Spy Planes

In the latter part of the 20th century, many of the aircraft developed for military reconnaissance – including the U-2 and the SR-71 – were tested and flown at Edwards Air Force Base.

The SR-71 at sunrise

The surveillance capabilities of these fast, high-flying and technologically-advanced aircraft are impressive: The U-2 is capable of climbing to very high altitudes, remaining in the air for almost 11 hours and covering up to 4,750 miles. The SR-71 Blackbird operates at sustained speeds in excess of Mach 3 and at altitudes of more than 85,000 feet.

Yet aerial surveillance is nothing new.

Old concept, new technology

Spy planes, surveillance satellites and unmanned aerial vehicles (UAVs) may be the stuff of the space age – but there were military "eyes in the sky" long before the Wright Brothers flew their first plane.

The aerial surveillance of one country by another, in some form of manmade conveyance, dates to 1794, when France's "Aerostiers" performed military observation from tethered balloons.

Americans used balloon reconnaissance in the Revolutionary War and the Civil War. Napoleon used it in Egypt, and the British in Africa. (Balloons and airships continued to be used for spying right up through World War II.)

The height advantage

Spying from the air has always been attractive because of the tremendous advantage height gives to extending the view. Before the current space age, advantage increased in proportion to altitude.

Today, the world is a different place. Spy satellites and UAVs perform dangerous surveillance tasks that, not so long ago, could only be entrusted to skilled pilots and aircrew trained in reconnaissance photography methods.

In late 1997, the sleek SR-71 – the most recent of the United States high-tech spy planes – was retired from the operational Air Force inventory as a cost-saving measure.

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Spy Planes : UAVs

The most widely-used unmanned aerial vehicle (UAV) may be the Pioneer, which is in service with the Army, Navy and Marine Corps and performed 483 missions during the Gulf War.

NASA photo

DarkStar, an uninhabited aerial vehicle

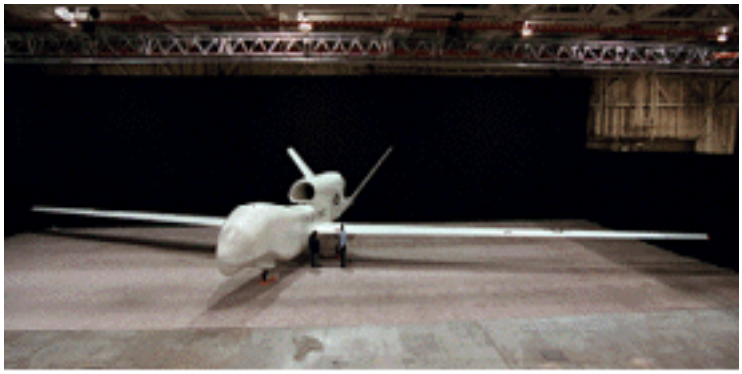
More recently developed is the Predator, which has been used in Bosnia. There are many others with names such as the Hunter, Maneuver Variant and the Outrider.

The DarkStar

Another UAV being tested is the Tier III- (pronounced Tier three minus), dubbed "DarkStar," which arrived at the Dryden Flight Research Center on Sept. 14, 1995.

The vehicle was developed by Lockheed Martin Skunk Works and Boeing Defense and Space Group to satisfy a goal of the Defense Airborne Reconnaissance Office to supply responsive and sustained data from anywhere within enemy territory, day or night, in all types of weather.

With a wing span of 69 feet, DarkStar, is designed to fly above 45,000 feet at subsonic speeds on missions lasting more than eight hours.



Global Hawk has a wingspan of 116 feet

The Global Hawk

The Department of Defense's newest uninhabited aerial vehicle (UAV), Global Hawk, was unveiled Feb. 20, 1997 at Teledyne Ryan Aeronautical's San Diego, Calif., facility. Global Hawk is a high-altitude, long-endurance uninhabited aerial reconnaissance system that will provide military field commanders with high-resolution, near-real-time imagery of large geographic areas.

The Global Hawk is optimized for low-to-moderate threat, long endurance reconnaissance missions where range, endurance and persistent coverage are paramount. The vehicle, with its 116-foot wingspan and 44-foot length, carries both synthetic aperture radar and electro-optical and infrared sensors.

The Global Hawk system will be able to survey, in one day, an area equivalent to the state of Illinois (40,000 square nautical miles), while providing imagery with a three-foot resolution. Alternatively, the system can provide more detailed (one-foot resolution), 'spot' images if needed. For a typical mission, the Global Hawk system can fly to a target area 3,000 nautical miles away, and stay airborne for 24 hours collecting data before returning. It flies at altitudes up to 65,000 feet.

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Spy Planes: The Early Years

In 1903, when Wilbur and Orville Wright made the first powered, sustained and controlled flights in an airplane, they believed its primary use would be for military reconnaissance. Since then, the techniques of aerial surveillance have developed right along with the aircraft.

The Bleriot XI was the first spy plane

The first use of an airplane in war occurred in 1911 during the Italo-Turkish War, when an Italian pilot in a Bleriot XI monoplane made a one-hour reconnaissance flight over enemy positions.

World War I

Most World War I military leaders believed that "heavier-than-air" flying machines were only useful for reconnaissance missions. Within a few weeks of the beginning of the war, the allied forces used visual reports on enemy positions to stop German armies from advancing beyond the River Marne and possibly winning the war.

Not long afterward, the Royal Air Force took their first aerial photographs during the battle of the Ainse. Developed and printed on the ground, they were forerunners of a huge photographic map of the entire western front, key to tactical and strategic planning.

About the same time, radio came into use as a means of passing messages between reconnaissance aircraft and the ground.

World War II

During World War II, reconnaissance proved as vital as it had been in World War I. In 1940, a Spitfire photographic sortie revealed that the Germans were using defensive radar in western France, when the Royal Air Force believed it had a monopoly of such equipment.

Later, a chance reconnaissance photo suggested that the enemy had a flying bomb almost ready for service – a discovery that lead to a heavy raid on a German rocket research center.

During World War II, the most successful reconnaissance aircraft were fighters, stripped of armament and all other disposable items, to save weight and increase performance. These

aircraft would race to target areas, take photos in a few quick passes, then escape at maximum speed.

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Spy Planes: The Cold War

Once upon a time not so long ago – during a period called the Cold War when Communism was a political threat to world stability – the United States found it necessary to develop fast, high-flying aircraft to keep an "eye" on potential enemy nations.

"Our knowledge of what was going on inside the U.S.S.R. was desperately weak", Dr. George B.Kistiakowsky, the Harvard chemist who became President Dwight Eisenhower's science adviser, recalled in a 1981 interview with aerospace author William E. Burrows.

Fear in Washington

In addition, fear of a surprise attack began to take hold in Washington as one threatening event followed another: the successful testing of a Soviet atomic bomb in 1949 and a hydrogen bomb four years later; the production of long-range bombers; then the development of an intercontinental ballistic missile capability. The first three Sputniks demonstrated that the Soviets had the capacity to loft heavy warheads over the Arctic to the heart of North America.

The RAND Corporation, the Air Force's Air Research and Development Command, and other organizations began to study the possibilities of space reconnaissance. In a 1946 RAND study, it was shown that it was technically feasible to launch Earth satellites for use as "observation aircraft"

The NRO

President Eisenhower, who would warn of the "military-industrial complex" in his farewell address in 1961, established the civilian-operated National Reconnaissance Office, or NRO. The office was conceptualized in Eisenhower's office a week after the first fully successful space reconnaissance flight of the CORONA satellite had taken place. Until its existence was officially made public on September 18, 1992, the NRO operated under the guise of the Air Force's Office of Space Systems in the Pentagon and was the most secret organization in the intelligence community.

The NRO is responsible for the development and operation of all U.S. reconnaissance

satellites and strategic reconnaissance aircraft, such as the U-2 and its supersonic replacement, the SR-71.

Built to spy

During the early Cold War period, a wide range of aircraft came under consideration for reconnaissance work, including modified fighters and bombers, such as the RB-29 and the RB-50.

In the mid-1940s, the U.S. Army initiated a design competition for the development of a plane designed especially for photo reconnaissance work.

The competition led millionaire recluse and aviator Howard Hughes to try his hand at the spy plane business. Hughes won a government contract to develop the XF-11 and nearly killed himself flight testing the plane in 1946, when he crashed into three Beverly Hills homes, burning down one. A competitor to Hughes' plane was Republic's XF-12, capable of operating at 45,000 feet at a speed of 470 mph over a range of 4,500 miles.

Other experiments into reconnaissance aircraft included the pot-bellied O-47 ('O' for 'observation'), as well as a saucer-shaped hovercraft (the V2-9AV, developed by the Army in 1960) – which never got more than three feet off the ground. Sitings of the hovercraft experiment helped fuel the public's infatuation about the military's involvement with UFOs.

Modified for surveillance

The Northrop Corp. proposed a modification to the YB-49 Flying Wing bomber (predecessor of the B-2), called the YRB-49A. Although its small radar signature had been noticed during tests during the late 1940s, it was the YB-49's high altitude and long-range flying abilities that gave it consideration as a spy plane. The plane promised a 400-mph cruise speed at 35,000 feet. (It was during a 1948 test flight of the YB-49 that whom Edwards Air Force Base is named, was killed with his four crew Capt. Glen Edwards, for members.)

But the YB-49 was the "wrong plane at the wrong time," getting trapped in the transition between propeller-driven and jet-powered aircraft. The program was canceled by the Air Force in 1949.

Before the late 1950s, the primary aircraft used for reconnaissance included North American's B-45 Tornado and Boeing's B-47 Stratojet.

The U-2

Of the Cold War planes, Lockheed's U-2 is in a class of its own, capable of climbing to very high altitudes, remaining in the air for almost 11 hours and covering up to 4,750 miles. The U-2 made its first flight in August 1955, with famed Lockheed test pilot Tony LeVier, at the

controls, and began operational service in 1956. (LeVier died Feb. 6, 1998.)

During its four decades of service, it has been a major player in some of the most dramatic political nail-biters of the century, including the espionage trial and conviction of American pilot Gary Francis Powers by the U.S.S.R., and the stand-off between the two superpowers during the Cuban Missile Crisis.

The plane continues its dignified career collecting scientifically significant data for NASA about the Earth's atmosphere (as an ER-2), and still serves as a reconnaissance aircraft under the command of the USAF 9th Operations Group.

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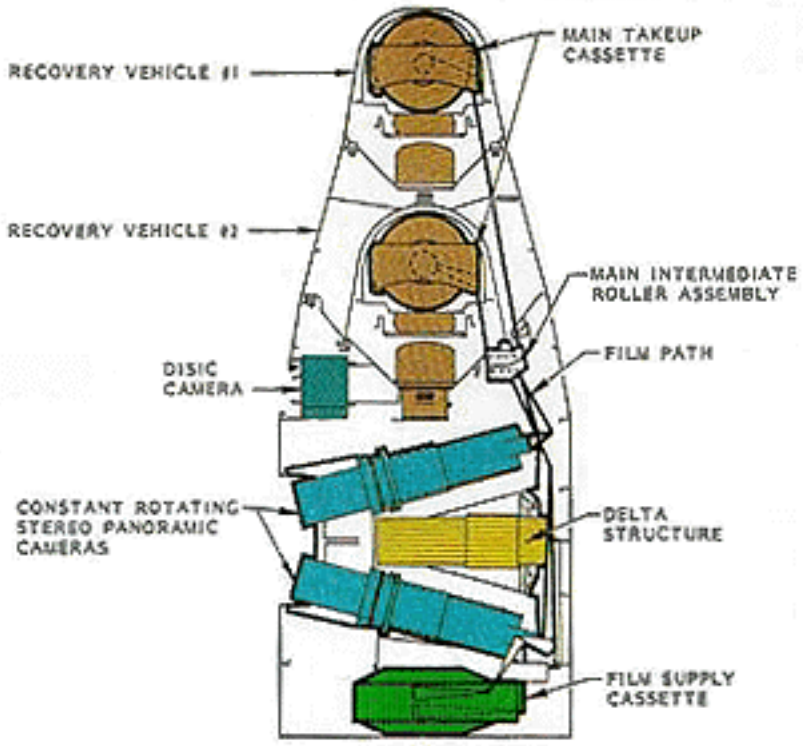

Corona was the first U.S. photo reconnaissance satellite system

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Spy Planes: The U-2

The first U-2s could fly higher than 55,000 feet

The U-2 was designed and built for surveillance missions in the thin atmosphere above 55,000 feet.

An unusual single-engine aircraft with sailplane-like wings, it was the product of a team headed by Clarence L. "Kelly" Johnson at Lockheed's "Skunk Works" in Burbank, Calif. The thin, elongated fuselage, and similarly thin wings, rendered the U-2 barely visible in overhead flights and invisible at its cruise altitude (usually above 60,000 feet).

First flight

The U-2 made its first flight in August 1955, with famed Lockheed test pilot Tony LeVier, at the controls, and began operational service in 1956. (LeVier died Feb. 6, 1998.) Its employment was kept secret until May 1, 1960, when one was downed over Soviet territory. Francis Gary Powers, flying for the CIA in his U-2 at 60,000 feet, was hit by a surface-to-air missile and captured by the U.S.S.R. He was later released in exchange for a Soviet spy, but died in a helicopter accident in 1977.

Air Force U-2s have been used for various missions, with primary operations originating out of Air Force Plant 42 in Palmdale, Calif., Beale Air Force Base, Calif., and Alconbury, U.K.

Cuban Missile Crisis

On October 15, 1962, Maj. Richard S. Heyser piloted a U-2 over Cuba to obtain the first photos of Soviet offensive missile sites. Major Rudolph Anderson, Jr. was killed on a similar mission on October 27, 1962, when his U-2 was shot down.

The U-2's modular payload design allows the aircraft to be reconfigured to perform various

missions which include; mapping studies, atmospheric sampling, and collection of crop and land management photographic data for the Department of Energy.

SPECIFICATIONS
Wingspan: 80 ft.
Length: 49 ft. 7 in.
Height: 13 ft.
Weight: 15,850 lbs. (17,270 lbs. with external fuel tanks)
Armament: None
Engine: Pratt & Whitney J57-P-37A of 11,000 lbs. thrust (J75-P-13 of 17,000 lbs. thrust for later models)

PERFORMANCE
Maximum speed: 494 mph.
Cruising speed: 460 mph.
Range: 2,220 miles (over 3,000 miles for later models)
Ceiling: Above 55,000 ft. (above 70,000 ft. for later models)

Information from the Advanced Network & Services, Inc., web site was used in this story.

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Spy Planes: The SR-71 & its predecessor

The SR-71 was conceptualized in 1958

The SR-71 boasts a proud history as the first high performance Air Force "spy plane."

This top-secret reconnaissance aircraft program left a legacy of new technologies, some still classified. Even today it remains the world's fastest jet-powered air vehicle.

The vision
Conceptualized in 1958, the SR-71 was the follow-on reconnaissance plane to the U-2.

"In over flying Russia for four years, we knew that they were making important advances in radar and missiles," said Clarence L. (Kelly) Johnson, the Lockheed designer who worked on the SR-17 project, beginning with the A-12. "So in 1958, two years before Gary Powers was shot down, we decide to make a follow-on airplane, the SR-71, to fly higher and four times as fast."

The specs
The idea for a supersonic reconnaissance vehicle was sparked a year earlier. In the fall of 1957, DoD contracted for an operations analysis to determine how far the probability of shooting down an airplane varied respectively with the plane's speed, altitude and radar cross-section. The analysis demonstrated that supersonic speed greatly reduced the chances of detection by radar.

DoD informed Lockheed and General Dynamics of the general requirements, and both companies launched design efforts. Between the fall of 1957 to late 1958, these designers

constantly refined and adapted their respective drawings and in July 1959, both contractors submitted proposals to build the new supersonic aircraft.

Into production

President Dwight D. Eisenhower was briefed on the design efforts in August and Lockheed won out over General Dynamics to build the aircraft. Five months later, Lockheed was given the green light to produce 12 of the new design.

Lockheed designer Johnson called the new vehicle "A-12" because it was the 12th design iteration in selling the aircraft. The program was dubbed super secret and developed under the code name "Oxcart."

On April 26, 1962, the A-12 made its first flight – two years, three months and 26 days after the initial go-ahead. President Lyndon B. Johnson announced the presence of the advanced supersonic experimental jet craft at a press conference on Feb. 24, 1964. He mistakenly called it the "A-11" not the "A-12," it was never referred to as "A-11" after that.

Flying higher

The A-12 was declared operational in November 1965 and it could indeed fly higher and faster than any other aircraft. This revolutionary airplane could fly at three times the speed of sound for more than 3,000 miles without refueling. Toward the end of its flight, when fuel began to run low, it could cruise at more than 90,000 feet.

The "Oxcart" was approved by President Johnson to deploy to Kadena Air Base, Japan, in May 1967, where it started to fly operational missions. Between 1967 and termination of the project in 1968, the A-12 logged 28 operational missions.

Retirement

While the aircraft was making history, politicians recommended the phase-out of the A-12 by September 1966, and stopped further procurement of SR-71 aircraft at that time. On Dec. 28, 1966, it was directed to terminate the "Oxcart" program by Jan. 1, 1968. The last operational mission flown by the Oxcart A-12s was on May 8, 1968. The total program lasted just over 10 years from its inception in 1957 through first flights in 1962 through termination.

Lockheed produced 15 A-12s, three YF-12As and 31 SR-71s.

"I think it will be a long time before we have an airplane that has higher performance than the SR-71 because the need for it is not there," Kelly Johnson said. "We can have satellites circling the earth in 90 minutes and we do not have to go any faster then this one."

The Air Force deactivated the last SR-71s in 1990, reactivated them in 1994, then retired them again in 1997.

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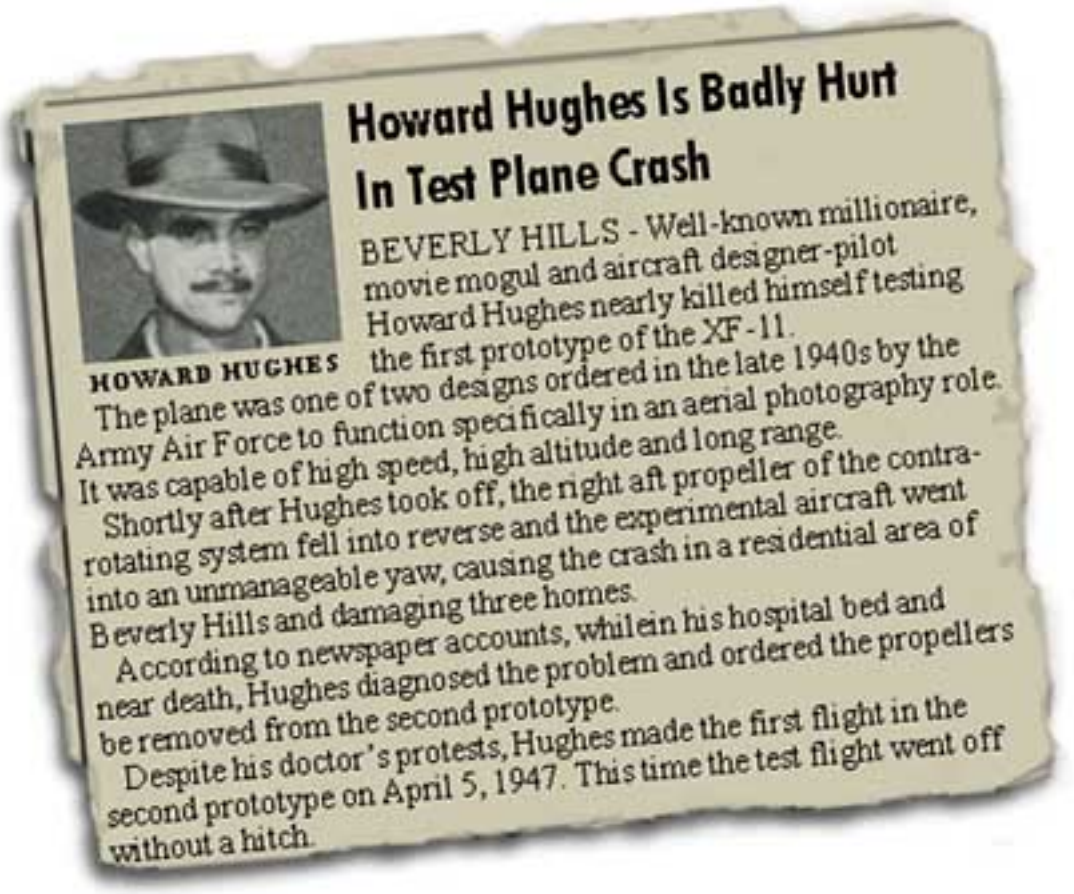
Spy Planes : Howard Hughes



Howard Hughes Is Badly Hurt In Test Plane Crash

HOWARD HUGHES

BEVERLY HILLS - Well-known millionaire, movie mogul and aircraft designer-pilot Howard Hughes nearly killed himself testing the first prototype of the XF-11.

The plane was one of two designs ordered in the late 1940s by the Army Air Force to function specifically in an aerial photography role. It was capable of high speed, high altitude and long range.

Shortly after Hughes took off, the right aft propeller of the contra-rotating system fell into reverse and the experimental aircraft went into an unmanageable yaw, causing the crash in a residential area of Beverly Hills and damaging three homes.

According to newspaper accounts, while in his hospital bed and near death, Hughes diagnosed the problem and ordered the propellers be removed from the second prototype.

Despite his doctor's protests, Hughes made the first flight in the second prototype on April 5, 1947. This time the test flight went off without a hitch.

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Spy Planes: Howard Hughes' XF-11

The Hughes XF-11 was designed as a photo-reconnaissance aircraft, yet looked more like an interceptor.

Millionaire Howard Hughes built and tested this XF-11

Prior to the the XF-11 and the XF-12, aircraft that had been designed for other missions were modified to perform as photo reconnaissance planes – and the results were always a compromise. During World War II, the F-4 and F-5 (modifications of the well-known Lockheed P-38 Lightning) were used to perform most of these missions.

A President's son

After flying a tour in Africa in F-5s, Col. Elliot Roosevelt, son of the late president, believed that aircraft must be designed around their specific mission requirements.

He outlined Army Air Force requirements and presented his ideas to the commanders at Wright Field (now Wright-Patterson Air Force Base). There he found advocates who were already trying to obtain funding to build a true photographic aircraft.

Roosevelt's recommendations led to the development of the XF-11 (later XR-11) and its competitor, the XF-12 (later XR-12) aircraft.

Development shrouded in secrecy

Roosevelt had heard rumors of the D-2, a secretly-designed project developed by well-known millionaire Howard Hughes. It was listed as a bomber, but was unsuited for the role. Reconnaissance suited the plane much better.

Hughes had secretly developed the D-2 in a hangar built on Harpers Dry Lake, near Muroc Dry Lake (near present-day Edwards Air Force Base). In spite of the tight security, Col. Elliot was permitted to see the aircraft during its short life. He was so impressed that he recommended production of the aircraft to Wright Field's procurement branch. While his

recommendation was under heated discussion, the one-and-only Hughes D-2 was destroyed when lightning struck the D-2 hangar.

Despite its early destruction, the design interested Col. Roosevelt and he recommended the aircraft be ordered as a photo-reconnaissance aircraft. The D-2 had first flown on June 20, 1943, and is only known to have made two flights. Aileron difficulties caused a major redesign.

The redesign

The Wright Field engineers were highly skeptical of the Duramold (resin-impregnated plywood) product used to construct the D-2 and insisted the aircraft be built of metal. They further insisted that the power plants be the new massive Pratt & Whitney R4360 ("corncob"). These requirements led to an entirely new larger and heavier design, although the aircraft would still resemble the D-2.

Agreements were reached at Wright Field and contract proposals were let for two experimental XF-11s and 98 production F-11s.

Hughes planned for the XF-11's two engines to be equipped with contra-rotating propellers which were installed on the first prototype.

Nearly fatal crash

On July 7, 1946, Hughes flew the first prototype of the XF-11. This flight ended in disaster and nearly claimed his life. The starboard aft propeller had slammed into reverse, sending his plane into an uncontrollable yaw which sent him spiraling to the ground. From his hospital bed, he ordered the second prototype aircraft be equipped with a single propeller installation.

The XR-11 was a remarkably stable aircraft, and at high speeds lateral control was excellent – but it left a great deal to be desired at low speeds.

The aircraft had a remarkably clean, low drag design with its long, straight wing looking similar to that of the Lockheed U-2, designed a decade later.

Hughes made the first flight on the second prototype on April 5, 1947. This time the test flight went off without a hitch.

The XF-11 went to Eglin Field, Fla., (now Eglin Air Force Base) to be tested, however the Air Force canceled the program in favor of utilizing the much more economical Boeing RB-50s to meet the long-range photo-reconnaissance requirement.

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Spy Planes: Republic's XF-12

XF-12: Developed to meet need for intelligence gathering

Republic's XF-12 was a "flying photo laboratory"

The advent of World War II brought into focus the critical importance of timely and accurate intelligence gathering. Field commanders needed the ability to make pivotal strategic decisions leading to successful campaigns.

Thus the need arose for an aircraft specifically designed for the photo-reconnaissance mission providing pre-strike photo interpretation of potential targets and the post-strike analysis of their subsequent destruction.

Airborne photo lab

Republic Aviation's F-12 was born out of the same competition as the Hughes XF-11 in response to the pressing need for speed, ceiling and range in a photo-reconnaissance aircraft. The first flight of the XF-12 was made on Feb. 4, 1946, which demonstrated the capability of operating at 45,000 feet at a speed of 470 mph over a range of 4,500 miles.

When the XF-12 was modified with increased "all weather" equipment and outfitted with a new power plant capable of providing short bursts of extreme power, it suddenly assumed tremendous importance in the eyes of both the U.S. Air Force and the State Department.

As a potent intelligence weapon, the XF-12 had the ability to obtain photographs both in daylight and under conditions of restricted visibility and at high altitudes over long ranges and with great speed. Operating from northern bases (Alaska and Canada), this "flying photo laboratory" was capable of mapping broad stretches of territory in the Arctic regions performing reconnaissance with near-invulnerability.

Design and equipment

Low-drag was a primary consideration throughout the design of the XF-12. Many of its features were taken directly from Republic's considerable experience with fighter plane design. In a extremely rare case of design direction absolutely no compromise with

aerodynamics was made in the shape of its fuselage. The long, pointed nose of the design virtually prohibited flow separation.

The XF-12 carried a variety of photographic equipment, including complete dark room facilities to permit the development and printing of films in flight. It contained three separate photographic compartments and a large hold in the belly accommodated 18 high-intensity photo-flash bulbs to permit night photography.

"Operation Bird's-eye"

The mission called "Operation Bird's-eye" was conceived to demonstrate the newly-designated XR-12's ultimate photo capabilities. On Sept. 1, 1948, the second XR-12 lifted off from Air Force Flight Test Center at Muroc, Calif., and climbed westward to gain altitude over the Pacific Ocean. Upon reaching its 40,000 foot cruising altitude, the XR-12 headed eastward and began photographing its entire route of flight over the entire United States. The crew shot a continuous 325 foot long strip of film composed of 390 individual photos covering a 490-mile-wide field of vision. The aircraft landed at Mitchel field at Garden City, Long Island, N.Y., completing a flight lasting six hours and 55 minutes.

The record shattering flight was featured in the Nov. 29, 1948, issue of *Life* magazine and the actual filmstrip went on exhibit at the 1948 Air Force Association Convention in New York City.

At the time this record was made, the Air Force had already canceled the entire XF-12 program in favor of utilizing the much more economical Boeing RB-50s to meet the long-range photo-reconnaissance requirement.

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Glen Edwards

In many ways, Glen Walter Edwards was very typical of his generation.

Capt. Glen Walter Edwards
1918 - 1948

Born when the First World War was entering its final stages, he entered adolescence in aviation's Golden Age of the 1930s, when most young people of his age looked eagerly to the skies. He came to maturity as the war clouds were gathering in Europe for the second time, and it was foreordained that his generation would face the second cataclysm.

Bright, well-educated, and with a singularly engaging personality, Edwards had much to offer to his society in World War II, and especially during the dynamic postwar years which followed.

Glen Edwards' Life	Planes Flown by Capt. Edwards
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Spy Planes: B-45 & B-47

RB 45 Tornado

At the end of 1944, the U. S. Army issued a design competition for a jet-powered bomber. This urgent requirement given to aircraft manufacturers was precipitated by the discovery of secret documents and actual German jet aircraft captured during World War II.

The B-45 Tornado, first four-jet aircraft

The first two American jet bombers produced were the North American B-45 Tornado and the Convair XB-46. The B-45 filled a critical gap in the U. S. defense posture. As an Air Force bomber, it saw limited service with the Tactical Air Command during the 1950s and served well as a reconnaissance aircraft during the Korean war. The reconnaissance models were designated RB-45Cs and assigned to the Strategic Air Command.

The Tornado also performed classified, deep penetration photographic intelligence missions over many cold war communist countries. The reconnaissance version of the B-45 became the forerunner of the U-2 and SR-71 surveillance aircraft.

B-47 Stratojet

The Boeing B-47 Stratojet was considered a perfect match for requirements by American military strategic planners during the Korean War and Cold War periods. During the 1950s, the Strategic Air command formed 28 medium bomb wings along with a few RB-47E reconnaissance wings.

The B-47 Stratojet NASA photo

Following its first flight of on July 3, 1953, the RB-47E went on to perform some of the most sensitive reconnaissance missions of the Cold War. During its service, at least two of these planes were lost flying missions over the Soviet Union.

One incident, involving a RB-47E, occurred during a photographic mission over the Soviet Union. The plane was intercepted and fired upon by Soviet MiGs and sustained wing damage. Fortunately, it was able to outrun them at altitude and return to its base in the United Kingdom.

A number of model changes occurred over the life of the B-47 with several variations emerging. But the RB-47E was the was the best of the B-47s.

The B-47E was later modified to perform specific duties needed for photomapping and weather reconnaissance. This version became the RB-47K.

The last version of the B-47 was the ERB-47H model. As an electronic/reconnaissance version it was used to monitor enemy radio and radar stations and could detect their missions. These planes were based overseas and operated from friendly countries to fly reconnaissance missions off the coasts of Russia, North Korea, China and other areas.

The reconnaissance version of the B-47 was the only plane which flew actual combat missions that the military may have found necessary to perform in case of nuclear war. They were used to constantly check weather along projected bombing routes, photograph enemy installations and monitor defensive radar systems.

The reconnaissance models of the B-47 provided invaluable data for Strategic Air Command's huge bomber fleet during the period 1954 to 1964. The secret to its success was versatility and the capability of the air frame to adapt to a number of varied missions while still maintaining excellent performance.

These models were eventually phased out and replaced with the U-2 and SR-71 spy planes.

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Spy Planes: Remembering Pilot Tony LeVier

Tony LeVier
Lockheed test pilot

Famed Lockheed chief engineering test pilot Anthony W. "Tony" LeVier died Feb. 6, 1998, from complications of cancer and kidney failure. He was 84.

LeVier first climbed into the cockpit when he was 15 years old. In a 1990 interview with the *Los Angeles Times*, he said Charles Lindbergh's flight from New York to Paris in 1927 inspired him to become a pilot, and a lucky find at a movie theater financed his first flying lesson.

He recalled, "We were barefooted, and going down the aisle. I noticed what appeared to be a dollar bill and I picked it up with my toes, palmed it and went to the seat. It turned out to be a $10 bill. And the first thought came to mind, 'Tomorrow morning I'm going to go take my first flying lesson.' "

Flew P-80s through U-2s

From there, LeVier never looked back. He flew some of the world's most advanced fighter jets of their time, including America's first production P-80 fighter jets, vintage 1960s F-104 Starfighters and the U-2 spy planes.

LeVier was a true top pilot during the Golden Age of flight testing and flew more "firsts" than anyone else. He went on to chalk up more than 10,000 flying hours in more than 24,000 flights.

During World War II, LeVier ferried Britain-bound Hudson bombers from Burbank to Canada. He flew P-38s in combat, and in 1950, he was at the controls of an F-90 penetration fighter when it became the first Lockheed aircraft to break the sound barrier – during a 60-degree dive at 900 mph.

LeVier made first flights in the F-94 Starfire, and the T-33-1. In 1954, he made the first flight of the XF-104 Starfighter, the first U.S.Air Force operational fighter to fly twice the speed of sound, which became a staple in the Air Force inventory. In the XF-104, he also was the first to exceed 1,000 mph in a production jet-powered aircraft.

Among the planes LeVier christened were the P-38 Lightning in 1942, which saw combat during World War II over England and the Pacific; and the TF-80C Shooting Star trainer, then one of the world's fastest airplanes.

LeVier made the first flight of the top-secret, high-altitude U-2 reconnaissance prototype on Aug. 4, 1955. Later that year, he began a 19-year career as director of flying operations for Lockheed's California Division.

Nine lives

His colleagues said if anyone had nine lives, it was LeVier. He flew more than 260 airplanes in his career as a test pilot, surviving eight crashes and one mid-air collision.

LeVier was the first to fly the XP-80, which was the prototype for Lockheed's first production jet-powered aircraft. In 1945, he bailed out of an XP-80 over the Mojave Desert when the aircraft's jet engine disintegrated. He suffered two crushed vertebrae and spent five months in a hospital.

After surgeons patched him up in a steel brace, he returned to fly another XP-80.

Long career

Although many of his first flights were at Edwards Air Force Base or Air Force Plant 42 (he retired from Lockheed in 1974 from his post as director of flying operations), he continued with the company as special flight safety consultant.

In 1982, LeVier inaugurated Safe Action in Flight Emergency Inc., a nonprofit program dedicated to training civilian pilots in handling life-threatening situations.

In recognition of his achievements, LeVier was named to the National Aviation Hall of Fame, the International Aerospace Hall of Fame and the OX5 Club's Aviation Pioneers Hall of Fame.

He also received the Smithsonian Air and Space Museum's Lifetime Achievement in Aviation and Flight Safety Award, was awarded the Society of Experimental Test Pilot's James H. Doolittle Award in 1993 for his life achievement in flying, and he was selected for the Aerospace Walk of Honor on Lancaster Boulevard.

In tribute

Edwards Air Force Base historian Jim Young commented, "He was a real pioneer and a giant of his era. He was truly a wonderful man – one of my favorite people."

"He was a treasured member and one of staunchest supporters over the years," said Paula Smith, executive director of the Society of Professional Test Pilots.

"He was on the the ground floor when the society was formed in 1956, and has been just as supportive now as he was then. "He was always out there. Flight safety and education was one of his priority goals, and he did a great job at that.

"He will be sorely missed," Smith said.

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Spy Planes: The Space Age

Up until the present day, Lockheed's SR-71 Blackbird has had the market cornered as the spy plane of the century.

The SR-71 is a high speed research aircraft used by NASA

The Blackbird

Although it recently has undergone its second retirement by the Air Force (after being deactivated in 1990, reactivated in 1994, then retired again in 1997), it still remains one of the most impressive aircraft of the 20th century. The plane performs magnificently at sustained speeds in excess of Mach 3 and at altitudes of more than 85,000 feet. Yet because spy satellites can perform the same reconnaissance duties, the SR-71 was retired from the operational Air Force inventory as a cost-saving measure.

The SR-71 Blackbird remains in service at NASA Dryden Flight Research Center, where it is being used to conduct research for the high speed test program.

Other aircraft developed in the recent past include Tacit Blue, unveiled by the Air Force in 1996. Tacit Blue was created to demonstrate that a low observable surveillance aircraft with a low probability of intercept radar and other sensors could operate close to the forward line of battle with a high degree of survivability. The project validated a number of innovative stealth technology advances.

The future is "unmanned"

The future of surveillance activities lies with unmanned aerial vehicles (UAVs), which can perform dangerous surveillance tasks without risking the lives of pilots and crew. (The AFFTC web site will feature a more complete story on UAVs in the near future.)

Although the Cold War has ended, the fascination the public holds for spy planes has not dulled.

In recent years, rumor and discussion has abounded regarding sightings and thunderous sonic booms of what is speculated to be a super Mach-6 spy plane, allegedly named the "Aurora."

The existence of this aircraft, rumored to have been tested at the military test facility at Groom Lake, Nev. ("Area 51"), has never been officially acknowledged by the government.

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