

ISSUE BRIEF

No. 4645 | JANUARY 6, 2017

Responding to the Chinese Space Challenge

Dean Cheng

As 2016 drew to a close, China published its third space white paper, sustaining the pattern of publishing one every five years.¹ This is consistent with the cycle of Five Year Plans that are central to Chinese economic and social planning efforts. *China's Space Activities in 2016* provides both an overview of China's space achievements over the past five years and an outline of key projects and milestones for the next five years.

Chinese Aims in Space

Much has been made of the white paper's discussion of Chinese lunar, deep space, and manned space efforts. According to the white paper, a major focus during the next five years will be conducting several landings on the Moon. These missions, parts of the China Lunar Exploration Program (CLEP), build on the experience of deploying lunar orbiters and a rover, *Yutu* ("Jade Rabbit"), over the past several years. The immediate goal is to obtain and retrieve lunar soil samples (*Chang'e-5*) and to land a probe on the far side of the Moon (*Chang'e-4*). *Chang'e-4* would make China the first nation to land an object on that side of the Moon.

In addition, Chinese space authorities expect to begin exploring the larger solar system. Thus far, China has not ventured beyond the Earth-Moon

system. Its one attempt to do so (as a part of the Russian Phobos-GRUNT mission) was when the Russian mission failed during launch. The white paper states that China intends to launch a probe to Mars by 2020 and is also interested in dispatching probes to Jupiter and the asteroid belt.

The white paper also indicates that the Chinese will be launching resupply vehicles (*Tianzhou*) to the *Tiangong-2* space lab so that they can conduct prolonged missions. This will help to support the broader goal of getting a larger, more advanced Chinese space station operational within the next five years. No indication is given, however, of any plans to land a Chinese astronaut on the Moon. Given the methodical approach China has taken thus far toward space, it is likely that they are currently studying the problem but will not incorporate manned spaceflights formally into space plans until they have successfully landed and returned robotic surveyors and samples.

In addition to such high-profile efforts, the white paper makes clear that PRC decision-makers will not be neglecting fundamental space support capabilities. The next five years will see the Chinese producing additional models of rockets, expanding the current range of Long March launch vehicles. They will also improve their *Beidou* indigenous satellite navigation system and field a variety of remote sensing systems (reconnaissance and surveillance satellites), including both electro-optical and synthetic aperture radar systems. The Chinese also expect the new Wenchang launch facility on Hainan Island to become fully operational by 2020.

Perhaps most striking, however, is the clear signal that Beijing is sending in this white paper about the relationship between space systems and terres-

This paper, in its entirety, can be found at <http://report.heritage.org/ib4645>

The Heritage Foundation
214 Massachusetts Avenue, NE
Washington, DC 20002
(202) 546-4400 | heritage.org

Nothing written here is to be construed as necessarily reflecting the views of The Heritage Foundation or as an attempt to aid or hinder the passage of any bill before Congress.

trial objectives. The Chinese will target improvements in their space information services capabilities, for example, at areas with large numbers of ethnic minorities, border areas, and islands in the sea. This reflects the importance the Chinese leadership has placed on maintaining a grip on such sensitive areas as Xinjiang and such key locations as the artificial islands in the South China Sea.

Similarly, the white paper emphasizes the role that the *Beidou* navigation system will play in supporting Xi Jinping's *One Belt, One Road* initiative. This multibillion-dollar effort is expanding Chinese infrastructure throughout both Central Asia (the Silk Road Economic Belt) and the Indian Ocean (the 21st Century Maritime Silk Road). The white paper indicates that basic services will be provided to nations on these two routes by 2018. By increasing these regions' reliance on Chinese satellite navigation data, Beijing hopes to limit the inroads of American and Russian systems and their associated political impact.

Military Considerations

The white paper makes few references to China's growing military space capabilities. No mention is made of anti-satellite systems, much less likely future tests, but even this carefully edited volume notes that space plays a vital role in national security considerations.

What *is* clear is that the Chinese People's Liberation Army (PLA) has been steadily expanding its portfolio of space capabilities. The PLA is responsible for operating all of China's space infrastructure, from launch sites to mission control facilities to tracking stations and ships. It has tested a number of anti-satellite systems, including not only the 2007 direct ascent kinetic kill vehicle that generated enormous debris, but also a weapon designed to destroy satellites in geosynchronous orbit.²

These new capabilities are being incorporated into a new organizational structure. The recent PLA reforms unveiled at the end of 2015 and early 2016 include the establishment of the PLA Strategic Support Force (PLASSF). This new service (*junzhong*) brings together Chinese military space, electron-

ic warfare, and network warfare capabilities and reflects the military's holistic view of space. For the Chinese military, establishing space dominance is integral to the larger effort to establish information superiority. Consequently, the PLASSF is expected to coordinate space, electronic warfare, and cyber operations.

How America Should Respond

It is clear that China will be pressing forward with the development of its space capabilities, including new satellites, launchers, and facilities. Even more important, however, Beijing clearly views space as one of the many tools it can and does employ to further its overall political goals.

For the United States, including the incoming Trump Administration, it is therefore essential to keep from falling behind China's burgeoning space efforts. It is equally vital that the United States integrate its space activities with its other political and diplomatic, economic, and military activities as part of its national strategy. Space policy should not be developed in a vacuum.

To this end, American leaders should take several steps to ensure that our space program remains at the forefront of our strategic thinking.

- **Incorporate American space achievements into our broader political messaging.** The United States is not engaged in a space race with China or Russia, but that does not mean that space missions do not influence international perceptions. NASA is one of the world's most recognizable brands, and space capabilities are part of America's brand. The world views American space accomplishments, including the New Horizons mission to Pluto, the International Space Station, and the upcoming James Webb Space Telescope, as a reflection not only of our scientific curiosity, but also of our industrial and technological capabilities and as part of our political appeal. Consequently, our abilities and advances in space should be incorporated into American strategic messaging and public diplomacy efforts, reflecting our overall national will and capacity.

1. White Paper, *China's Space Activities in 2016*, State Council Information Office of the People's Republic of China, December 2016, <http://www.spaceref.com/news/viewsr.html?pid=49722> (accessed January 5, 2017).

2. Sydney J. Freedberg, Jr., "Pentagon Reports on China's Satellite Killers," *Breaking Defense*, May 11, 2015, <http://breakingdefense.com/2015/05/pentagon-reports-on-chinas-satellite-killers/> (accessed January 5, 2017).

- **Establish a clear road map for maintaining American space capabilities.** Because of its wealth, the United States sustains four space-related programs. NASA focuses on space exploration, and the National Oceanic and Atmospheric Administration (NOAA) is responsible for providing essential information such as meteorological forecasting. In addition, there is the realm of national security space, where the U.S. Air Force and the intelligence community fly a variety of space systems to monitor global developments. Yet despite this substantial commitment of resources, the United States continues to rely on Russia for rocket engines and to place American astronauts in orbit. This dependence will eventually undermine American space superiority: If we cannot decide how and when to place payloads into orbit, how can we sustain our position?
- **Sustain funding and provide programmatic stability for key space projects.** It is incumbent on the incoming Administration and Congress to provide the wherewithal to support continued American leadership in space. In part, this entails providing sufficient funding over the long term to ensure that programs can be brought to fruition. The end of the Space Shuttle program has seen a variety of incarnations of rockets and crew capsules, but the consistent support from both the executive and legislative branches necessary to produce a working system has never material-

ized. Similar problems have marred the American weather satellite constellation to the point that the U.S. now depends on China for portions of its weather data.

- **Encourage private-sector entrepreneurship and innovation in meeting civilian space demands.** In some areas, such as communications satellites, private companies have long been dominant. Companies such as Intelsat are among the world's largest operators of satellites, their constellations dwarfing many nationally owned and operated ones.

Conclusion

One of the Obama Administration's major innovations has been increased reliance on the private sector to produce new approaches to managing and even to launching satellites. Coupled with interest from such entrepreneurs as Jeff Bezos and Elon Musk, the result has been a surge of companies striving to fill the gaps in America's space capabilities. This approach should be sustained in the coming years, especially as the companies' products mature and become increasingly reliable. Encouraging entrepreneurship and unleashing private-sector innovation will be crucial to rebuilding America's lead in space.

—*Dean Cheng is a Senior Research Fellow in the Asian Studies Center, of the Kathryn and Shelby Cullom Davis Institute for National Security and Foreign Policy, at The Heritage Foundation.*