "dissuade or *deter* others from either impeding those rights or *developing capabilities intended to do so*; take those actions necessary to protect its space capabilities; *respond to interference*; and *deny, if necessary, adversaries the use of space capabilities hostile to U.S. national interests*" (emphasis added).

The entire document contains *one paragraph* describing NASA's civilian space exploration programs. Since the announcement three years ago of his Moon/Mars initiative, President Bush has never mentioned it again.

Reaction to this assertion of Iraq policy into space was immediately seen as a provocation against other space-faring nations. One White House commentator observed that it was specifically to counter China's increasing space capabilities that this policy was promulgated.

Mike Griffin's first trip by a NASA Administrator to China in September showed the U.S. technical community what China has developed, and what it is planning for the future. That future will either be one of work toward common goals in space, or getting ready to fight a war there.