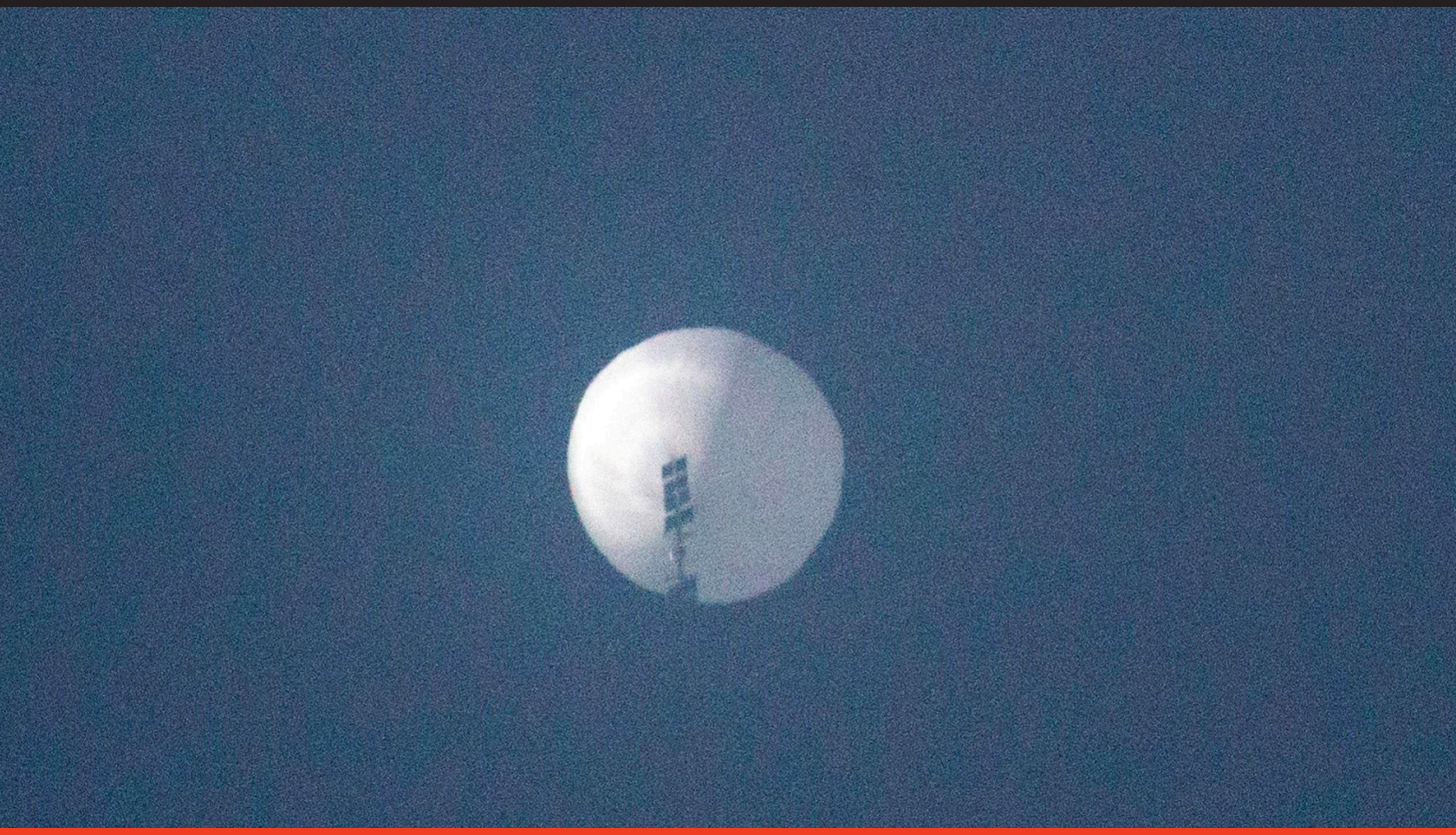
MEMRI China Media Studies Project (CMSP)

OFFICIAL CHINESE SOURCES DISPROVE CHINA'S CLAIMS THAT ITS BALLOONS ARE FOR METEOROLOGICAL RESEARCH:

MEMRI TRANSLATIONS AND ANALYSIS ON CHINA'S MILITARY USES OF SURVEILLANCE BALLOONS, AIRSHIPS, AND AIRSHIP-BORNE HYPERSONIC VEHICLES



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Chinese Military Website Article From 2020: Airship-Borne Hypersonic Vehicles Can Be the Next Generation of Air Weapons – Similar To The U.S. Cold-War Era 'Rods From God'

February 22, 2023 | China | Special Dispatch No. 10503

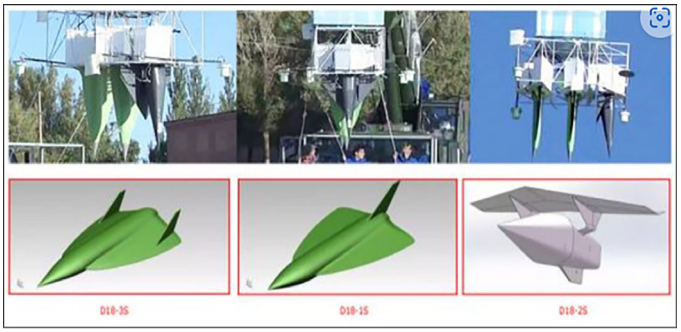
An article on China's Sina Military website, published November 24, 2020 and titled "The Chinese Version of 'The Rods From God'? CCTV Unveils Three Hypersonic Vehicles Capable of a Wide Speed Range."[1] The article, attributed to "Bai Zhan Dao," describes China's 2018 test launch of hypersonic vehicles from airships. It predicts that hypersonic weapons launched in this fashion may be the next generation of weapons capable of penetrating enemy air defenses, and compares it to the U.S. Air Force's Cold War-era "Rods from God" concept weapon.

Below is the text of the article:

"Recently, [the official CCP outlet] CCTV reviewed China's first near-space test launch of hypersonic vehicles capable of a wide speed range, which took place on September 21, 2018. It showed three scale models of the hypersonic vehicles used in the test – namely, the D18-1S, D18-2S and D18-3S vehicles.

"In the 2018 test at the Jiuquan Satellite Launch Center, three scaled-down models were lifted aloft by an air balloon, were dropped, entered free flight, accelerated past the speed of sound, entered an aerodynamic bounce state, and finally deployed parachutes and landed for recovery. The unique launch test has caught the imagination of many netizens, who believe it heralds the imminent arrival of the ultimate weapon: the 'Rods from God.'

The so-called 'Rods from God' are a space-based kinetic energy weapon concept from America's 'Star Wars' project during the Cold War. It consists of telephone-pole-sized tungsten rods that are launched at ground targets from satellites and that reach a maximum speed of Mach 10 before striking their targets. The kinetic energy of the rods would be equivalent to 11.5 tons of TNT, making them like a tactical nuclear weapon without causing any radiation contamination.



Mil.sina.cn/zm/2020-11-24/detail-iiznezxs3400422.d.html, November 24, 2020.

Mil.sina.cn/zm/2020-11-24/detail-iiznezxs3400422.d.html, November 24, 2020.

"Due to the extremely high speed and small radar cross-

section of the tungsten rods, the weapon is theoretically extremely difficult to defend against. However, the difficulties in researching and developing precision guidance technology, as well as the high cost of positioning tungsten rod ammunition in orbit, prevented the American 'Rods from God' concept from ever becoming practical.

"The hypersonic vehicles tested by China in 2018 have nothing to do with the 'Rods from God' and are only free-flight models used to verify the aerodynamic layout of hypersonic weapons. However, they resemble the "Rods from God" in terms of how they were delivered.

"The large amount of flight data obtained from the test will contribute to the development of China's second-generation hypersonic vehicles. Clearly, hypersonic weapons are superior tactically and cost-wise to the 'Rods from God,' and there is no concern that they would be targeted by anti-satellite weapons.

"The 'wide speed range' of these hypersonic vehicles means that the aerodynamic layout of the vehicles can adapt to the hypersonic wave-riding flight at speeds above Mach 6 after reentry into the atmosphere. At the same time, after slowing down to lower speeds, it enables the vehicles to maneuver towards their targets and to avoid being attacked, improving the weapon's ability to penetrate air defenses and accurately strike its targets.

"To achieve this goal, the D18-1S and D18-3S were designed using a conventional wave-rider aerodynamic layout. The difference between the two models is that the D18-1S has a single vertical tail and the D18-3S has a double vertical tail.

"The D18-2S has a parafoil aerodynamic layout, meaning that its entire fuselage is suspended below the wings. This design is very rare in hypersonic vehicles, and it may have greater advantages when it comes to the distribution of internal loads.

"Regardless of the layout, the high lift-to-drag ratio of various hypersonic vehicles with a wide speed range would increase the range and maneuverability of hypersonic weapons, allowing them to easily penetrate any existing anti-missile defense system.

"Research on hypersonic vehicles with a wide speed range will also contribute to the development of a Chinese aerospace plane or supersonic passenger plane.

"The fact that the D18-1S, D18-2S, and D18-3S models have been revealed to the public naturally shows that our country already has even more advanced designs. Showing off failed designs now isn't harmful; it can actually cheer people up."

Endnote:

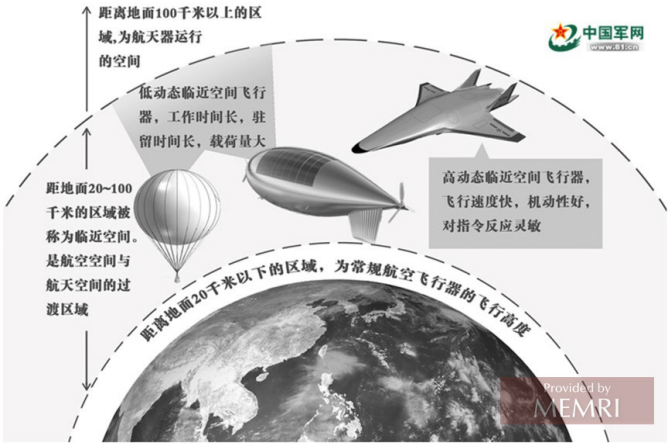
[1] Mil.sina.cn/zm/2020-11-24/detail-iiznezxs3400422.d.html, November 24, 2020.

China's People's Liberation Army (PLA) Report In March 2018: "An Omnipotent Weapon – How Amazing Are Near-Space Vehicles? Airships Can Provide Tremendous Strategic, Tactical Advantages On The Modern Battlefield; They Are Stealthy, Can Be Used To Strike Land-Based And Space-Based Targets"

February 17, 2023 | China | Special Dispatch No. 10498

On March 30, 2018, the China Military Network, an official People's Liberation Army (PLA) outlet, published a report titled "An Omnipotent Weapon – How Amazing Are Near-Space Vehicles?" [1] *The article was written by a researcher named Qiang Tianlin, and it describes the strategic and tactical advantages that near-space vehicles, including airships, can provide as weapons and military communications platforms.*

The report says that in October 2017, a Chinese experimental airship successfully carried a live turtle into near space, and it explains that near-space vehicles operate at altitudes between 20,000 meters (which is the flight ceiling of conventional military aircraft) and 100,000 meters (which is the minimal altitude at which spacecraft operate). It says that at this altitude, near-space vehicles enjoy consistent and smooth flight conditions and are outside of the targeting range of military aircraft and surface-to-air missile systems. It also explains that near-space vehicles are stealthy, can be deployed easily, are energy-efficient, can operate around-the-clock in all weather conditions, and can be built to operate for several years at a time. In addition, the article says that near-space vehicles can provide high-quality over-the-horizon intelligence and communication, can surveil very large areas, can carry weapons to strike both land targets and space-based targets, can jam enemy communications, and are not vulnerable to atmospheric interference that other communications platforms are affected by. The article mentions near-space vehicle platforms being developed by other countries, including France's Stratobus Autonomous Stratospheric Airship program and the United States' SR-72, X-30, and Integrated Sensor Is Structure ("ISIS") programs.



An image from the March 2018 report in the People's Liberation Army (PLA) outlet.

Following is the text of the report:

Near-Space Vehicles – The Weapons Of Air And Space Battles

In October 2017, China's independently developed "Voyager 3" near-space vehicle successfully carried a live turtle

into near space, carrying out experimental tasks and testing key technologies. This is the first time in the world that an aerostat carried a live animal into near space for an extended period of time, indicating that China's near-space flight technology has reached new heights. With the rapid development of new and modern hi-tech, the information battlefield is no longer limited to land, sea, and low altitudes, and near space has become a new battlefield for modern warfare and an important link in the national security system. As an important link connecting the air and space battlefields, near-space vehicles will play a crucial role in the future integrated air-and-space joint operations, which are highly valued by more and more countries. The development and application of these tools will also have an important impact on future combat.

Near-Space Vehicles Can Control the Sky Above Them and the Land and Sea Below Them – They Are "Hanging Swords" Floating in No-Fly Zones

Generally speaking, the flight ceiling of conventional aircraft is below 20,000 meters, and spacecraft operate at an altitude of at least 100,000 meters. The space between 20,000 meters and 100,000 meters is called "near space".

Near space includes the stratosphere, the mesosphere, and part of the thermosphere. It is the transition zone between aerospace and space, an empty area that is unexplored, with the exception of the occasional rocket crossing through it.

It is precisely because of its unique environment that near space has special advantages. There are few clouds and little rain in this region, and the temperature is almost constant. Hence, it near-space vehicles enjoy smooth flights. At this altitude, near-space vehicles can also avoid most ground while being able to strike both ground targets and spacecraft. This is an ideal area for airborne military activities and it has great potential for development.

There are two different kinds of near-space vehicles: high-dynamic vehicles and low-dynamic vehicles, in accordance with flight speed. The [Rockwell] X-30, which was jointly developed by the United States Department of Defense and NASA, is a typical high-dynamic near-space vehicle with a high speed, good maneuverability, and high responsivity to commands.

Low-dynamic near-space vehicles can be used as space stations and as space experimentation platforms because of their long working time, their long stay period, and their large load capacity. It has been reported that the United States plans to build a permanent high-altitude floating platform composed of multiple airships at an altitude of 30,000 meters which will be used as a high-altitude transfer station and supply station for spaceships.

With the continuous development of new strategic weapons, the strategic value of near-space vehicles has been favored by many countries, and many Western countries have included them in the construction of information weapons and equipment system. In recent years, the United States has made continuous efforts in the field of near-space vehicle technology. In the U.S. Department of Defense's Unmanned Systems Integrated Roadmap 2005-2030, near-space vehicle appear in the category of unmanned aerial weapon systems. Russia, the United Kingdom, Israel and other countries have also made preliminary research achievements in this field.

Wide Coverage, Low Cost, Long Stay Times, Short Reaction Time – Near-Space Vehicles Have Many Advantages

Near-space vehicles can become the "new favorites" that countries will compete to develop. This is because they can make up for the vast gap between the operational ranges of aircrafts and satellites, and they have key advantages over traditional aircraft in carrying out strategic and tactical tasks.

Near-space vehicles are generally deployed 30,000 meters above the mission area, and their field of view is greater than that of traditional reconnaissance aircraft. In addition, the ionosphere does not interfere with their signals, and they can easily provide high-resolution surveillance of a very wide area. The United States has proposed a high-altitude surveillance and spy airship program in

its "Integrated Sensor is Structure (ISIS)" program. The goal is to develop a surveillance airship that can fly at an altitude of more than 20,000 meters and carry out high-altitude reconnaissance missions in any area of military activity.

In fast-paced modern warfare, near-space vehicles can be deployed quickly and efficiently at any time, and they can be easily maneuvered in accordance with operational requirements. They also enjoy stable flight conditions, and there is only a small time delay in the transmission of data.

Another benefit of near space is that the air flow is smooth and the environment is stable. This enables most near-space vehicles to float over the mission area for a long time with the help of natural energy sources such as wind, atmospheric buoyancy, and solar energy. Energy consumption is therefore low. For instance, the Stratobus Autonomous Stratospheric Airship proposed by France would be able to carry as much as 1000 kilograms and continuously carry out surveillance missions in near space for up to five years.

How can near-space vehicles remain intact during missions that last for several years? For one, near-space vehicles are relatively smooth in shape and do not reflect a great amount of radar or infrared light, making them difficult to detect or to lock on to. In addition, modern combat aircraft and surface-to-air missile systems can barely reach near space, so they pose no threat to near-space vehicles. These factors enable them to operate safely and stably for a long time.

Reconnaissance, Surveillance, Communication Relays, Space Confrontations, Resupply Missions – Near-Space Vehicles Have Unparalleled Military Value

The emergence of near-space vehicles not only utilizes the connection between the air and space, but also provides new ideas for air defense and anti-missile combat. If equipped with weapons platforms, near-space vehicles will enable more rapid attacks on a global scale, greatly accelerating the pace of war.

With regard to information wars, since the battlefield environment changes rapidly, it is particularly necessary to monitor the situation on the battlefield in a dynamic fashion. Near-space vehicles can carry advanced radars, which can constitute a near-space monitoring platform and provide monitoring around-the-clock in all weather conditions. The best example of this is the [Lockheed Martin] SR-72 hypersonic vehicle planned by the United States, which will have intelligence, reconnaissance, surveillance, and strike missions. It is expected to achieve its first flight in 2023 and to begin service in 2030.

Attaining information superiority in future wars is becoming increasingly critical. In the complex electromagnetic environment, it is of great significance to ensure stable and safe communications to preserve the initiative in a war. At present, military communication signals are vulnerable to interference, and this has always had implications for military combat capabilities. A communication platform based on equipment carried by near-space vehicles would be able to function for an extended period of time and provide over-the-horizon communication capabilities, while simultaneously providing stronger and more secure signals than satellite navigation communications can.

In addition, near-space vehicles can play another important role: carrying out space-based countermeasures and strikes. Expanding countermeasure and jamming platforms to near-space vehicles would facilitate suppressive and deceptive jamming operations, granting a strong electronic countermeasures advantage. If a near-space vehicle is used as a weapons platform, it can strike targets anytime and anywhere in a large coverage area. For example, the [Boeing] X-37B orbital test vehicle integrates multiple functions. It can fly at supersonic speeds in the atmosphere, and it can also enter orbit, giving it tremendous advantages over other aircraft and spacecraft.

Endnotes:

[1] 81.cn/jskj/2018-03/30/content_7988486.htm, March 30, 2018.

In An Article Nine Years Ago, China's People's Liberation Army (PLA) Expert: Airships Have Great Military Potential – They Can Be Used For Air Defense, Border And Battlefield Monitoring, And Communications Missions

February 15, 2023 | China | Special Dispatch No. 10494

On November 21, 2014, an article titled "Aerostats Have Great Military Potential" was published in the 10th edition of China Youth Daily.[1] The article was written by Wang Peng, an expert from the PLA's Air Force Engineering Academy, and it asserts that airships are safe and cost-effective aircraft that can be used by militaries to efficiently carry out air defense, border and battlefield monitoring, and communications missions. The article lists the many advantages of using airships for military operations and provides information about how the militaries of other countries – including the United States, Israel, and South Korea – do so.


美国中亚反恐战争的功与过

Below is the text of Wang Peng's article:

"Aerostats Are Currently Used By The Militaries Of Many Countries For Battlefield Surveillance In Wartime And For Ordinary Border Control"

"Recently at the 10th Zhuhai Air Show, a white balloon attracted the attention of many spectators. It is a new type of aerostat developed by China Electronics Technology Group Corporation. The 32-meter-long, 1,600-cubic-meter, helium-filled aerostat, which is the first of its kind to be exhibited at a world class air show, can float at an altitude of 1,000 meters for 15 days and nights. It can even withstand typhoons of category 10 and thunderstorms. From the sky, it can monitor real-time developments on the ground 24 hours a day, covering 360 degrees.

"Aerostats have a history of more than 200 years. According to the basic working principle of aerostats, they can be divided into airships, tethered balloons, and hot air balloons. Compared with aircrafts, aerostats have the unique advantages of low operating costs, long stay times at a fixed point in the air, large load capacities, low noise, low energy consumption, a high degree of safety, and a high cost effectiveness.

"Therefore, as an economic, safe, environmentally friendly means of transport with little restrictions on air

routes, all kinds of aerostat have been widely used in civil transportation, environmental monitoring, remote sensing communication, emergency rescue, public safety, and other fields.

"When our country held the Shanghai World Expo in 2010, for the first time, an aerostat – a tethered balloon in this case – was used for air security, and it played an important role in the safe operation of Expo Park.

"In addition, many performance advantages of aerostat make them very widely used in the military. Tethered aerostats, such as inflatable balloons, were used for aerial surveillance as early as the 1870 Siege of Paris by Prussian forces. The true use of aerostats for independent surveillance began in the 1970s. At the time, the United States mainly used them to monitor flight activity over Cuba across the Caribbean Sea.

"Aerostats are currently used by the militaries of many countries for battlefield surveillance in wartime and for ordinary border control. According to a Flight Global article from September 12, 2014, the Israeli military has been greatly expanding its use of aerostats by loading them with multiple sensors. Indeed, during its [Operation Protective Edge] offensive to defend the Gaza border in July and August [of 2014], Israel deployed 13 aerostats along the border to monitor border movements remotely and transmit video and other intelligence data using a two-way secure communications line."

"It Can Be Predicted That Aerostats Will Play An Increasingly Important Role In The Future Battlefield"

"Since the shelling of Yeonpyeong Island in December 2010, the South Korean military has decided to introduce aerostats to monitor its northwestern islands and the North Korean military around the clock. According to an April 2 [2014] report by Yonhap News Agency, the South Korean military will spend 24 billion won (about RMB 140 million) on its aerostat project to buy blimp bodies, optical cameras, radars and ground control equipment, and plan to deploy them to combat in late 2014 or early 2015.

"With the development of related technologies in construction, materials, control, and payload, the military applications of aerostats will be even broader. For example, the U.S. military has incorporated the aerostat system into its own air defense detection network. In peacetime, it performs the tasks of air patrol, communication, environmental monitoring, and early warning of low-altitude targets such as cruise missiles. In wartime, it is used for the front air defense and protection of key targets in the theater. Among them, low altitude early warning and communication are the two most important application fields.

"In 2012, Raytheon conducted a Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS) validation test in Utah. The system consists of multiple aerostats: one lifts a surveillance radar to an altitude of 10,000 feet (giving it a range of hundreds of kilometers), others carry fire-control radars, and all of them carry communications and sensor systems.

"Tests have shown that the system can hover in the air for up to 30 days to detect, track, and locate multiple threat targets, effectively thwarting attacks by enemy cruise missiles, low-altitude manned/unmanned aerial vehicles, and other targets. More importantly, the tasks undertaken by this system usually required four or five fixed-wing aircrafts to complete in the past, and the use of aerostats only requires a small number of staff, very low fuel consumption, a minimal maintenance workload, and much lower operation costs than those of fixed-wing early warning control aircraft. Hence, this system has a very high combat-effectiveness/cost ratio.

"In the communications sector, Lockheed Martin is developing a high-altitude long-endurance unmanned

aerostat system for the U.S. Army Space and Missile Defense Command/Army Strategic Command. The system can be suspended at an altitude of 19,880 meters as a long-term high-altitude wireless communication signal relay platform, extending battlefield communication distances and enhancing the reliability of communications. It can also be used to improve communication capabilities of ground forces in remote areas.

"At present, the nearby space where aerostats conduct their main activities has become a new strategic commanding point that many countries are competing to seize. Developed countries – including the United States, Russia, Britain, Germany, Japan and so on – are increasing their efforts in the exploration and development of nearby space and have carried out the development of various kinds of nearby-space controllable aerostats. It can be predicted that aerostats will play an increasingly important role in the future battlefield."

Endnotes:

[1] Zqb.cyol.com/html/2014-11/21/nw.D110000zgqnb_20141121_3-10.htm, November 21, 2014.

Chinese Think Tank: U.S. Violated International Law By Shooting Down A Civilian Aircraft 'In Distress'

February 13, 2023 | China | Special Dispatch No. 10485

On February 10, 2023, the Chinese think tank Internet of Things published an article titled "Did the U.S. Spend $400,000 Shooting Down the Civilian Balloon in Order to Crack China's Key Air Technology?"[1] The article provides an overview of the Chinese spy balloon saga, echoing Chinese government narratives about the balloon's civilian research mission, and it asserts that the U.S. violated international law by shooting down a civilian aircraft that entered its airspace "in distress" due to force majeure. In addition, the article suggests that the U.S. government is refusing to return the debris from the balloon to China because it wants to analyze "key" Chinese technologies on it. It also provides information about advanced Chinese airship technologies that are in development and points out that the U.S. spent at least $400,000 to shoot down the "wandering balloon.". Following are excerpts from the article:

The U.S.'s Downing Of The Balloon Whose "Fanciful Drift Has Caused Such Uproar" Was "A Clear Violation Of The Convention on International Civil Aviation"

"It has been a week since an unmanned Chinese airship strayed into U.S. airspace. According to the latest information, the United States sent its most advanced F-22 Raptor fighter jets to shoot down the balloon and said that it refused to return the balloon's debris and equipment to China. Despite China's repeated claims that the unmanned civilian airship's straying into U.S. airspace was an accident of force majeure, the U.S. overreacted by sticking to its 'Chinese conspiracy' theory, calling it a 'spy balloon' used to spy on U.S strategic sites, and it overreacted by shooting it down. This act is a clear violation of the Convention on International Civil Aviation (Chicago Convention).

"Why is the United States so worried about a 'balloon' whose fanciful drift has caused such uproar? Why did the U.S. refuse to return the equipment after shooting down the balloon? Senate Majority Leader Chuck Schumer (D) has said that the United States can collect the equipment and analyze the technology used by the Chinese military. What is the key technology that the U.S. is trying to find out from this balloon, after all the unreasonable technological restrictions it has imposed on China?

"The U.S. Put On A One-Man Show With The Wandering Balloon

"Over the past week, the case of the 'Wandering Balloon' has attracted a lot of attention in the United States. On February 2, Pentagon spokesman Patrick Ryder said that the U.S. government had detected and was tracking a high-altitude surveillance balloon that has been flying over the continental U.S. for several days. U.S. media reported that the balloon even came close to top-secret U.S. nuclear missile bases.

"The next day, a spokesperson from China's Foreign Ministry responded: 'The airship is from China. It is a

civilian airship used for research purposes, primarily meteorological. Affected by the Westerlies and with limited self-steering capability, the airship deviated far from its planned course.'

"Eventually, the United States sent in its most advanced F-22 Raptor fighter jet and fired an AIM-9X Sidewinder air-to-air missile to shoot down the balloon. In response to this action, Tan Kefei, China's Ministry of National Defense spokesman, once again stated on February 5, through an official ministry account on WeChat, that this is a civilian scientific research balloon that is mainly for meteorological research.

"The U.S. military attack on our unmanned civilian airship is a clear overreaction. On the afternoon of February 7, Charge d'affaires Xu Xueyuan of the Chinese Embassy in the United States was ordered to lodge solemn representations with senior officials of the U.S. State Department and the White House National Security Council over the U.S. attack on a Chinese unmanned civilian airship.

"John Kirby, a spokesman for the U.S. National Security Council, said that the U.S. had no plans to return pieces of the balloon or its equipment to China. In response, Chinese Foreign Ministry spokesperson Mao Ning said, 'The airship does not belong to the U.S. It belongs to China.' She also said that the Chinese government will continue to resolutely safeguard its legitimate and lawful rights and interests.

"In fact, if the airship had not deviated significantly from its intended course, there would have been no need to enter the United States. After completing its civilian mission, the balloon would either send information back home via satellite or drop its payload on a planned route to a point in the ocean for recovery. The balloon itself would eventually descend and sink into the sea.

"We don't know exactly why the U.S. has taken these steps. Zhu Feng, dean of the School of International Studies at Nanjing University, said the balloon incident highlighted the long-term lack of mutual trust between China and the US, and that anti-China sentiment in the U.S. has kidnapped Sino-U.S. relations, which will make it harder to effectively manage bilateral relations.

"The Meteorological Research Blimp Was Innocent

"Now back to the subject of the event, the unmanned airship. At present, there is no further information about the unmanned weather airship shot down by the United States, except that it is measured to be about 30-40 meters in diameter and flying at an altitude of 20 kilometers. Photos posted online show the unmanned airship in the shape of a sphere, with a pod that consists mainly of engines, propulsion and fins, and no human cabin. Videos of the airship being shot down shows it quickly deflating and turning into a 'line' – it is presumably a soft airship or a tethered balloon without an internal frame.

"Photos of the Chinese balloon released by the U.S. show that the balloon has solar panels, which may be used to power the equipment on board – a common way for large balloons to be powered. But the unmanned airship was spherical rather than streamlined for flight, and it does not have a large propulsion system or directional control system, which means it mainly drifts with high-altitude air currents and has limited ability to maneuver.

"In addition, according to relevant meteorological reports, Earth has multiple atmospheric circulations due to the uneven heating of the sun and the deflection force exerted by its rotation on the moving air currents. It is not impossible that a balloon could travel from Asia to America in a particular season. This also proves from one aspect that the action of the United States to shoot down the airship is not only an overreaction, but also a serious violation of relevant international convention.

"According to the Convention on International Civil Aviation (Chicago Convention), Chinese civilian unmanned airships enjoy the right of distress entry into foreign airspace, including the United States – that is, they may enter foreign airspace without prior notice when affected

by force majeure such as weather. Under the convention, states must also refrain from the use of force against civilian aircrafts in flight. Therefore, the United States should have taken assistance measures to the Chinese civilian aircraft, which was in distress. The use of military force by the United States to attack the civilian airship obviously exceeds the necessary and reasonable limits and violates the rules of international law.

"In addition, instead of taking matters into its own hands by shooting down the airship and removing the wreckage, the U.S. should allow China to assign observers to participate in the investigation of the accident and inform China of the findings in a timely manner. Any measures taken by the United States should respect the various ownership rights of the relevant Chinese enterprises owning the airship. One international law expert has said that if the U.S. cannot prove that the blimp poses a military or related threat, China has the right to demand compensation.

"In fact, weather sounding balloons – unmanned airships used for weather work – are often mistaken for UFOs. A sounding balloon is the carrier of the whole sounding equipment. It carries a radiosonde to the high altitude at the speed of 6-8m/s to detect high altitude meteorological elements...

"The Technological Battle Behind the Unmanned Airship

"Since the U.S. shot down the sounding balloon, there has been much speculation about the identity of the maker of the high-profile unmanned airship. While the exact company that made the airship is yet to be determined, there is no doubt that there is a group of domestic companies capable of building unmanned airships for civilian use. In addition to the well-known company DJI, other companies such as EHang, Zhuzhou Rubber Design and Research Institute, and Parrot are all strong in this field.

"Xu Shunli, the general manager of the Shanghai-based Datian Airship company, said that at present, the domestic sounding balloon is in a R&D stage and has not yet entered the stage of industrialization. In the future, there will be two major development directions for aerostats such as airships. One will be stratospheric airships, and the second will be heavy-duty airships, suitable for unconventional transportation of extremely long, large, or heavy objects. Among these, a stratospheric unmanned airship is a major scientific research project being promoted by China, but no countries in the world have successfully developed and put into official use.

"With the rapid development of solar energy, batteries and artificial intelligence technologies, the design of unmanned stratospheric airships has become possible.

"In terms of domestic research progress, China's self-developed stratospheric Yuan Meng airship made its first test flight in December 2015. According to reports, stratospheric airships can be widely used in land and resources observation, marine monitoring, environmental protection, disaster prevention and reduction, fine agriculture, water conservancy monitoring, geodetic mapping, urban planning and management and other aspects. Stratospheric airships will play an important role in promoting the coordinated regional development, coordinating the development of urban and rural areas, promoting the construction of new socialist countryside, strengthening the conservation of energy and resources and the protection of ecological environment, enhancing the ability of sustainable development, and optimizing the pattern of land development. It is of great significance for promoting the overall development of national economy.

"In terms of international research progress, foreign media has reported that Sceye, a private company in the United States, previously announced the news of stratospheric airship manufacturing. The company chose New Mexico as its stratospheric flight base in the United

States for observation of Earth and for communication. Stratospheric Airships HAPS (High Altitude Platform Stations) developed by Sceye are known to be capable of staying at altitudes of nearly 20,000 meters for long periods of about 65 days, and they can be used to monitor crop conditions, climate change, and personnel transport. Notably, the airship could also improve communication links between drones, aircrafts and satellites, as well as extend broadband.

"Final Words

"Notably, the unmanned Chinese airship was shot down by an AIM-9X missile fired by two U.S. F-22 fighters only after it had descended to an altitude of 20,000 meters. The F-22, known as the world's strongest fifth-generation stealth fighter, has been in service for more than 20 years without a combat record. However, it shot down a Chinese airship at an altitude of 19,800 meters this time, creating the highest altitude record of the U.S. military ever shot down an aircraft.

"Media reports said that while the U.S. military claimed that its fighter shot down the Chinese airship with only one missile, local witnesses said that the F22 fighter jets fired two or three AIM-9X missiles before the last one successfully hit the target. It is also said that the cost of this type of missile launched by the F-22 is 400,000 dollars per missile. Some Chinese netizens called the U.S. a 'loser.' But while there are no exact numbers, China's unmanned airship will certainly not be cheap. There is no point in comparing costs here."

Endnotes:

[1] Iot101.com/mobile/news/6754.html , February 10, 2023.

Deflating China's Aggression'

By Heino Klinck*

February 8, 2023 | China | MEMRI Daily Brief No. 453

History was just made and we were all able to witness it live on television. Not since Imperial Japan's attack on Pearl Harbor has the American military shot down a foreign aircraft in U.S. airspace. The recent Chinese violation of U.S. airspace and territorial integrity by directing a surveillance balloon over almost the entire length of the continental United States is the latest example of China's aggressive actions against the international rules-based order.

On the eve of Secretary of State Blinken's departure for Beijing, a massive Chinese surveillance balloon was spotted high in the Big Sky country of Montana. The Secretary's trip was highly anticipated as an opportunity to potentially reset the relationship between the United States and the People's Republic of China. President Biden and General Secretary Xi met on the sidelines of the G20 meeting in Bali in November 2022. Later that same month, Secretary of Defense Austin and Minister of Defense Wei held discussions in Cambodia during the ASEAN Defense Ministers' Meeting-Plus (ADMM+). Both of these engagements were touted as setting the conditions for a productive meeting between America's senior diplomat and Chinese senior leaders including General Secretary Xi himself.

This is but the latest example of provocative actions by the CCP regime in Beijing flouting all norms of international behavior. The timing of the balloon's intelligence collection mission comes after a year of dangerous People's Liberation Army (PLA) operations against U.S. and allied aircraft in international airspace.

- February 2022, a PLA Navy Luyang class destroyer used a military-grade laser to illuminate a Royal Australian Air Force (RAAF) P-8 Poseidon maritime patrol aircraft in international airspace over the Arafura Sea northeast of Darwin, Australia.

- In the Spring of 2022, the PLA Air Force repeatedly "buzzed," within 20 to 100 feet, Canadian CP-140 Aurora maritime patrol aircraft involved in enforcing United Nations Security Council resolutions (UNSCR) against North Korea in international airspace. Notably, these resolutions were ostensibly supported by the PRC.

- In May 2022, a PLAAF high performance fighter intercepted another Australian P-8 in international airspace over the South China Sea. Most ominously, the J-16 fourth generation fighter released chaff and flares in the flight path of the P-8.

- In December 2022, a PLA Navy J-11 unsafely maneuvered within 10 feet of a U.S. Air Force RC-135 Rivet Joint reconnaissance plane flying in international air space over the South China Sea.

These repeated episodes of Chinese provocations and dangerous behavior are not new. To put these incidents into historical perspective, they are a continuation of PRC counter-normative behavior that has been occurring for decades. Most famously perhaps was the April 2001 incident in which a Chinese jetfighter literally collided with a slow-moving turboprop U.S. Navy EP-3 signals reconnaissance aircraft over international waters south of Hainan Province. This dangerous intercept resulted in the unfortunate death of the Chinese pilot, Wang Wei, who is ignominiously referred to as "Wrong Way" given his recklessness, and the illegal detention of the U.S. crew.

On January 11, 2007, the Chinese conducted an anti-satellite (ASAT) missile test by shooting one of its weather satellites utilizing a kinetic kill vehicle launched on a multi-stage solid fuel missile. Despite international condemnation, the PRC did not actually acknowledge the ASAT test until January 23. This Chinese ASAT test caused the largest amount of space debris in human history by creating more than 2,000 trackable-sized pieces with approximately 150,000 debris particles endangering space travel, the International Space Station, and satellites from every country in the world.

Over several days in March 2009 and in the international waters of the South China Sea, the USNS Impeccable, an unarmed ocean surveillance ship, was dangerously harassed by ships of the Chinese navy, the Chinese Bureau of Maritime Fisheries, the Chinese State Oceanic Administration, and Chinese flagged trawlers, as well as a Y-12 aircraft.

Moreover, the Chinese have used PLA, Coast Guard, and commercial vessels to try to forcibly coerce all of their neighbors in the South and East China Seas to accept excessive and unlawful Chinese territorial claims. Beijing even rejected the 2016 ruling of the international tribunal in the Hague that ruled that China had violated the Philippines' sovereign rights in its exclusive economic zone by interfering with Filipino fishing and petroleum exploration, building artificial islands as well as other destabilizing and illegal activities within Filipino waters.

In short, the Chinese balloon over America is illustrative of the consistently upward trajectory of China's aggression, adventurism, and egregious disregard for the rules-based international order and, of course, a clear threat to U.S. national security. While a positive, stable relationship between the U.S. and the PRC should be everyone's objective, it cannot be pursued with blinders on completely disregarding American interests and values. Pollyannaish optimism for Chinese cooperation on climate change, fentanyl production, global health, and mutually beneficial economic growth can no longer ignore long-term CCP intent. Namely, revising the international order to favor Beijing's authoritarian system to facilitate Xi Jinping's paramount goal of the so-called "great rejuvenation of the Chinese nation by 2049."

If realized, this CCP strategic objective will come at the expense of liberal democratic ideals, not to mention the legitimate national security interests of most countries in the Indo-Pacific and beyond. The United States should prioritize collaboration and cooperation with its allies, partners, and like-minded countries worldwide to thwart China's aggression in all domains. The Biden Administration has made some progress in this regard recently. However, before the U.S. secretary of state unintentionally assumes the role of an ardent suitor willing to engage China on its terms, there is still a lot of work to be done to ensure a "floor" in the relationship is actually built on solid ground and not the illusion of possible Chinese cooperation.

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Government-Sponsored Chinese Academic On Unmanned Spy Balloons: We Have Been Using Unmanned High-Altitude Blimps To Gather Intelligence For A Long Time

February 8, 2023 | China | Special Dispatch No. 10475

On December 22, 2022, a video was posted to the Chinese Haokan video platform in which an unnamed Chinese academic presented as an associate professor of transportation engineering and a special researcher at Huaqiao University said that China has been developing high-altitude blimp-based reconnaissance and surveillance systems for "a long time." He said that the 30,000-meter flight ceiling of unmanned reconnaissance airships protects them from modern air defense systems, that they can serve as a highly effective "eye in the sky," and that they can be particularly useful in detecting stealth aircraft, which are most easily detected from above. He also said that China deployed its first "near-space" airship, the Yuan Meng as early as 2015, and that China's airship technology is no less sophisticated than that of the U.S. In addition, he said that China's fleet of airships includes the AS-700 manned airship and the Golden Eagle unmanned airship. Moreover, he said that it is possible that Chinese intelligence blimps have served a role in helping China detect American incursions into the South China Sea, and that in 2019 U.S. satellites photographed unmanned Chinese airships in that region.

To view the clip of the Chinese government-sponsored video on unmanned high-altitude airships, click here.

"China Began To Lay Out A Super High-Altitude Anti-Stealth Reconnaissance System A Long Time Ago" Which Includes "Various Types Of Anti-Stealth UAV's" And "High-Altitude Airships Equipped With Anti-Stealth Pods"

Chinese academic: "So the U.S. Air Force has been hoping to develop a high-altitude blimp with solar charging capabilities for carrying reconnaissance equipment for high-altitude reconnaissance missions. After all, with the air defense capability of most countries, they cannot deal with this 'eye in the sky' with a flight ceiling of 30,000 meters. Therefore, this type of reconnaissance airships can be used like the spy planes in the Cold War era, as if conducting reconnaissance in no-man's land.


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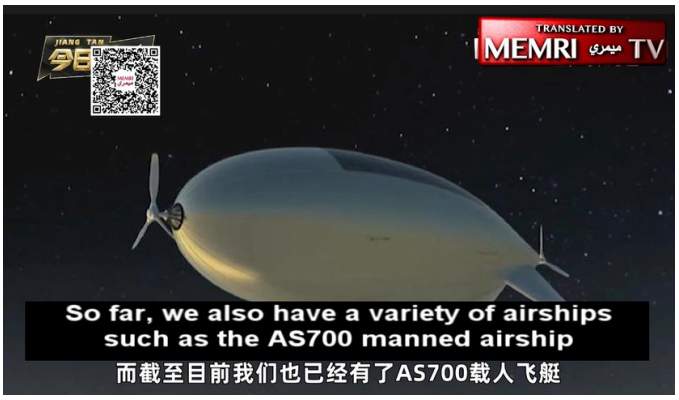
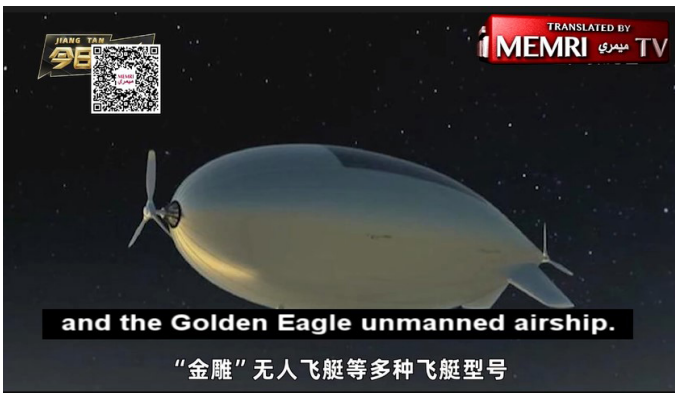
毕竟以绝大多数国家的防空能力来说

"It is worth mentioning that according to the original concept, the U.S. military also designed and developed a large transport airship capable of transporting main battle tanks. But considering the cost and difficult of [America's] research and development, so far, the U.S. military has only developed a reconnaissance blimp, used to spy on other countries from a distance.

"At this point some viewers might ask, do we have such good equipment? The answer is not only yes, but also that our technology is not inferior to that of the United States. As early as 2015, we flew the first Chinese near-space airship, the Yuan Meng. So far, we also have a variety of airships such as the AS700 manned airship and the Golden Eagle unmanned airship.





China's High-Altitude Airship Technology "Has Long Been Applied To Places We Do Not Know"

"It can be said that in the field of high-altitude airships, China is already the leader together with the United States, and the related technology has long been applied to places we do not know. For example, in 2019, U.S. satellites photographed unmanned Chinese airships parked on the ground in the South China Sea region.

"On this basis, at the very least, we need to understand one thing: relying solely on land reclamation is not enough to build a complete intelligence gathering and control system in the South China Sea. Considering that every time the U.S. military enters the South China Sea we catch them red-handed, who can guarantee that China's high-altitude airships have not made contribution in these areas? Right? Well, that's it for this episode, thank you for watching."

April 2022 Paper By China's People's Liberation Army: Military Can Use Balloons To Test Enemy Air Defenses; Following U.S. Downing Of Spy Balloon, Chinese Government Media Confirmed This

February 7, 2023 | China | Special Dispatch No. 10471

In April 2022, the China's People's Liberation Army (PLA) published a paper that focused on "special aircraft" and concluded that balloons could be used by the military to test enemy air defenses. Following the U.S.'s February 4, 2023 downing, over the Atlantic Ocean, of the Chinese spy balloon that had crossed over the country over the course of a week, official Chinese media said that the incident confirmed that airships can be part of China's air strategy and mocked the U.S. for, it said, spending spent over $1.4 million to pop a $50 balloon. Social media users also commented on the incident; a Weibo user wrote a post titled "An Unmanned Airship Causes The Collapse of Myth of the North American Air Defense System."

The following are excerpts from the PLA article, from official Chinese media, and of the Weibo user's post.

PLA Paper From April 2022: Balloons Can Be Used To "Suppress Enemy Air Defense Early Warning Systems And Shield Air Attack Forces To Carry Out Their Missions"

A paper published in April 2022 by People's Liberation Army (PLA) focused on "special aircraft" and concluded that one of the useful military applications of balloons would be to "suppress enemy air defense early warning systems and shield air attack forces to carry out their missions."[1] It stated:

"(Balloons can) induce and mobilize the enemy's air defense system, providing the conditions for the implementation of electronic reconnaissance, assessment of air defense systems' early warning detection and operational response capabilities.

"In response to the growing threat posed by ground-based air defense systems to air attack forces, it is necessary to use cheap air balloons to create active and passive interference to effectively suppress enemy air defense early warning systems and shield air attack forces to carry out their missions."

Chinese Military Expert: The Incident Confirms That Airships Can Become Part Of China's Air Strategy

On February 5, after the balloon was shot down, the official Chinese media Guancha.cn published an article

titled "The Airship Was Shot Down And Has Fulfilled An Amazing Strategy Research Article Published Nine Years Ago."[2] The article was written by Wang Xiangsui, a retired senior Chinese Air Force colonel who is currently a professor at Beihang University, the director of the Center for Strategic Studies, and the head of the Academic Research Department of the National Security Policy Committee of the China Society of Policy Science. Wang has long worked on military and strategic issues, and he co-authored, with General Qiao Liang, a famous book titled Transfinite Warfare.

In the article, Wang wrote that the incident confirms his contention in a 2014 paper titled "Innovating Air Defense Systems: Long Stays in the Air and Instant Strikes," in which he wrote that "airships that can stay in the air for long periods of time hold the best hope of becoming the core of a new generation of air defense systems."

Notably, the key research conclusion in his 2014 paper was: "Compared with the F-22 fighter jet of the United States, which has achieved technical success but failed in cost and effectiveness ratio, the technology price of airship is relatively lower, the effective load is larger, and can achieve lasting stay in the air. It is also a typical dual-use technology of military and civilian, so it can become the best choice for China to build its domestic air defense system. In fact, the United States is a typical country that has developed airship technology and used airships for military reconnaissance for a long time."

Official CCP Website: The U.S. Spent Over $1.4 Million To Pop A Civilian Balloon That Costs $50 Online

The CCP's official Sina.com website published an article titled "The U.S. Spent 9.55 Million Yuan [$1.47 million] to Blow Up China's Stray Balloon; The Balloon Cost Only 350 Yuan [$50] on Taobao.com."[3]

According to the article, the downed Chinese balloon was developed by Zhuzhou Rubber Institute in Hunan Province, which has developed high-altitude balloons that can fly up to 48,000 meters. The article states: "On Taobao's Zhuzhou Rubber Institute online store, a balloon that can fly 30,000 meters in the air costs only 350 yuan [approximately $50]. The Chinese airship that strayed into the U.S., equipped with some scientific equipment, was certainly more expensive, but probably not too expensive. It has to be said here that 'Made in China' is impressive in bringing so low the cost of high-altitude balloons. Reports say that it took three AIM-9X Sidewinder missiles from an F-22 stealth fighter jet to bring the balloon down. One AIM-9X costs $472,000, costing about $1.41 million for three. The United States spent more than $1 million to pop a civilian balloon. Is this for self-defense, or to win back a little bit of face?"

Weibo User: The Incident Indicates The Collapse Of The Myth Of America's Air Defense Capabilities

On February 6, 2023, a Guangdong-based Weibo user named "Bullshit eggs – 胡扯鸡蛋" published a post titled "An Unmanned Airship Causes The Collapse of Myth of the North American Air Defense System."[4] The post stated:

"This time the balloon took a route from Japan, the Aleutian Islands, Alaska, Canada and finally to the United States, and not over the Pacific Ocean, but over the Arctic route and over the entire air defense system of North America.

"The off-course airship accidentally tested the quality of North American airspace defense systems. It wasn't until one pilot reported the airship that the Americans realized the quality of their so-called North American Airspace Defense was losing its underwear.

"This incident also shows that usually the U.S. air defense altitude is not more than 30,000 meters. The most advanced F-22 carries three air-to-air missiles, of which only one hit and shot down the balloon, while the other two missed. The funny thing is that when the video clear-

ly showed multiple missiles being fired, the U.S. media pretended not to see it, saying that one missile was fired and the balloon was shot down.

"At first, the U.S. Air Force was not sure it could shoot the balloon down until the balloon was lowered to 18,000 meters, when the Americans began to show off, one F22, four F15s, two air tankers, and an aircraft carrier, three missiles, which brought down the unmanned airship."

Endnotes:

[1] Jcdz.cbpt.cnki.net/WKE/WebPublication/paperDigest.aspx?paperID=c26a2604-a3af-4f39-9dc0-0f58dd3f44e9#.

[2] User.guancha.cn/main/content?id=928767.

[3] Finance.sina.cn/2023-02-06/detail-imyeurri3136644.d.html?from=wap.

[4] Weibo.com/1864856880/MrOiy5sEc.

Chinese Military Use Of High-Altitude Airships Revealed In Chinese Social Media Videos, Published Weeks Before U.S. Shot Down 'Spy Balloons'

January 03, 2023 | China | MEMRI TV No. 10151

Source: The Internet - "Bao Yuer's Qin Wuyan on Bilibili"

During the recent "spy balloon" incident over North America, the Chinese government claimed that the balloons were for "weather purposes." However, Chinese social media videos posted weeks prior to the incident reveal that China had been developing high-altitude airships for military and reconnaissance purposes.

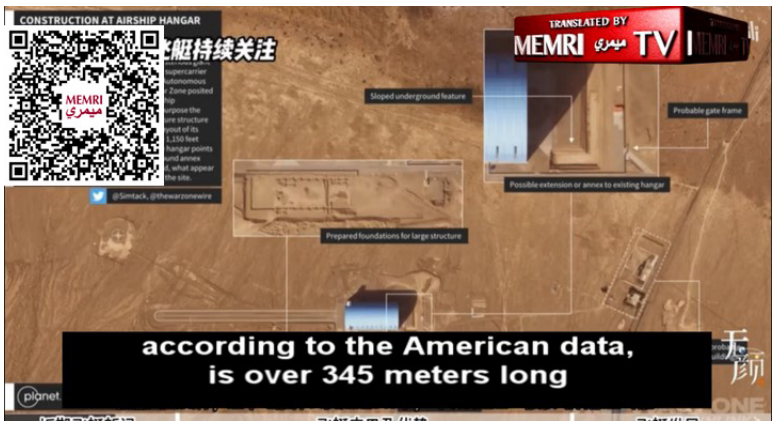
The following video specifically detailed the advantages of using airships for reconnaissance, communication relay, and early warning. It emphasized that airships are difficult to detect and destroy, making them an effective tool for detecting cruise missiles and low-altitude radars. The video concluded that airships have broad military and civilian applications, which major powers are competing to acquire.

The trajectory of the "spy balloons" that the U.S. shot down closely aligns with the path outlined in this explicit military strategy. These revelations suggest that China's military was experimenting with high-altitude airships long before the "weather balloon" incident occurred.

Narrator: "On December 298, 2022, the AS700, a domestically developed manned airship named 'Xian Yun [Auspicious Cloud]' successfully completed its maiden voyage over the banks of the beautiful Zhang River, following its airworthiness certification. The Aviation Industry Special Flight Institute developed this civilian manned airship.

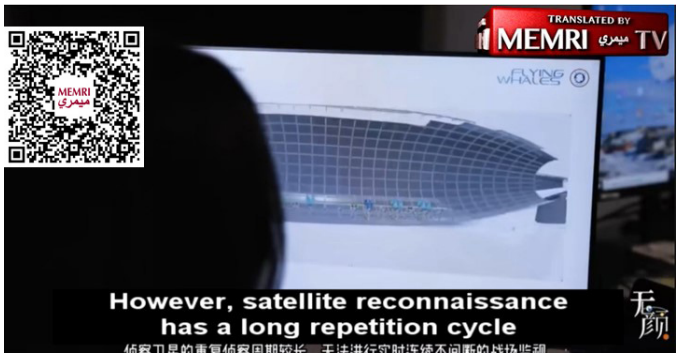
"Some internet users believe that China's civilian manned airship is backward technology, something that others no longer want to deal with. If that's the case, why did the mysterious flying object that appeared in the sky near the South China Sea a few days ago make the U.S. and the Philippines so nervous?

"In fact, the U.S. has always been very concerned about China's super-large airships. Several years ago, a satellite of the American Planet Labs company photographed a huge airship hangar south of Bosten Lake in Xianjiang, which, according to the American data, is over 345 meters long and can accommodate an entire nuclear-powered aircraft carrier.

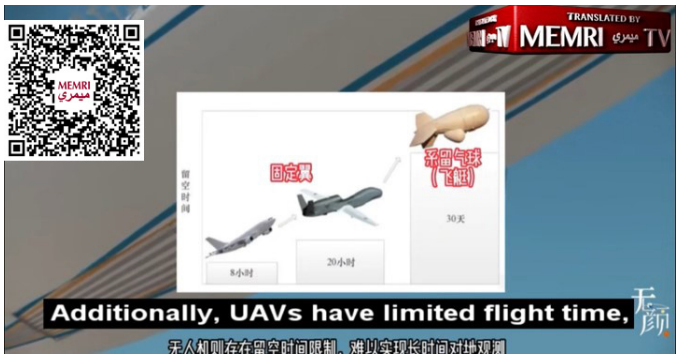


"In 2019, when a tethered balloon deployed over Mischief Reef was exposed, the U.S. was deeply worried. Are airships live targets or ghosts in the air? What makes the U.S. so concerned about Chinese airships? What are the practical applications of airships? Let's delve into these questions."Military application of airships: 1. Reconnaissance: In terms of battlefield reconnaissance and surveillance, traditional methods rely heavily on satellites and unmanned aerial vehicles (UAVs).

"However, satellite reconnaissance has a long repetition cycle and cannot provide real-time continuous monitoring of the battlefield.



"Additionally, UAVs have limited flight time, making it difficult to achieve long-term ground observation. Airships, on the other hand, can be quickly deployed to the airspace near the battlefield to perform long-term, uninterrupted reconnaissance missions. Airships have low observation costs, high spatial and temporal resolution, and a wide observation range. By taking advantage of the Earth's curvature and terrain obstacles, airships can make it difficult for ground-based radars to detect them in a timely manner. Furthermore, airships have significant advantages in detecting cruise missiles and low-altitude radars, and they are not easily destroyed.



"2: Communications relay: Traditional ground-based radio systems are limited by terrain, with a limited transmission range. Satellite transmission also incurs high space loss, making it difficult to achieve small antennas and low-power transmission. This presents many difficulties for border defense communications infrastructure and emergency

communication support in key areas. Airships can serve as high-altitude communication relay platforms in the battlefield, providing broadband high-speed anti-interference and ultra-long-distance communication capabilities for ground, sea, and low-altitude objects. Airships can act as relays for communication between maneuvering units on both sides of high mountains or at sea, thus expanding the effective space for combat operations.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3. Early safety warning: Airships equipped with early warning radars and optical detection devices can form an early warning and detection platform, expand the radar's line of sight, improve the radar's coverage range and detection capabilities for low-altitude and ultra-low-altitude targets. Together with satellites and early warning aircraft, they can form a comprehensive and all-weather early warning and detection system. They can detect and track various incoming targets from long distances, determine their heading, speed, and other information, and identify targets, playing an important role in air defense and missile defense operations.

"Among the various types of airships, stratospheric airships have a higher distance from the ground. In military applications, stratospheric airships can serve as a general-purpose platform with military communication, long-range reconnaissance, intelligence gathering, navigation, early warning, and other functions. They have a line-of-sight that is about twice that of an early warning aircraft, a very large detection range, and extremely high strategic value. As a result, government agencies, military research institutions, and universities in countries such as the United States, Russia, Europe, and Japan have successively launched research and development work on stratospheric airships.

"On July 27, 2011, the U.S. military and Lockheed Martin carried out the first test flight of the HALE-D stratospheric verification craft in Ohio. During the test, when the HALE-D raft rose to an altitude of about 9.75 kilometers, the exhaust valve froze, causing exhaust to fail to discharge in time. The resulting overpressure caused the hull to rupture, and the net buoyancy was insufficient, preventing the craft from continuing to rise. The test was declared a failure. Since then, there has been little public news about the development of stratospheric airships in the U.S.

"On October 13, 2015, China's first new type of near-space platform for military and civilian use, called 'Yuan Meng [Dream Come True]' successfully took off in Xilinhot, Inner Mongolia.

"It was the world's first near-space airship with continuous power, controllable flight, and reusable capabilities. The flight carried its customer's broadband communication, data relay, high-definition observation, space imaging, and air situational awareness systems, and could hover and fly within a designated range of 20 kilometers in altitude.

"In summary, airships have the characteristics of long staying-in-the-air time, strong load-bearing capacity, easy deployment, and low cost-to-efficiency ratio.

"They have important applications in the fields of reconnaissance, communication, and early warning, and are by no means outdated technologies. The development of airships has a wife range of military and civilian application needs, making them a new type of combat effectiveness that major powers are competing to seize."