

Monday Dispatch

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# SYLLOGE ON CHINA

Focus: Nuclear, Space, Missiles and other Security Issues

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## **Nation soars ahead with space missions**

Zhao Lei

China Daily, January 13, 2020

Last year, a long chapter was written in the history of China's space industry, with a host of memorable events taking place. The nation carried out more space missions than any other country, with 32 successful orbital launches. At the start of last year, the country mounted the world's first expedition to the far side of the moon, which had never before been closely observed by a spacecraft. The Chang'e 4 robotic probe landed on the far side in early January last year after a 26-day journey that began at the Xichang Satellite Launch Center in Sichuan province. It was the country's fourth mission to explore the moon.

Yutu 2, the world's seventh lunar rover and the first to reach the far side, was released from the spacecraft to survey the landing site near the moon's South Pole-Aitken basin, the largest and deepest known in the solar system. The robot has been operating on the lunar surface for about 370 days—a record. The previous mark was set by the Soviet Union's Lunokhod 1, which worked on the moon for 321 days in 1970 and 1971. According to the China National Space Administration, Yutu 2 has traveled nearly 360 meters on the lunar surface. In June, the China Academy of Launch Vehicle Technology, the nation's leading maker of carrier rockets, carried out the country's first seaborne launch of a rocket in the Yellow Sea.

A Long March 11 solid-propellant rocket was fired from a mobile launch platform in the waters off Shandong province, sending seven satellites into orbit nearly 600 kilometers above the Earth. The mission—the world's first seaborne space launch for five years—shows that China has the technologies and capabilities required for such an operation and also indicates that the country has found an alternative to its ground-based launch centers.

<https://www.chinadaily.com.cn/a/202001/13/WS5e1bb74aa310cf3e3558406c.html>

## **China's most advanced destroyer the Nanchang formally enters service in 'leap forward' for navy**

Minnie Chan

South China Morning Post, January 13, 2020

China officially commissioned its first Type 055 guided missile destroyer, the Nanchang, on Sunday in what it hailed as a “leap forward” for its naval modernisation programme. A grand ceremony was held in Qingdao, a major naval base in the eastern province of Shandong, on Sunday morning, state news agency Xinhua reported. The Nanchang was launched in June 2017 and made its public debut in a naval parade to mark the 70th anniversary of the PLA Navy in April last year. However, military sources said that its outfitting had not been completed at the time of the parade.

“Nanchang made an appearance at the parade as part of the celebration but much of its equipment – including radars, communications and weapons systems and other works – had not actually been finished,” one PLA insider said. Another military source said the Nanchang, which has a displacement of 12,000 tonnes, had been undergoing sea trials and weapon systems tests in the past eight months. Xinhua said the commissioning of the Nanchang, which is equipped with air-defence, anti-missile, anti-ship and anti-submarine weapons, represented a “generational leap” in the Chinese navy’s destroyers. The warship appeared at the navy’s 70th anniversary parade last year, but insiders said its equipment had not been finished. Photo: Reuters. It is seen as one of the world’s most advanced ships of its type – behind only the US Navy’s Zumwalt class – and is Asia’s largest and strongest destroyer.

<https://www.scmp.com/news/china/military/article/3045764/chinas-most-advanced-destroyer-nanchang-formally-enters-service>

### **Challenges remain after muscle flexing**

China Military Online, January 13, 2020

The US Department of Defense (DoD) announced the USAF’s F-35 combat exercise on January 6, during which all 52 F-35 jet fighters of USAF’s 388th and 419th Fighter Wings at the Hill Air Force Base in the State of Utah took off at the same time. It is concluded by the DoD that the 388th Fighter Wing at Hill Air Force Base has achieved full war-fighting capability. As the US-Iran conflict keeps escalating, the US military has been flexing its muscles intensely to release strong signals of deterrence, which has captured extensive attention. Given the recent movements in the international community and the progress on F-35’s commissioning, the US military’s muscle-flexing moves are based on three considerations.

First, the US military tries to change the negative image of F-35. The F-35 jet fighter has been widely criticized for its high price, poor performance and the possibility of information leak since it was debuted. The US claiming on such a high profile the full combat capability of its first F-35 Fighter Wing aimed to enhance people’s confidence in the fighter’s performance and save its reputation to some extent. Second, the US military attempts to advance the global deployments of F-35. Lately Turkey has almost abandoned the agreement to buy 100 F-35 jet fighters from the US, which lent a blow to the latter’s global deployments of the F-35 combat system. By demonstrating the fighter jet’s conditions, ground support capability, commanding and combat capability, the US military wants to show its allies F-35’s outstanding system and advance its global combat system.

Third, the US wants to intensify the strategic deterrence against Iran. The official announcement from the Pentagon came at a tricky moment considering the all-round tension between the US and Iran, and the photo of so many F-35 fighters in “elephant walk”—the term for military planes

taxiing in close formation just before takeoff- at the Hill Air Force Base was obviously aimed to intensify the strategic deterrence against Iran. Some of the air, ground, commanding and supportive personnel at the air force base were deployed to the Middle East last year, and the fully war-ready fighter squadron has been deployed to UAE's al-Dhafra Air Base, ready to carry out "emergency tasks" in the region anytime. However, although the first F-35 Fighter Wing has achieved full war-fighting capability, its path of development remains a long and hard journey strewn with various tests. There is the test of "realistic combat". If the Trump administration decided to launch military attacks on Iran, the USAF's F-35 fighters stationed at UAE's al-Dhafra Air Base might be mobilized as "vanguards", and their performance would be the basis to evaluate their combat capability.

There is the test of "multi-purpose performance". The US military has high hopes for F-35 and plans to assign it with more new-type combat tasks in addition to the regular combined air battle, surface battle and ground assault. It even plans to equip the fighter jet with anti-missile capability before 2025, but whether F-35 will be able to carry out these new tasks effectively remains to be observed. Last but not least, there is the test of "integration". According to the plan, the US military will strongly promote the F-35 global combat system by way of frontline deployments, selling the fighter jet to other countries, joint exercise and training, and real combats. But there are concerns that the F-35 is not compatible with the combat systems of American allies yet, and sustained explorations and efforts have to be made in order to integrate them seamlessly in the future.

[http://eng.chinamil.com.cn/view/2020-01/13/content\\_9716045.htm](http://eng.chinamil.com.cn/view/2020-01/13/content_9716045.htm)

### **China's top radar institute awarded for classified, advanced project**

Liu Xuanzun

Global Times, January 12, 2020

China's top radar development institute was recently awarded a national prize for a classified, advanced project, as experts hailed China's radar industry on Sunday as a top player in the world. For participating in a major project, the 14th Research Institute of the state-owned China Electronics Technology Group Corporation (CETC) was given the first prize in the National Science and Technology Progress Award in a ceremony held in Beijing on Friday, the People's Daily reported on Saturday. The detail of the project is "too advanced to be openly displayed," the report said.

Military observers believe the project to be closely related to China's advanced radar development. The Nanjing-based institute is the birthplace of China's radar industry, the only large, high-technology, comprehensive institute in China that can deliver early warning and detection systems for all fields of sea, land, air and space, the People's Daily report said.

Radar products made by the CETC 14th Research Institute can be found on a variety of Chinese weapons and equipment including warships, warplanes, air defense systems, strategic early warning systems, anti-drone systems and satellites. The AESA radar dubbed "Star of the Sea" installed on China's recently commissioned aircraft carrier Shandong is a homemade product of the institute. The radar effectively boosts Chinese naval formations' regional air defense capability, making China the third country behind the US and Russia to be able to domestically develop such a system, according to the report.

Thanks to the institute, China now operates radars of different bands and all types, allowing them to cooperate with and complement each other, optimizing their detection capability, detection accuracy and mobility, the report said, noting that coordination between different radar bands can also resist hostile jamming and thrive in complicated electromagnetic environments. A military expert who asked not to be named told the Global Times on Sunday that Chinese radars can be considered among the most advanced level in the world. "One of the sharpest spears in modern warfare is stealth aircraft, which can sneak deep into hostile territory and launch deadly attacks. But China possesses the shield to counter it by developing the anti-stealth radar," the expert said.

<http://www.globaltimes.cn/content/1176531.shtml>

### **World's largest radio telescope starts formal operation**

Xinhua, January

China completed commissioning of the world's largest and most sensitive radio telescope on Saturday, putting it into formal operation after a productive three-year trial. The telescope will gradually open to astronomers around the globe, providing them with a powerful tool to uncover the mysteries surrounding the genesis and evolutions of the universe. All technical indicators of the telescope have reached or exceeded the planned level, and its performance is world-leading, Shen Zhulin, an official with the National Development and Reform Commission, said at a commissioning meeting Saturday.

Panoramic photo taken on Jan. 8, 2020 shows China's Five-hundred-meter Aperture Spherical radio Telescope (FAST) under maintenance in southwest China's Guizhou Province. (Xinhua/Ou Dongqu) The Five-hundred-meter Aperture Spherical radio Telescope (FAST) is a single-dish telescope with a diameter of half a kilometer and a receiving area equivalent to about 30 football fields. It is located in a naturally deep and round karst depression in southwest China's Guizhou Province. After its commissioning, FAST can now be used for observation at full capacity, and is expected to make a number of major scientific discoveries in the coming two or three years, said Jiang Peng, the chief engineer of the telescope. In over two years, FAST has identified 102 new pulsars, more than the total number of pulsars discovered by research teams in Europe and the United States during the same period.

[http://www.xinhuanet.com/english/2020-01/11/c\\_138696973.htm](http://www.xinhuanet.com/english/2020-01/11/c_138696973.htm)

### **China announces top 10 sci-tech news events of 2019**

Xinhua, January 11, 2020

Lists of China's and the world's top 10 sci-tech news events, jointly selected by the Chinese Academy of Sciences and Chinese Academy of Engineering, were announced Saturday in Beijing. The 10 major China's scientific and technological news events included the first-ever soft landing on the moon's far side by Chang'e-4 probe, the discovery of the largest ever stellar black hole by Chinese astronomers, as well as the successful in-orbit tests of the country's first space-based gravitational wave detection experiment satellite Taiji-1. The development of the new type of brain-inspired chip by Chinese scientists and the discovery of a lower jaw fossil from the ancient Denisovans who lived around 160,000 years ago were also selected.

On the list of the world's top 10 sci-tech news events, the release of the first black hole's image, the first landing and sample collection of Japan's Hayabusa2 space probe on the asteroid Ryugu, as well as the grant of the first Ebola vaccine's marketing by the European Commission were included. It was the country's 26th annual selection of sci-tech top news events.

[http://www.xinhuanet.com/english/2020-01/11/c\\_138697197.htm](http://www.xinhuanet.com/english/2020-01/11/c_138697197.htm)

### **China's leading nuclear submarine designer Huang Xuhua awarded top science prize**

Liu Zhen

South China Morning Post, January 10, 2020

One of China's leading nuclear submarine scientists has been presented with one of the country's highest honours for his work on the development of strategic weapons.

Huang Xuhua, 93, was one of two people to receive the Highest Science and Technology Award of Year 2019 from Chinese President Xi Jinping at a grand ceremony on Friday at the Great Hall of the People in Beijing. The prestigious award was Huang's second in just three months, after he was given a Medal of the Republic in September, again for his work in advancing nuclear submarine technology.

The Chinese navy has two types of submarine capable of providing a sea-based nuclear deterrent – the Type 094A and the next generation Type 096, which is under development.

Once in service, the Type 096 will carry the country's most advanced submarine-launched ballistic missile (SLBM) – the JL-3 – which itself is still in the development stage. The Type 094A is already in service and carries JL-2 missiles. After completing an engineering degree in shipbuilding in 1949, Huang joined China's inaugural nuclear submarine project in 1958. By the

1980s he had risen through the ranks to be chief designer on the country's first nuclear-powered submarines. He played key roles in the development of the Type 091 Han-class nuclear attack submarine and the Type 092 Xia-class nuclear ballistic missile submarine (SSBN). He even took part in the Type 091's first deep diving test.

<https://www.scmp.com/news/china/military/article/3045610/chinas-leading-nuclear-submarine-designer-huang-xuhua-awarded>