FLIGHT LINES

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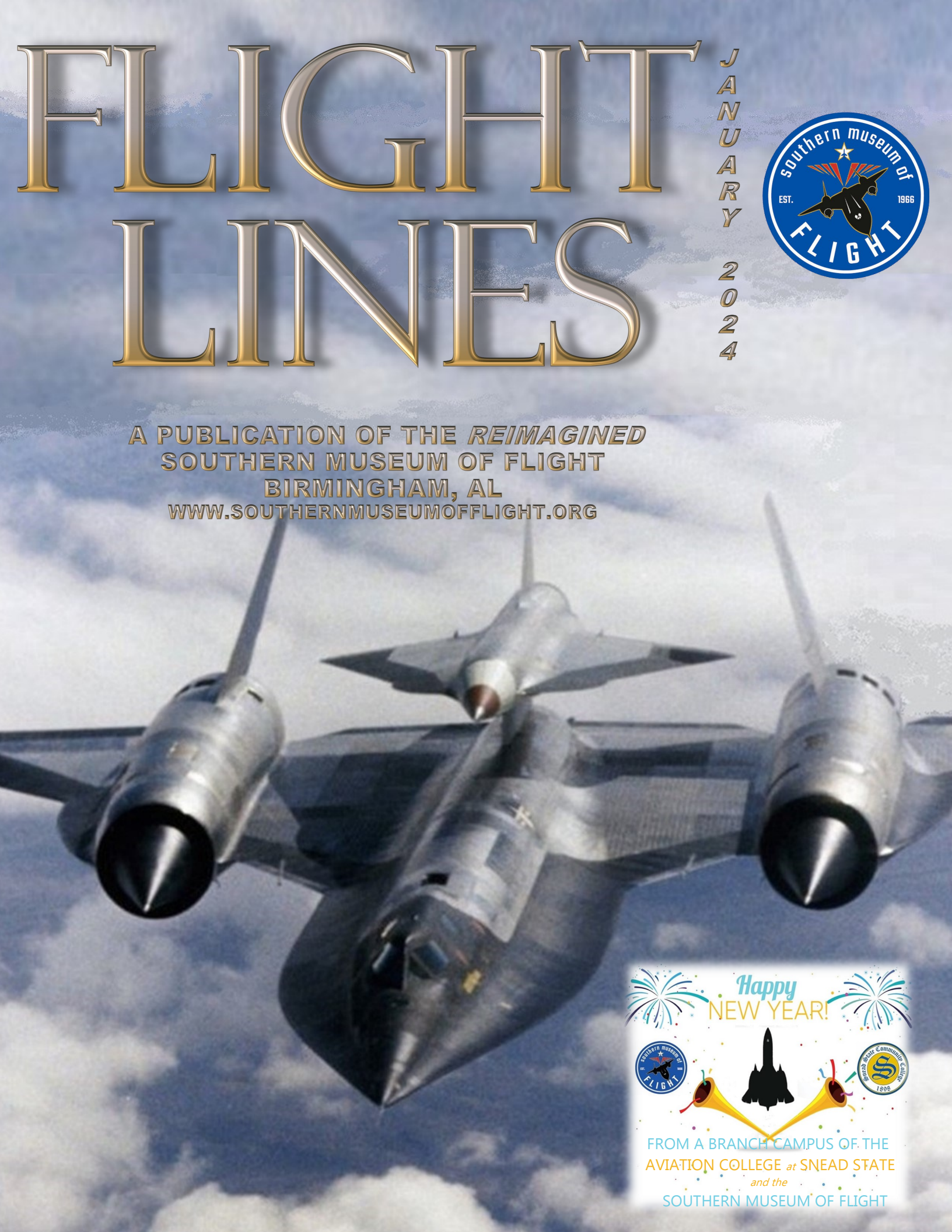


MEET ANOTHER COLD WAR MUSEUM

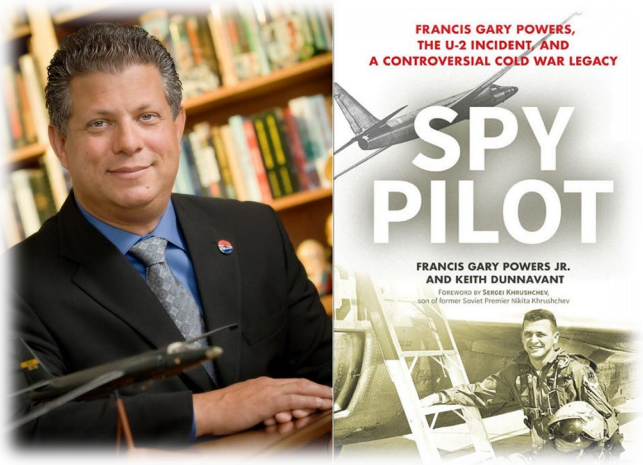
Cold War Museum—Vint Hill Farms, VA

The Cold War Museum is located at Vint Hill, VA in one of the former Vint Hill Farm Station buildings used during the Cold War by the US Army, the National Security Agency, and the Central Intelligence Agency. These agencies used this location to intercept and interpret coded messages. The museum has over $3 million worth of artifacts in its collection that are particularly strong on signals intelligence, image intelligence, aerial surveillance, civil defense, the Berlin Airlift, and the Cuban Missile crisis. It also covers events such as the hijacking of the *USS Pueblo* by North Korea, and the *USS Liberty*, a spy ship the Israelis repeatedly strafed, napalmed, and torpedoed during a ferocious hour-long assault that the Washington Post later described as "*one of the most bloody and bizarre peacetime encounters in US naval history*." The museum also has the largest collection of civil defense items in America, mainly acquired from the former Civil Defense headquarters in Washington

The museum was founded in 1996 by Francis Gary Powers, Jr. (*son of U-2 pilot Francis Gary Powers*), and John C. Welch to preserve Cold War history and honor Cold War veterans. The museum has developed various educational programs and activities to help educate future generations about the Cold War. Museum speakers have visited numerous grade schools, high schools, colleges, and universities in order to teach students about the Cold War. The museum also assists with educational programming for the History Channel, the Discovery Channel, A&E Television Networks, the Learning Channel, C-SPAN, and numerous public access stations. The mobile exhibit on the U-2 incident, the "*Spies of Washington Tour*," and the Cold War Conversations lecture series continue to generate interest and support.

For many Americans, the name Francis Gary Powers doesn't mean anything, but for students of history, particularly of the Cold War era, it is a touchstone of controversy. Francis Gary Powers, Jr. traces events leading up to, and following, the downing of the U-2 spy plane, including the Soviet kangaroo court in which Powers apologized for the flight and was sentenced to ten years confinement. When he was released nearly two years later, in exchange for Soviet spy Rudolf Abel - an event that was the subject of the Steven Spielberg film, "*Bridge of Spies"* - Powers returned to the United States, not as an American hero, but under a lingering cloud of suspicion.

Years after Powers' death, Powers Jr. set out to rescue his father's reputation. As a result of his son's tireless efforts, Powers was posthumously awarded the Silver Star for gallantry by the United States Air Force in 2011, "*an admission that Washington had treated Francis Gary Powers unfairly, that it had left a patriot out in the cold for far too long*."



Spy Pilot is a compelling read of the forgotten heroism of a father and the determination of a son to bring that heroism to light.

The Southern Museum of Flight was privileged to host Francis Gary Powers, Jr. in 2018 who presented an outstanding program and provided great insight in his consulting role in the movie production of "*The Bridge Of Spies*". It was a very well attended program and provided the museum's guests with personal insights into this historical Cold War era - a rare experience! Gary Powers co-author of the book, *Spy Pilot*, Keith Dunnavant, was also hosted by the museum in 2021 and shared more insights into this cold war period.

The Cold War Museum shares a campus with The Inn at Vint Hill, the Vint Hill Craft Winery, the Covert Café, and Old Bust Head Brewing Company. Their website (*www.coldwar.org*) provides extensive information about many interesting aspects of the Cold War.

ESPIONAGE CONCEPT - 60 YEARS AGO

The Museum's D-21B Supersonic Drone

In the 1960s, Lockheed's secret Skunk Works developed the Mach-3, A-12 reconnaissance aircraft for the Central Intelligence Agency (*CIA*) as a follow-on reconnaissance aircraft to the U-2. But after the shooting down of a U-2 aircraft by the Soviet Union in 1960, a number of different concepts were proposed as alternatives. Kelly Johnson, the brilliant aerospace engineer in charge of Lockheed's Skunk Works, along with an elite team of engineers, developed the concept of a long-range drone that used much of the A-12's technology - a technology that was far ahead of its time that even a vivid imagination had difficulty envisioning it.

Previously classified photo of the Lockheed D-21 drone at the Skunk Works manufacturing facility

A full-scale mockup was ready by December 1962, which had already undergone preliminary tests to measure its radar cross-section. Successful wind tunnel tests had also been performed with a modified ramjet engine. The CIA was not enthusiastic about the this drone concept, mostly because the agency was overextended at the time with other covert operations. But the USAF was interested in the D-21 as both a reconnaissance platform and a cruise missile. The CIA finally decided to work with the USAF to develop the new drone. Lockheed was awarded a contract in March 1963 for full-scale development of the D-21.

Flat, triangular, black, featureless except for its odd form as viewed from above, it had a sharply pointed nose recessed into a forward-facing orifice. That's it. No canopy, no cockpit, no weapons. Nothing attached to the outside. Its shape was smooth and simple.

The D-21 was truly a "*drone*", not a remotely piloted aircraft (*RPA*). Its flight plan was programmed into a guidance system and it was initially launched from a mothership launch aircraft at speed and altitude. It flew a predetermined spy mission from 17 miles above the ground and 3-times the speed of sound. It photographed massive swaths of land with incredible detail and resolution. And because of its remarkably stealthy shape, no one ever knew it was there. The experience gathered through the development of this system – to include uncrewed navigation and scramjet /solid rocket booster engine technology enabled the fabled Skunk Works team to consistently progress in these key technology areas.

The D-21 required a mothership to launch given its ramjet engine, which needed to be air-launched at a certain speed to activate. Initially, Lockheed testers used an M-21 (*essentially a variant of Lockheed A-12 aircraft*) to air launch the D-21 drone. The D-21 was designed to carry a single high-resolution photographic camera over a preprogrammed path. Then the camera, equipped with its own parachute, was released for retrieval, after which the drone would self-destruct.

There were three successful launch separations, but on the fourth mission in 1966, a launch accident and collision resulted in that launch configuration being cancelled.

The Museum's GTD-21B Supersonic Drone
One More of the Museum's Impressive Displays

But the program does move forward on its own. The drone is dropped from a lumbering B-52 mothership. The D-21 is then boosted to high altitude and Mach 3+ with a rocket booster. Once at speed and altitude the booster unit drops off and the D-21 drone begins its spy mission. After more than a year of test launches from the B-52 mothership, the D-21 drone was ready for its first operational missions over China. Despite a successful launch, the D-21 drone was lost.

In the middle of 1972, after four attempts at overflying China with the D-21 drone and four mission failures, the program was cancelled. It was *imaginative* - it was *innovative* - it was *ingenious*. But it was *impossible*. So ended one of the most ambitious and outrageous espionage projects in history.

There were 39 - D-21s built and the remaining drones were placed in mothballs and given the designation GTD-21B ("*GT" standing for "Ground Training*). Eleven of the surviving D-21Bs are now on display at military and aviation museums in the United States. Unfortunately, the wreckage of a twelfth D-21 is on display at the Chinese Aviation Museum in Beijing.

Our museum's display drone (*s/n 69-0539*) being one of the last D-21s produced, was formerly on display at the Museum of Aviation at Robins AFB in Georgia prior to arriving at its new home here at the Southern Museum of Flight in 2017.

COLD WAR NEWSWORTHY

What Is This Cold War Relic ?

Shown above is one of 256 now-abandoned satellite calibration markers placed in the Arizona desert by the USAF and the CIA during the Cold War (1947-1991). The concrete markers helped calibrate spy satellites that were used to take pictures over Russia and China from 1959 to 1972. Due to the technology of the time, these satellites required a system of fixed points to focus their lenses on, so a series of huge concrete targets were poured throughout the Arizona desert by the US Army Map Service, which leased the land ostensibly for office space. *Photographed in Casa Grande, AZ*

Masters of the Air

Available to watch on Apple TV+
Release Date - January 26, 2024

Much like its companion shows, *Band of Brothers* and *The Pacific*, ***Masters of the Air*** will be set during World War II and will showcase the events from the perspective of the 100th Bombardment Group of the US Army Air Forces.

Visit The "Mother Ship" Cockpit

With the app, **Cockpit360^0**, your gateway to aviation can be right in the palm of your hand.

Climb aboard some of the most famous and unique aircraft ever built. ACI Cockpit360 allows you to take virtual cockpit, flight deck, and cabin tours from the famed P-51 "*Mustang*" to the M-21 "*Mothership*" featured in this edition of Flight Lines. Cockpit360^0 includes more than 75 aircraft from various museum collections allowing users to immerse themselves in an experience few can achieve in person and the app is available through the Apple and Google Play stores.

The cockpit, given it is the human interface to an aircraft, often times is not able to be "*visited*" by museum patrons. Thus, the ability to visually visit various historic aircraft interiors enhances their museum experience.

Lockheed M-21 Cockpit

Cockpit360^0 was developed by an active volunteer at the Heritage Flight Museum, located at the Bellingham (*WA*) International Airport. Often referring to it as the best, non-paying job, he's ever had, Lyle Jansma, owner of ACICockpit360^0, currently serves as the official museum photographer with the opportunity to shoot pictures of vintage aircraft that span over 60 years of aviation history.

A Wrecked D-21 Drone In A Chinese Museum

Only four operational D-21 flights under the code name, *Senior Bowl*, were made over the People's Republic of China before the program was canceled in 1971. The D-21s were carried by B-52s launched from Guam. Their target was China's nuclear test site at Lop Nor. All failed. The first failure was due to a D-21 guidance system malfunction causing it to fly on past China into the Soviet Union where it crashed, only to be recovered by the KGB. Film canisters were never recovered from two of the drones.

The fourth and final mission of the D-21 drone took place on March 20, 1971 and was undertaken by D-21 #527. Experts at the 4200th Support Squadron and at Skunk Works concluded that #527 must have malfunctioned. It was thought to have gone down near Lop Nor. It's wreckage was found by local authorities and remained in the China Aviation Museum junkyard for years. In 2010, the wreckage was moved to the museum's exhibition area.

Despite their failures over China, the D-21 program was significantly ahead of its time. A Mach-3 capable drone with an operational ceiling of 90,000 feet was an unheard of in its day and remains impressive even in this new era of unmanned aerial vehicles.