Robert Novell Year in Review

2013

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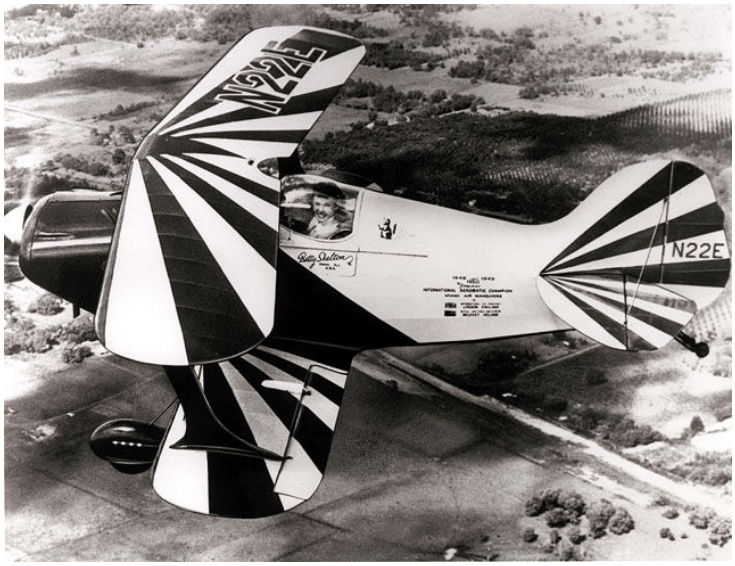
Robert Novell's Third Dimension Blog



Good Morning---I hope all is well for everyone and the weekend will provide a little bit of quiet time and time with friends and family. For the past few months we have talked a lot about aviation pioneers, and especially those pioneers that made the Wright Brothers successful; however, today I want to move forward in time to talk about Betty Skelton who has the nickname – "First Lady of Firsts."

I first became familiar with Betty's accomplishments through the National Corvette Museum. I am a Corvette guy, always have been, and always will be. In fact, I like Corvettes more than I like airplanes now that I think about it but this article is about Betty and not Robert Novell so let me get back to the business of telling my story.

Betty was the first woman inducted in to the Corvette Hall of Fame because of her accomplishments behind the wheel of a Corvette. Betty established a number of speed records on NASCAR's measured mile at Daytona Beach, Florida, and also represented GM at major auto shows, in TV commercials, and national radio ads. Harley Earl at the GM Tech Center, along with Bill Mitchell, designed a special Corvette for Betty, in 1956-57, which was a translucent gold, and Betty drove the Corvette to Daytona for Speed Week and then paced all the NASCAR races with it in 1957.

A really interesting fact, that is not well known, is that in 1959 she was invited by NASA to become the first woman to undergo physical and psychological testing for the first seven astronauts, and because she actively promoted the Corvette line she had GM give all of the original astronauts new Corvettes – A very savvy PR move on her part.

OK, let's move beyond Corvettes and talk about Betty's accomplishment as an aviator, and I am going to do that by posting an article, in its entirety, on Betty from the *"Women in Aviation Resource Center."*

Enjoy……..

The First Lady of Firsts

Betty Skelton

In aviation circles, few people are considered "living legends." Legends are those who have blazed trails and whose glorious exploits, impressive accomplishments and immeasurable popularity has spanned generations.

In an era where heroes were race pilots, jet jocks and movie stars, Betty Skelton was an aviation sweetheart, an international celebrity and a flying sensation. Her career and success could be pages right out of a storybook but even Hollywood could not produce a picture as grand as the real life that Betty Skelton has led.

Betty's enviable record is still recognized today by pilots, and competitors, and she is frequently referred to as, The First Lady of Firsts. She was the first woman to cut a ribbon while flying inverted and she piloted the smallest plane ever to cross the Irish Sea. Twice she set the world light-plane altitude record (29,050 feet in a Piper Cub, in 1951). The first time Betty broke the record established in 1913 in Germany. She also unofficially set the world speed record for engine aircraft in 1949. Today Betty Skelton holds more combined aviation and automotive records that anyone in history. "I have always been interested in speed," she said. "It's pretty fortunate when you can find something you love to do so much and it is also your occupation." Besides winning the International Feminine Aerobatic Championship for three consecutive years, 1948 - 1950, she received honorary wings from the United States Navy and held the rank of Major in the Civil Air Patrol. She flew helicopters, jets, blimps and gliders, and participated in all U.S. major air events in the forties. Today the very spirit of Betty Skelton and her love and devotion to aviation and aerobatics is bestowed upon the top female in the field with the presentation of the coveted "Betty Skelton First Lady of Aerobatics" trophy.

As a young girl in Pensacola, Florida, Betty watched the Navy Stearmans fly their aerobatic routines from her back yard. She dreamed of someday flying too. Her parents co-owned a fixed base operation in Tampa, Florida so she literally grew up in airplanes. Betty recalls playing with model airplanes instead of dolls and soloed illegally at the age of twelve. She was a commercial pilot at eighteen and a flight instructor by the time she was twenty.

Betty's real desire was to fly military planes as a ferry pilot in the WASP program. Her flight experience ranked among the best but she was "shot down" because of her age. The minimum was 18 1/2 and at 17, she could not get a waiver. The WASP program would end four months before she reached the appropriate age. In the years while she waited, Clem Whittenbeck, the famous aerobatic pilot of the 1930's, taught Betty how to do loops and rolls and for her, aerobatics was love at first flight.

"My first aerobatic plane was a real crate!" says Betty, "It was a 1929 Great Lakes that was sluggish and not nearly as responsive as a true aerobatic plane should be." Its Kinner engine was usually "sick" and she had her share of serious mishaps and narrow escapes flying the old "Lakes." She even crashed it once.

In 1948 she purchased the one and only Pitts Special, an experimental biplane hand-built, and carefully designed by Curtis Pitts himself. It was a single seat, open

cockpit aircraft weighing only 544 pounds. Little did she know at the time that she and the Pitts would become a famous team that would soar to new heights. Her plane would become the most famous aerobatic aircraft in the world. Betty would teach the little Pitts a lot of new maneuvers, but not before the airplane taught Betty a thing or two.

With one Feminine Aerobatic Trophy already to her credit, Betty flew her new Pitts Special back to her home base at Tampa's Peter O'Knight airport. A large crowd of friends and well-wishers gathered to welcome Betty and her new flying machine, and it was on that day she found a suitable name for her new partner.

Upon purchasing the Pitts, the former owner quickly checked Betty out in the plane but neglected to mention a few things about the landing characteristics. Betty made her approach into Tampa and landed nicely. Suddenly, as she brought the Pitts to a stop, it went out of control. She could not have known that at low speeds the plane's rudder was ineffective and only the brakes would keep her going straight. As she clamored to bring the plane under control she said under her breath: "You little stinker!" The Pitts resented that rejoinder and ground-looped in front of the entire crowd. Nothing but Betty's pride was hurt but the name stuck. From that moment on they would live forever as Betty Skelton and her Little Stinker.

Betty would practice for hours, sometimes on just one maneuver. She disciplined herself and never strayed from the hard and fast rules that she imposed. One rule was to build an extra margin of safety into all her low-level maneuvers. She would compromise for nothing less than an extra ten percent of airspeed or altitude - if she had both, so much the better. This extra margin of safety would keep her out of trouble in the future. With Betty, safety always came first. She routinely practiced at an altitude of 3,000 feet unless she was practicing her ribbon cutting, in which case she always had a spot picked out below in case she ran into trouble and needed to make a forced landing.

Betty had two safety belts built into the airplane at different locations in the event one broke loose during a violent maneuver. During practice, she placed towels between herself and the safety harness to act like shock absorbers, but they never eliminated all the pressure. As a result, Betty was always bruised. When she worked intensely on her outside maneuvers, the forced pressure of blood to her face would cause Betty to go for weeks with black eyes and splotches on her face. During other maneuvers when the blood would drain from her body, she would

experience momentary "red-out." She slowly built up her tolerance and always knew how far she could push a maneuver and still stay in control.

Soon Betty and Little Stinker worked as one. Her movements telegraphed calm and confidence and her little friend, listening to her thoughts, reacted as an extension of Betty's body, diving and looping to her every command.

The maneuver Betty is best known for is the inverted ribbon cut. This involves cutting a ribbon strung between two poles, ten feet from the ground, upside down. You could count the number of men on one hand that could do the stunt, and being the best meant that Betty had to learn how too. Her friends tried to talk her out of attempting the stunt, because it was a dangerous maneuver that allowed for no margin of error, but Betty was determined. She would be successful at becoming the first woman to complete the feat but with near fatal results.

Betty promised her friends she would attempt the stunt scientifically, making many practice runs until she felt comfortable. She would start with a high altitude, line up the poles, roll upside down, go lower, and lower, until she got a feel for it. Betty's first pass was deliberately high but right on target. Feeling confident, she set up to cut the ribbon on her second attempt, only on this try the Pitts' engine quit just as she rolled upside down. She was only a few feet above the pavement.

Betty's ten percent rule saved her life that day. The extra ten percent in airspeed enabled her to execute a half outside snap roll and bring the plane and herself down to safety. An inspection of the fuel injection system found that the engine's injector jets were clogged with dirt and after a simple cleaning her Little Stinker was as good as new.

Being number one meant Betty had to work twice as hard as everyone else. Perfecting the artistry of aerobatics and taking her routines to the level of flawless perfection was a skill Betty worked at constantly. Betty attributes her success in the sport to having had the coolness of a champion bullfighter, the fighting spirit of a cornered cobra and the dedication of a priest.

One of the hardest things about flying the aerobatic circuit was enduring the pain of watching many friends die. Each fatality occurred while trying to outperform Betty or while trying to imitate maneuvers that only she could do in her Pitts. (Death was a constant reminder that all aerobatic pilots fly in the shadow of death.) "At times it felt like a waiting game," says Betty, "wondering who would be next." Betty looked on death as one of the risks of the business. "Learning to fear death without actually being afraid was something you had to do to make it through."

Betty did not just "luck" into her accomplishments and achievements because of her good looks, although she was every bit the glamour gal that the press made her out to be. Betty did not believe in luck, good or bad, just great timing. Betty has, become however, partial to the number "2" over the years.

Betty first laid eyes on her little Pitts on the 2nd of the month. It was serial number two and the aircraft registration number was 22E, (a number that is still reserved for Betty today.) Even the old Taylorcraft she first soloed was NC 22203 and her Great Lakes was numbered NX 202K. Being born at 2:00 a.m. and wearing Channel No. 22 perfume is probably just a coincidence, but number "2" would have special meaning to Betty as the years and her career flew by.

Besides setting altitude records and flying aerobatics, Betty felt the need for speed and loved to race. "Some of my fondest memories are of the flying at the Cleveland Air Races in the late forties." Betty remembers, "Every big name pilot in the country would be at the races, all the old gang, and it was easy to get caught up in all the excitement."

Being a champion meant Betty was always in demand and maintaining the hectic schedules was physically exhausting and emotionally draining. Air shows and appearances were scheduled one after another, sometimes three in the same day and all in different cities. Betty's life was anything but normal and she tired of her nomadic lifestyle. She realized early that it would be impossible to handle a career as well as a family. "During those years more than one engagement ring was returned."

With all the accomplishments Betty had made in aerobatics, there did not seem much left for her to do. For all the fame and glory, there was little money to be made in the sport that Betty loved so much. It was no secret, flying was an expensive undertaking, and there were not many alternatives for women in aviation. She had been born too late to qualify for the military WASP program and too early to try for the airlines. Staying in aviation would have meant going back as a flight instructor or flying at a fixed base operation, "hardly a suitable challenge." So on October 2, 1951, at the age of 26, Betty retired from professional aerobatic flying.

Although Betty would leave her first love of flying, she would be instrumental in forever changing how women were viewed in the competition level of aerobatics. She challenged the Professional Race Pilots Association and made changes that today allow women to race in closed course pylon races with the men. This set up a

chain reaction that would open many doors to women at the competition level of aerobatics.

As for her Little Stinker, it was enshrined in the Smithsonian's Air and Space Museum on August 22, 1985. "It is tremendously gratifying to know that children may see the tiny plane for decades to come and hopefully be inspired and seek a future in the sky and space."

Being a person who thrived on challenges and with the open road ahead, it seemed only natural that Betty moved on to auto racing. Her records in this field would become as impressive as those in her aviation career. Betty broke the world land speed record for women four times, and became the first woman to officially drive a vehicle over 300 mph, (315.72 to be exact)! She won nine sport car records for speed and acceleration, and became the first woman test driver as well as the first woman to drive an Indianapolis racecar. She toured for the National Safety Council, appeared in national advertisements and TV commercials, co-wrote, and produced an award-winning motion picture movie entitled, "Challenge."

Betty was inducted into the Florida Hall of Fame in 1977, The International Automotive Hall of Fame in 1983, The International Aerobatic Hall of Fame in 1988, and The Tampa Bay Walk of Fame in 1991. Betty married Donald Frankman, a TV director/producer, on New Year's Eve in 1965. They make their home in Florida where they own a real estate business and consider themselves semi-retired. As a woman who has set more combined aviation and automotive records than anyone in history, Betty can still be found flying in her airplane or driving her red Jaguar, but now it is purely for pleasure.

When Betty decided to fly Little Stinker, she shared with her little friend her beliefs. "If you are to fly with me you must believe in yourself. Pay no attention to what others say, what they think, what they do. Let your free spirit take you where you will, and when it falters, let your soul demand that you not give up, but only aspire to climb higher and higher.

"As you soar into the heights, never forget the others or look down upon them. Remember, you were once there and needed help, understanding, and love. Direct your free spirit to helping your fellow man...and you will know heaven on Earth.

"Never believe your own press, nor take your accolades too seriously. It matters not what you did yesterday. Only what you do today, and tomorrow, is meaningful to your freedom and spirit.

"Challenge and perfection is the greatest gift of life. Embrace it and use it well. To turn your back on the challenge of perfection is to close the door on your spirit, your freedom... your very existence.

"It is not easy to be the best. You must have the courage to bear pain, disappointment, and heartbreak. Our dedication must help lift the other up when one of us is down. You must learn how to face danger and understand fear, yet not be afraid. You must establish your goal, and no matter what deters you along the way, in your every waking moment you must say to yourself, `I can do it.'"

Source Document

Have a good weekend, stay close to friends and family, protect yourself, your profession, and the "Third Dimension" for those who will follow in your footsteps.

Robert Novell

January 5, 2013

The Aurora - Maybe Yes or Maybe No

February 4, 2013

Robert Novell's Third Dimension Blog

Good Morning---The first Monday of the month and it is time to talk about strange and unique airplanes. They call it Aurora, or the SR-91, and speculation on its existence is in abundance. I have two viewpoints for you. One is from Defense Aviation and the other is from a website called Unreal Aircraft.

Enjoy…….

Defense Aviation

Aurora also known as SR-91 Aurora is the popular name for a hypothesized American reconnaissance aircraft, believed by some to be capable of hypersonic flight at speeds of Mach 5+. According to the hypothesis, Aurora was developed in the 1980s or 1990s as a replacement for the aging and expensive SR-71 Blackbird.

A British Ministry of Defense report released in May 2006 refers to USAF priority plans to produce a Mach 4-6 supersonic vehicle, but no conclusive evidence had emerged to confirm the existence of such a project. It was believed by some that the Aurora project was canceled due to a shift from spy-planes to high-tech unmanned aerial vehicles and reconnaissance satellites, which can do the same job as a spy plane, but with less risk of casualties.

The main question here is, "Does the US Air Force or America's intelligence agencies have a secret hypersonic aircraft capable of a Mach 6 performance?" The continually growing evidence suggests that the answer to this question is YES. Perhaps the most well-known instance, which provides evidence of such an aircraft's existence, is the sighting of a triangular plane over the North Sea in August 1989 by oil-exploration engineer Chris Gibson. As well as the famous "skyquakes" heard over Los Angeles since the early 1990s, found to be heading for the secret Groom Lake (Area 51) installation in the Nevada desert, numerous other facts provide an understanding of how the aircraft's technology works. Rumored to exist but routinely denied by U.S. officials, the name of this aircraft is Aurora.

The outside world uses the name Aurora because a censor's slip let it appear below the SR-71 Blackbird and U-2 in the 1985 Pentagon budget request. Even if this were the actual name of the project, it would have, by now, been changed after being compromised in such a manner.

The plane's real name has been kept a secret along with its existence. This is not unfamiliar though, the F-117a stealth fighter was kept a secret for over ten years after its first pre-production test flight. The project is what is technically known as a Special Access Program (SAP). More often, such projects are referred to as "black programs."

So what was the first sign of the existence of SR-91 Aurora? On 6 March 1990, one of the United States Air Force's Lockheed SR-71 Blackbird spy planes shattered the official air speed record from Los Angeles to Washington's Dulles Airport. There, a brief ceremony marked the end of the SR-71′s operational career. Officially, the SR-71 was being retired to save the $200-$300 million a year it cost to operate the fleet. Some reporters were told the plane had been made redundant by sophisticated spy satellites.

But there was one problem, the USAF made no opposition towards the plane's retirement, and congressional attempts to revive the program were discouraged. Never in the history of the USAF had a program been closed without opposition. Aurora is the missing factor to the silent closure of the SR-71 program.

Testing such a new radical aircraft brings immense costs and inconvenience, not just in the design and development of a prototype aircraft, but also in providing a secret testing place for an aircraft that is obviously different from those the public are aware of.

Unreal Aircraft

In 1985, a budgetary weapons procurement document referred to a top-secret multi-billion dollar USAF program called Aurora. Looking into this document, the Washington Post learned unofficially that it was linked to stealth technology, possibly development of the B-2 bomber project. Three years later, the New York Times reported that a hypersonic reconnaissance aircraft with stealth capability was being developed to replace the SR-71 Blackbird.

Sounds: Most of the evidence for Aurora's existence is anecdotal. Among these tales are the reports of unusual sonic booms above Southern California, dating back to mid and late 1991. On at least five occasions, the booms were recorded by at least 25 of the 220 US Geological Survey sensors across Southern California used to pinpoint earthquake epicenters.

Seismologists estimate that the aircraft were flying at speeds between Mach 3 and 4 and at altitudes of 8 to 10 kilometers. The aircraft's flight path was in a north-northeast direction, consistent with flight paths to secret test ranges in Nevada. Seismologists say that the sonic booms were characteristic of a smaller vehicle than the 37-metre long shuttle orbiter. Neither the shuttle nor NASA's single SR-71B was operating on the days the booms were registered.

Intercepted radio transmissions add further circumstantial evidence. Radio hobbyists in Southern California have monitored transmissions between Edwards AFB radar control and a high-altitude aircraft using the call sign "Gaspipe." Controllers were directing the Gaspipe aircraft to a runway at Edwards, using advisories similar to those given space shuttle crews during a landing approach. The monitors recorded two advisories, both transmitted from Edwards to Gaspipe: "You're at 67,000, 81 miles out" and "Seventy miles out, 36,000, above glide slope."

Sightings of unidentified high-performance aircraft have been made in the Southwestern United States and, later, in other parts of the United States and in Britain and Europe. Reports from outside the United States are difficult to reconcile with an experimental test program, and make more sense in context of the deployment of an operational aircraft.

In addition to reports of triangular high-performance aircraft, numerous reports mention peculiar contrails consisting of a string of pulses or rings, often referred to as a "string (or chain) of doughnuts".

Chris Gibson (sometimes incorrectly named in sources as Chris Hudson), 30, was in the Royal Observer Corps aircraft recognition team for 12 years up until 1991. Chris told Jane's Defense Weekly that while working as an oil-drilling engineer in the North Sea in 1989 he saw a strange wedge-shaped aircraft flying between two conventional F-111 fighter-bombers and a KC-135 Stratotanker.

A simulated depiction often captioned as of Aurora refueling under F-111 escort has been widely circulated. This illustration is a photomontage, which was created by Bill Rose, to illustrate an article in a 1995 issue of the U.K magazine Astronomy Now by Bill. It was never intended to be an accurate portrayal of Chris Gibson's sighting. A second, better image was used in an article by Rose for UFO Magazine. A third version, which almost perfectly depicts the sighting according to Chris Gibson, can be seen in Tim Matthews book UFO Revelations and several U.K. magazines.

Gibson's report is widely considered one of the most reputable sighting reports of what is thought by many to be the Aurora, or at least some other "black" aircraft. It is worth commenting that Chris himself does not claim to have seen Aurora and, befitting a witness of his observer background, would not leap to such a conclusion in the absence of solid information.

The picture gained some cult notoriety when published in the British magazine UFO Encounters which put it on its February 1996 cover with the caption "UFO Escort Picture: We Unveil New Evidence Of This US Cover-Up". Other UFO magazines reacted more calmly and clearly identified the image as a simulation.

The renowned aviation source, Jane's Defense Weekly, has added its reputable weight to speculation about Aurora by alleging that the triangular shaped planes have been in service since 1989, after they had analyzed information to hand for about three years. Jane's editor, Paul Beaver, has said, "The evidence has grown overwhelming - all we need now is a photograph to prove that it exists."

Jane's analysts believe that the $1 billion aircraft, which has now been dubbed Aurora, could reach cruising speeds as great as Mach 8 - or 5,280 mph, which was more than 2½ times the official world record. Jane's technical editor, Bill Sweetman, reported that the so-called "hypersonic" Aurora operates mainly at night and incorporates the latest radar-evading "stealth" technology.

The Pentagon announced in 1990 that it was retiring its supersonic spy plane, the SR-7l Blackbird, and would rely for its future high-altitude surveillance on orbiting

satellites. Sweetman, an expert in high-technology aircraft, maintained the Pentagon story about satellite spying was a smokescreen.

A Mach-8 plane would be able to reach any point on the globe in less than three hours. Such a plane, fueled by liquid methane, would be of potentially greater use than high-resolution images from orbiting satellites that can take 24 hours to arrive over the subject, the Jane's report said.

Sweetman based his conclusions on pieced-together data, including the strange sounds reported above air bases in Nevada and California that were characterized as a "low-frequency, high-amplitude pulsing", multibillion dollar spending on classified research projects and the Gibson sighting of a wedge-shaped aircraft over the North Sea under fighter-bomber escort.

Sweetman believed the U.S. aerospace giant Lockheed, which produced the F-117 stealth fighter, is the most likely manufacturer of Aurora. "Lockheed's financial figures have indicated a continuing, large flow of income for 'classified' and 'special mission' aircraft," Sweetman reported.

Among the varied claims relating to Aurora are:

- Aurora is considered hypersonic, about 30-40 meters long, with a 75-degree dart shape and weight of around 70-80 tons, with a crew of two.

- Its primary purpose is long-range reconnaissance, with an unrefueled range of at least 10,000 km.

- As a weapons platform it may have potential for surgical nuclear strike or anti-satellite roles.

- It may be trans-atmospheric, or have a trans-atmospheric variant.

- Power plants may be pulsed detonation wave engines (theoretically capable of powering an aircraft towards Mach 10 at over 180,000 feet altitude). These engines have been studied since at least 1993. Laser detonation is posited as a means of maintaining precise control over ignition, which may occur externally, or, more conventionally, in a confined chamber. Alternatively, Aurora may use a combined cyclic engine. The latter could function as an air-augmented rocket, a ramjet, a scramjet, and a rocket. Methane could serve as fuel, or liquid slush hydrogen, doubling as a structural coolant. Either power plant is possibly capable of producing the unusual doughnut-chain contrails reported in recent years.

- A small squadron of Auroras is rumored to operate from Beale AFB, in California.

- Aurora may have a coating, which can be made to change colors, or even render it invisible.

- And finally, the Northrop B-2 stealth bomber is seen by some as an expensive ($22.5 billion development costs) cover-up for development of Aurora, based on suppositions concerning range, speed, stealth and payload disappointments in the production B-2s.

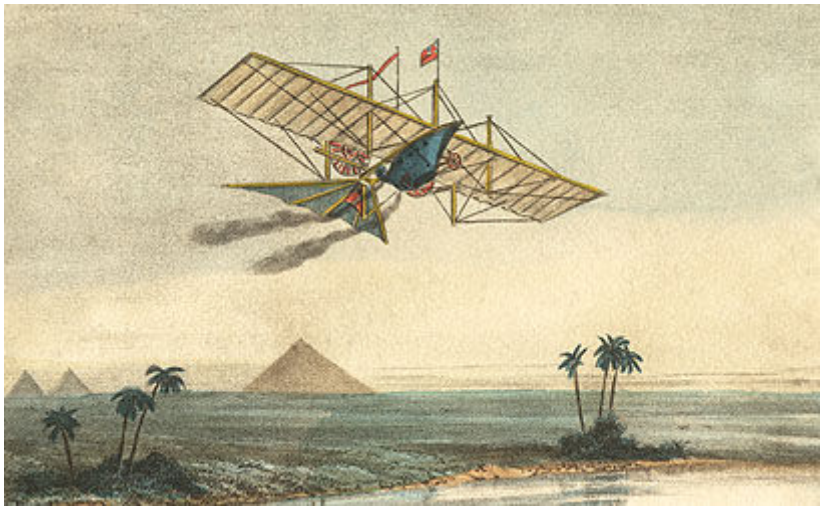
Maybe yes or maybe no - you decide. Have a good week, take care, and fly safe.

Robert Novell

February 4, 2013

The First Steam Powered Airplane Was a Worldwide Success - Almost. April 05, 2013

Robert Novell's Third Dimension Blog



Good Morning - I hope the week was good for everyone and now you will have time for yourself, family, and friends. It has been a long week for me, after going off the grid on a short vacation for four days and enjoying some quiet time, but I am slowly catching up.

This week we are going to talk about a steam-powered airplane that was patented in 1842 and sold to the public as an *"Aerial Steam Carriage,"* and the next step forward in connecting the cities of the world. Things did not turn out exactly as planned but the way the project was put together rivals modern day public offerings, and marketing, for a new airline.

Enjoy.....

William Henson and John Stringfellow Present the

The Aerial Steam Carriage

Good Morning Steward, is this the boarding area for the flight across the Channel?

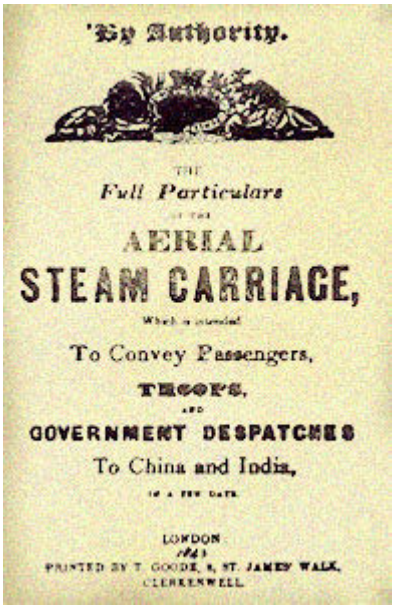
Yes ma'am. Check your luggage at the gate and proceed up the boarding ramp.

My daughter and I are so excited! It is safe to fly, isn't it?

Absolutely, ma'am - These airplanes incorporate all the latest safety features: high-pressure steam engines, double-walled boilers and the finest canvas propellers. After all, this is 1848.

This imaginary conversation would have occurred if Henson and Stringfellow had been successful with their "Aerial Steam Carriage," but luck was not on their side. William Samuel Henson was an engineer and inventor who were familiar with the aeronautical work of George Cayley. Discussions with his associate John Stringfellow led to his design for a large passenger-carrying steam-powered monoplane, with a wingspan of 150 feet, named "ARIEL - The Henson Aerial Steam Carriage," for which he received a patent in 1842. Henson, Stringfellow and two others, Frederick Marriott and D. E. Columbine, incorporated the Aerial Transit Company in 1843, and fully intended to construct the flying machine.

Henson had demonstrated a model of his design, which may or may not have made at least one tentative steam powered flight as it lifted, somewhat, off a wire guide. Numerous attempts to actually fly the large model (and an even larger model with a 20 foot wing span) were made between 1844 and 1847, but none of the attempts were successful.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Full Particulars

AERIAL

STEAM CARRIAGE,

To Convey Passengers,

TROOPS,

GOVERNMENT DESPATCHES

To China and India,

LONDON

Now, let's travel back to the very beginning and try to put the pieces together.....

In the small English town of Chard, evidence of the burgeoning industrial revolution could be heard every day in the chattering machinery of the lace mills during the 1840s. Festooned with endless racks of brass bobbins and intricate levers, these mechanical marvels produced all kinds of goods, from curtains and ornamental lace for ladies to mosquito nets for hardy explorers. Automatic looms wove the threads, commanded by a system of computer like punch cards. John Stringfellow, master lacemaker and skilled mechanic, knew how every swinging bar and meshing gear worked in these great machines. After all, he had designed them.

A man of his age, Stringfellow found himself drawn to the new advances in science. With his trousers hiked up, he waded through the shallow waters of the Chard canals, chipping fossils from their chalky banks to help him investigate the ancient past. In a makeshift laboratory behind his home, he produced flickering sparks using the new science of electricity. And he was fascinated by the steam engines that powered his mills and were transforming his world.

William Henson, also a lacemaker, knew Stringfellow through family connections. Henson was captivated by the new methods of travel then being introduced, including steamboats, railroads and the first road carriages. He also marveled at the hot-air balloons that floated majestically over the countryside.

Exactly how these two inquisitive men joined forces to design an airplane is not known. We do know that both frequented the Chard Institute, a lecture hall where the intellectually curious came to witness demonstrations on scientific topics. There is a story that Stringfellow was fond of tossing sheets of cardboard' (possibly model airfoils) across the empty gallery between lectures. Perhaps that's how their partnership began.

By 1840, the men were working together on a study of bird flight. Using Stringfellow's taxidermy models, they measured the wingspans of different species. Through spyglasses, they also observed birds flying across the countryside.

Soon they reached a momentous conclusion. While flapping wings was fine for the birds, they decided that a flying machine should have stationary wings, set at a slight angle to the wind and propelled through the air at great speed, just like Stringfellow's cardboard sheets at Chard Hall. What they needed was a dependable way to experiment with this new idea. In the summer of 1841, Stringfellow boarded the Great Western Railway, bound for London, intent on doing some research along the way. Imagine their surprise when his fellow passengers spied

wings of different shapes and sizes floating just outside their car windows. The inventor had somehow secured the conductor's permission to perform tests during the journey (we might think of them as wind tunnel tests).

Both men agreed that steam was the means to propel their airfoil. The steam engines of their day were ponderous affairs, however, with great cast-iron cylinders weighing hundreds of pounds for each horsepower produced. But Stringfellow had already begun designing miniature engines, jewel-like machines with tiny, soldered fittings. He fired their conical boilers with methylated spirits, burned in thimble-size reservoirs. One of his masterpieces was so light that he could even send it through the mail. Coupling those advances with the new Ericsson screw-type propeller, Henson and Stringfellow created a now-classic aeronautical design the fixed-wing, propeller-driven airplane.

Certain they were on the right track, the team began drawing up plans for a full-size flying machine. Dubbed *Ariel*, the craft they envisioned would be colossal. A fixed wing spanning 150 feet would provide 4,500 square feet of sustaining surface. A streamlined cabin, fitted with glass windows, would accommodate passengers and crew. Specially designed high-pressure steam engines would operate twin six-bladed propellers to create the necessary thrust. A pilot-operated tail and rudder system would guide the great craft, while vertical stabilizers would steady the machine. A tricycle landing gear fitted with shock-absorbing wheels would facilitate takeoffs and landings.

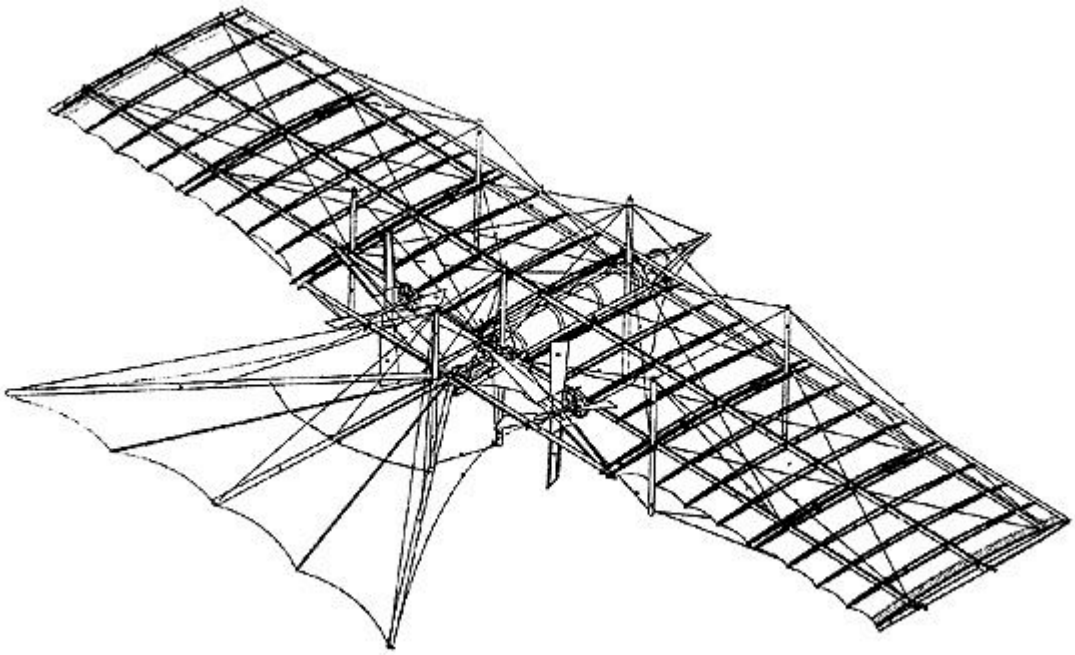
With each pound of weight supported by two square feet of wing surface, *Ariel* would hopefully reach a cruising speed of about 50 mph. To achieve takeoff, the inventors planned to accelerate the machine down a launching ramp, with the wing fabric reefed back to reduce drag. Once perfected, the craft was to carry sufficient coal and supplies to complete a 500-mile flight.

Surprisingly modern features were incorporated in the design. The wing would gain its strength from hollow laminated spars that supported 26 gracefully curved ribs. Using the latest technology from bridge building, the inventors would employ pylons, strategically placed across the span, to carry wire trussing out to the wings. The inventors also devised oval-section bracing wire to reduce drag during flight.

The wings of the airship would be delicately cambered and double-surfaced for maximum lift. Their long span and narrow chord would make them among the first high-aspect-ratio wing designs in history. Both wings and fuselage were to be covered with oiled silk, to provide a sealed skin for landing on water.

In more than a thousand experiments, using whirling arms and other apparatus, the inventors correctly identified the center of pressure and other key features of aircraft design. It is believed that they also secured the services of a mathematician who performed calculations using differential calculus to verify that each piece of the craft was as light and strong as possible.

Such complex innovations might seem impossible for a pair of Victorian inventors. But a set of moldering engineering drawings, purchased at auction in 1959, proves that the story is true. Meticulously prepared plan views and isometric drawings depict an exquisitely detailed, surprisingly modern-looking aircraft. And in the records of the British Patent Office there exists a complete patent application for 'a locomotive apparatus for flying through the air,' submitted by William S. Henson and John Stringfellow. Their patent was granted on September 29, 1842.



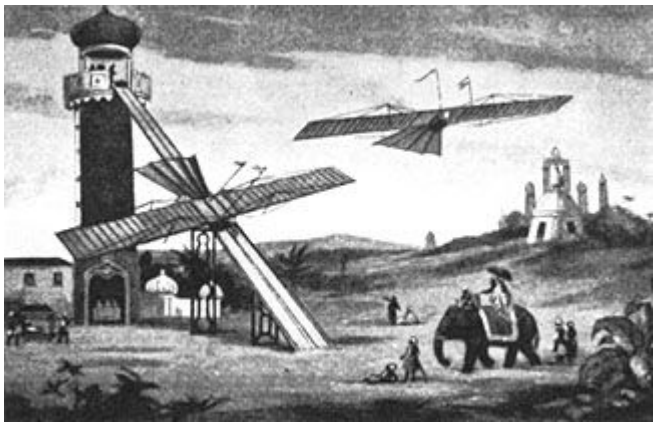
(Patent Drawing Of The Aerial Steam Carriage - 1842)

Now that we know the history let's talk about the marketing.....

The public would soon learn about Henson and Stringfellow's plans in a big way. Frederick Marriot, a newspaperman and publicity agent, joined the team. In a spirit that seems to foreshadow modern marketing tactics, the flamboyant Marriot unveiled a full-blown public relations campaign.

One can only imagine the public's reaction when, flanked by their confident promoter, Henson and Stringfellow announced the formation of the Aerial Transport Company–in effect, the world's first airline. Subscriptions were sought to raise funds to finance the construction of the fleet's first airship. 'An invention has recently been discovered,' announced a glowing prospectus, 'which if ultimately successful, will be without parallel even in our present age.' Readers were informed, 'In furtherance of this project, it is proposed to raise an immediate sum of 2,000 pounds, in 20-pound sums of 100 pounds. Applications can be made to D.E. Columbine, Esquire, Regent Street.' It is unclear just how much was raised, but a sheaf of papers discovered among the effects of a businessman who died in 1854, included some 45 pages of reports 'prepared for the financial backers to *Ariel* Project.'

To raise additional funds for the project, Marriot hit on the enterprising idea of selling promotional lithographs showing *Ariel* in flight. Within months, images of a great flying machine soaring over the capitals of the world were decorating homes and businesses all over Europe and America.



Now, back to the final pieces of our story.....

On March 24, 1842, J.A. Roebuck, a Member of Parliament for Bath, moved in the House of Commons for 'the incorporation of the Aerial Transport Company, to convey passengers, goods, and mail through the air.' Within a week, the widely read *Mechanics Magazine* published the full specification from the patent.

The English press was quick to offer its views. Sharp-tongued critics reminded their readers that no flight attempts had succeeded thus far. More scientifically minded writers speculated about the Aerial Steam Carriage's stability in stormy weather. Technical journals agreed or took issue with the inventors' calculations

for necessary power and their provisions for control. Debated by gentlemen in their clubs as well as workingmen in the pubs, air travel had become a topic of the day.

According to Marriot, the Aerial Steam Carriage would not only achieve the dream of human flight but also commence regular service from London to outlying cities. Special 'aerial stations' would be erected at each destination, equipped with smooth landing fields. Station houses, patterned after railway depots, would serve the passengers, while coaling stations, machine shops and other mechanical facilities would maintain the aircraft. Legions of workers, from boilermakers to stokers to porters, would service the aircraft and its passengers.

In times of war, Marriot argued, it might also be used in an air force. Fleets of Aerial Steam Carriages, strengthened to carry the added weight of munitions and armor, could assist the British Empire in moving troops around the globe.

The firm's grandiose plan unleashed a whirlwind of controversy and speculation. While some admired its foresight and boldness, others dismissed the idea as hucksterism. Some journalists offered mocking praise, pointing out that shipwrights and wagon makers would go bankrupt once everyone began traveling by air. Satirical cartoonists had a field day, depicting *Ariel* on improbable flights to places like China, with the passengers becoming embroiled in ludicrous adventures.

The Aerial Transit Company never built the large version of the Aerial Steam Carriage, perhaps because of the disappointing experiments with the model craft and, perhaps, because of the expense involved. Henson, Stringfellow, Marriott and Columbine parted company.

In 1848 William Henson and his wife, Sarah, left their native England and moved to the U.S., settling in Newark, New Jersey, where he spent the last 40 years of his life. Henson had apparently ceased his aerial research for good, and never again took up the matter. Henson, along with his wife and children, and other members of their family are buried in Orange, New Jersey.

Stringfellow remained convinced that human flight might still be within his grasp. He returned to his workshop with plans for a small aircraft, which he hoped might carry a single pilot, but age and circumstances conspired against John Stringfellow who was a man who that had been born too early to realize his dreams. He died in 1883, more than 40 years after beginning his quest, but still many years short of the day when air travel would become a reality.

Source Document - One

Source Document - Two

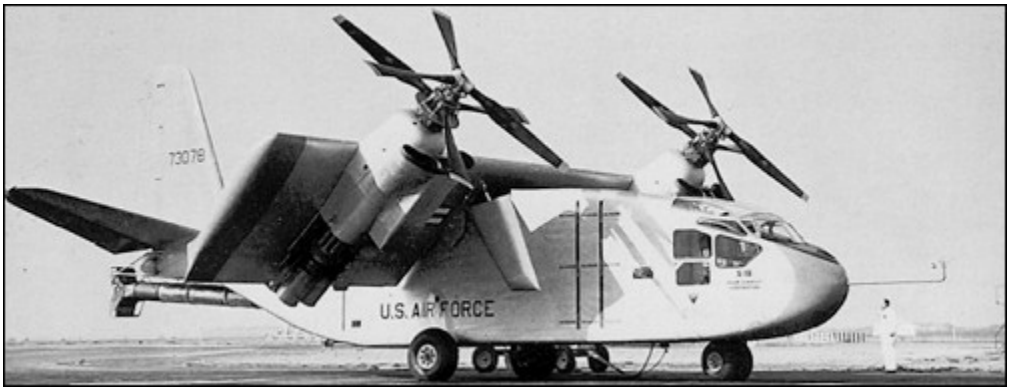
I hope everyone has a good weekend and you have time to contemplate your past, and future, plans for happiness. Remember - **"Gatekeeper"** - and remember that aviation is supposed to be fun regardless of the airplane you fly.

Robert Novell

April 05, 2013

Was The Forerunner of The Osprey A Better Design? - May 6, 2013

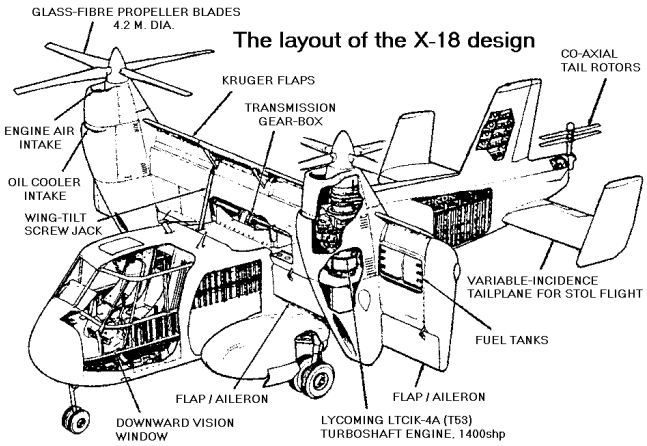
Robert Novell's Third Dimension Blog



Good Morning---This is the first Monday of the new month, so it is time to talk about strange aircraft. This week we will talk about an airplane that introduced technology which is now an accepted aviation design. The airplane is the Hiller X-18 and it was a tilt-wing that provided proof of concept but was abandoned because of cost, engineering problems, and the cold war challenge.

Enjoy.....

Hiller X-18
(1959)



Hiller Aircraft was one of the pioneers in VTOL flight and investigated the possibilities of the phenomena following World War II. Its investigations pointed to the advantages to be derived from the Tilt-Wing concept. It generated enough interest from the Navy with its expertise, and received a contract in 1957 for a four-ton payload, tilt-wing transport.

The company's potential also attracted the interest of the Air Force in 1954. Three years later the Air Force pushed for the construction of a prototype and a flight test program, and awarded the company a $4 million contract to accomplish the awesome task. Even though the plane was built from scratch as a research-gaining test bed the **X-18** definitely carried the look of an era transport and it would also be the largest VTOL aircraft built to date at the time.

The contract called for a twin-engine Tilt-Wing convertiplane, was also required to have a significant forward speed capability of about 640km/h in addition to its vertical take-off and landing capabilities,

Another consideration of the flexibility of the plane was that where landing strips were available the **X-18** could be used in a conventional take-off mode resulting in an increased payload capability. The model was to also be constructed using as much conventional fabrication techniques as possible. The task was aided greatly during its early phases by a series of wind tunnel tests at NACA Langley, Virginia. The first, and only, prototype was completed in 1958 and quickly became involved in an extensive ground test program.

The first actual flight test took place on November 24, 1959. There would be twenty flights in the program with the program ending in July 1961. It was that final flight of the program that actually spelled disaster.

When a problem occurred with one propeller's pitch control system the program was terminated; however, the fact that the engines were not cross-shafted together contributed to the termination as well.

But after the flight testing was over there was still another important mission to be performed by the **X-18**. During this phase the plane would serve to generate a data base for the four-engine **XC-142** Tilt-Wing transport that would follow.

During its final days, the **X-18** would be damaged when a ground test stand, upon which it was mounted, failed. Shortly thereafter, the **X-18**, like a number of the other X planes, would be disassembled and cut up for scrap.

Looking at the engineering of the **X-18** it quickly comes to light that this was an extremely complicated machine, and certainly pushed the state-of-the-art for the time period.

The propulsion system, although it wasn't immediately evident when viewing the plane, carried three engines. Besides the obvious pair of Allison T40-A-14 turboprops, each mounting a pair of Curtiss-Wright turbo-electric three-bladed propellers and putting out a total of just over 11000 horsepower, there was also a 1530-kg-thrust Westinghouse J-34 turbojet located in the aft fuselage that provided the greatly-needed pitch control. It was located in the aft fuselage. The T40, by the way, was the same engine that was used in the **Convair XFY-1 "Pogo"** Tail Sitter VTOL fighter.

The thrust from this auxiliary engine was diverted through a pipe that protruded out the rear of the aircraft and terminated with an up-and-down diverter valve. By applying the thrust in either an up-or-down direction, the devise was able to maintain the craft's pitch control.

The T-40 props were huge, 4.8m in diameter, with the props geared to be counter-rotating. The engines provided significant lift, thrust, providing the **X-18** with excellent performance through transition from vertical to horizontal flight. Following transition to its forward velocity the **X-18** acquired the look of a conventional transport, and it was hard to even identify its VTOL capability.

The cockpit featured a standard cockpit layout, but stability augmentation was built into the roll and pitch axes. Hydraulic boost was used on the ailerons, and a jet diverter and a servo tab boost on the rudder. The only additional control on the cockpit panel was a lever to tilt the wing, which was mechanically locked in the full-down position, but hydraulically locked when in the intermediate positions.

The **X-18** airframe certainly was not a from-scratch project, but instead was derived from a montage of existing aircraft parts and pieces. The main fuselage, which was 19.8m in length, was a modified **Chase XC-122C** model with other parts coming from a **R3Y** transport. Its construction did not require any unconventional techniques or components, which resulted in a great timesaving's in the overall project.

The fuselage was actually cut in half during the construction process and stretched to a length, which was required to meet the center of gravity and landing gear requirements. For simplicity reasons, the tricycle landing gear was fixed in the

deployed position. During horizontal flight, the **X-18** carried the look of a standard transport although the wings looked a bit stubby.

The high-set 14.6m-span wing, though, was a new design, with the engines nearly centered between the fuselage centerline and the wing tips. Interestingly, there were no flaps but ailerons, with the actual tilting of the wing, was accomplished by a pair of hydraulic pistons. The high-set wing was designed to rotate through a complete 90 degrees, enabling a pure helicopter vertical transition.

The **X-18** weighed 12150kg empty and 14850kg loaded. Compared to the other VTOL craft of the time, the **X-18** was a large aircraft and required each main Allison T-40 engine to lift 7430kg, as compared to the 5400 to 6300kg for each of the Tail-Sitter VTOL projects.

From the pilots' point-of-view, the **X-18** was rated as an easy aircraft to learn. That came from the fact that the cockpit controls were practically identical to any turboprop transport of the period, the only addition being the wing-tilt lever.

Source Document

That is it for this Monday. Enjoy the week, enjoy the videos, and remember you are a **"Gatekeeper"** regardless of your rating.

Robert Novell

May 6, 2013

The RJ Revolution, the Regional Airlines, and the Boeing 717 - June 14, 2013

Robert Novell's Third Dimension Blog

Good Afternoon and Happy Friday---The week pasted quickly for me and I must admit that I am ready for some down time. I hope everyone is well and thanks for stopping by the 3DB where once again we are going to talk about the future of the Regional Jets and the ACMI carriers who operate them.

The picture above is a RJ-200 operated by Air Wisconsin for US Airways and one of the issues that I am having a problem answering for myself is what happens to the regionals supporting American/US Airways when the main line carriers become a single entity; however, while I have some facts to share with you, that may give you/us a starting point to build on, I don't have a definitive answer to offer up - only speculation.

So, let's move ahead with a few more facts.....

One of the points we talked about last week was fuel cost being the primary consideration for the CRJ-200s being put out to pasture but I am not sure that is true. Yes, fuel cost per seat mile are high but if you have a lease payment for the new equipment that will be almost six times what they are currently paying per month then how much are the main line carriers saving? Is there another reason that has the main line carriers moving away from the 200s and into the 76 seat aircraft?

Could it be that the image of the 200s, having been dubbed a circular sardine can by the public, be the issue? No, because I don't think Delta would have just purchased 40 CRJ-900s, with an option for 30 more if this was true.

Could it be that the CRJ-200 is beginning to encounter higher maintenance cost because of high utilization and their age? Are they destined to be pushed aside like the DC-9s and early B-737s - Maybe?

Could it be that the main line carriers are going to give the new equipment to ACMI operators who have a lower cost as compared to the size, and seniority issues, of the current operators? I know of two cases in the past where this solution was used by the main line carrier in order to push the cost per hour down to meet their needs. Could this be happening again? For sure we know that the "Scope Clause" that brought on the RJ Revolution and made the 50 seat jets a mainstay for the regionals is now going to make the 76 seat jets the mainstay and the 50 seaters are no longer wanted, or needed, by the main line carriers.

Currently there are around 600 CRJ-200s operating in North America and Embraer has around 600 of the ERJ-135/140/145 operating in the same market. There is a potential market for some of these airplanes to be converted into freighters, or corporate aircraft, and the emerging market in Russia, Africa, and elsewhere may absorb some. However, I think the majority will end up in the desert but there are still other airframes whose future may be in question.

Regional Airline Fleet

Scheduled Passenger Carriers for Select Aircraft[1] (as of July 2012)

	Manufacturer	Aircraft Type	Number of Aircraft	% of Total Aircraft	Average Seats	Total Seats
REGIONAL JETS	Bombardier	CRJ100/200	585	24%	50	29,250
	Embraer	ERJ 145	454	18.6%	50	22,700
	Bombardier	CRJ 700/705	279	11.5%	70	19,530
	Embraer	EMB 170/175	187	7.7%	70	13,090
	Bombardier	CRJ 900	139	5.7%	86	11,954
	Embraer	ERJ 135/140	103	4.2%	37	3,811
	Total		**1,747**	**71.7%**		**100,335**
TURBOPROPS	Bombardier	DHC-8-100/200	101	4.1%	37	3,737
	Raytheon	Beech 1900	79	3.2%	19	1,501
	Saab	340	62	2.5%	35	2,170
	Bombardier	DHC-8Q-400	98	4.0%	74	7,252
	Embraer	EMB 120	50	2.1%	30	1,500
	Bombardier	DHC-8Q-300	44	1.8%	50	2,200
	ATR	ATR 72	24	1.0%	60	1,440
	Cessna	208-Caravan	84	3.4%	10	840
	Bombardier	DHC-6	3	0.1%	19	57
	Cessna	207-Skywagon[2]	21	0.9%	6	126
	Piper	Chieftan PA-31	6	0.2%	9	54
	Reims-Cessna	406	73	3.0%	9	657
	Britten Norman	BN Islander[2]	24	1.0%	9	216
	ATR	ATR 42	11	0.5%	48	528
	Raytheon	B100	2	0.1%	8	16
	Pilatus	PC-12	2	0.1%	9	18
	CASA	C-212	2	0.1%	26	52
	Short Brothers	SD3-60	2	0.1%	36	72
	Total		**688**	**28.2%**		**22,436**
	Grand Total		**2,435**			**122,771**

Source: OAG Schedules, OAG Fleet

Notes:
[1] Does not include aircraft under 9 seats
[1] Does not include 9 A318, 38 A319, and 7 A320 owned by Republic Airways Holdings Inc.
[1] Does not include 1 Shorts 330 Sherpa cargo aircraft owned by Era Aviation
[2] Aircraft fleet totals only for member carriers

An interesting item for you to consider about Delta is that when they shut down Comair in September of 2012 they noted that ***COST*** was the primary consideration. They also announced that the 500 or so RJs would be reduced to around 100 within two years; however the big announcement that got everyone's attention was that they would be leasing all of the 88 Air Tran B-717s from Southwest.

A copy of an article on that lease agreement can be found below.

Southwest to Unload AirTran's Boeing 717s With Delta Leases

By Mary Schlangenstein & Mary Jane Credeur - May 22, 2012 3:19 PM PT

Southwest Airlines Co. (LUV) will unload its Boeing Co. (BA) 717 jets, returning the discount carrier to flying just one type of plane, under a tentative sublease agreement with Delta Air Lines Inc. (DAL)

Delta will become the biggest operator of the 717, a model out of production since 2006, as it takes the 88 jets Southwest acquired in buying AirTran Holdings Inc. in 2011. Atlanta-based Delta said today the planes will replace less-efficient jets.

Shifting back to flying only Boeing 737s will help Dallas- based Southwest curb training and maintenance expenses, and dropping the smaller 717 also rids the airline of a plane that costs more to fly on a per-seat basis. Southwest is the largest customer for the 737, the world's most widely flown jetliner.

"It returns us to a single fleet type and improves our overall economics," Chief Operating Officer Mike Van de Ven said in an interview. "It improves our scheduling flexibility and our ability to recover when operations go awry."

Delta will use the 717s to replace 50-seat regional jets and older DC-9s targeted to be removed from its fleet. The purchase extends the airline's strategy of adding

used planes, such as the Boeing MD-90s bought in April, to help retire some of its aging aircraft.

Neither airline disclosed financial terms.

Southwest Drops

Southwest fell 0.8 percent to $8.27 at the close in New York, while Delta slipped 0.4 percent to $10.54.

Boeing made only 156 of the twin-engine 717s in seven years of deliveries that ended in 2006. By comparison, the 737 has amassed more than 9,300 orders since its first one in 1965, and the best-selling variant made today can seat about 160 people, according to Boeing's website.

The 117-seat 717s would move to Delta over three years starting in the second half of 2013 through 2015, Southwest said in a statement. The airline has said it expects to end 2012 with about 692 planes, including the 717s. Boeing Capital Corp. holds the 717 leases and is a party to the Delta accord.

When Southwest agreed to acquire AirTran in September 2010, the airline said it saw a role for the 717 in serving smaller cities. The AirTran purchase closed in May 2011, and Southwest said in August it wanted to drop the planes, after fuel prices climbed 48 percent in the previous 11 months.

Made Sense

"If there was one factor that influenced the economics of the airplane more than anything else, it was rising fuel prices," Van de Ven said. "At that point, it made sense for us to try to get back to a single fleet."

Once talks began with Delta, Southwest didn't search for any other carriers to sublease the planes, Van de Ven said. Southwest's leases extend through 2018 to 2024.

Delta's acquisition of the 717s is contingent upon its pilots approving a tentative agreement to cover the aircraft. Voting will conclude June 30 on the accord, which also allows Delta to add as many as 70 two-class, 76-seat regional jets.

"These actions pave the way for us to restructure and up- gauge our domestic fleet, which will lower our costs, provide more pilot jobs and improve the onboard experience for our customers," Chief Executive Officer Richard Anderson said in a statement.

Southwest plans to keep its fleet count largely unchanged as the 717s move to Delta at a rate of three a month starting in mid-2013. Delta said the 717s won't alter its seating capacity.

Source Document

Reference the union agreement with the Delta pilots that is pending ratification. You will find the following verbiage:

In terms of scope, we were able to achieve important improvements, from the smallest jets through international joint venture protections. Scope is the most complex section of the contract. At its core, it is about who flies Delta's passengers and ultimately, about Delta pilot jobs.

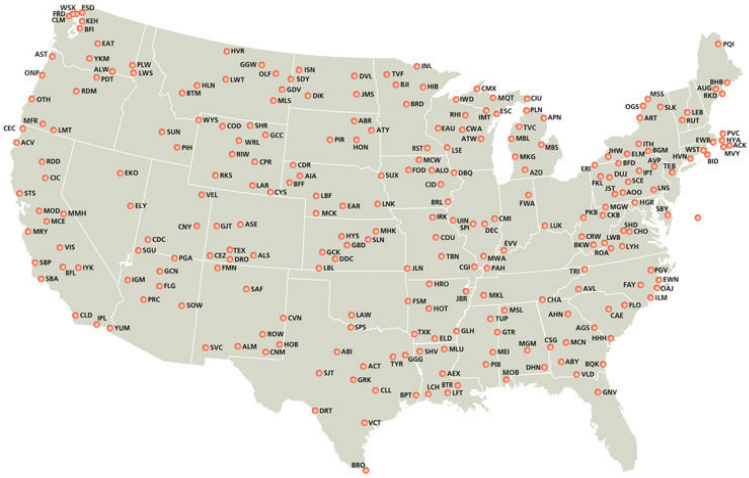
Importantly, we will have a block hour ratio, which establishes a minimum amount of mainline flying relative to DCI flying and a cap on the total number of 50 to 76 seat DCI aircraft. Delta will be permitted accelerated access to 76-seat jets, but this access can only occur if Delta first acquires small narrow-body jets flown by Delta mainline pilots and if there is a significant reduction in the number of 50-seat aircraft. Without the acquisition of these new mainline aircraft, Delta will be capped at the current level for 70/76-seat jets. Ultimately, under this agreement, Delta's access to 76-seat jets will be capped at 32 less than what is allowed in the current PWA. Additionally, Delta will no longer be permitted to convert 70-seat jets to 76-seat jets going forward, regardless of the size of the mainline fleet. Delta management decides which aircraft it operates, but we have every reason to believe that Delta will soon announce the purchase of aircraft contingent on the ratification of this agreement. This will represent a major opportunity for many of our pilots to upgrade from the right seat to the left seat and will also create a need for additional hiring for the right seat. While the details are complex and best left for a dedicated Negotiators' Notepad, let me summarize by saying that if Delta executes its plan for the small narrow-body jet flying, the result will be a major shift of block hours to Delta mainline. The share of mainline domestic flying will increase by 21 percent and the ratio of mainline domestic to DCI flying will increase by 57 percent over the life of this agreement.

The entire agreement can be found by clicking HERE.

It will be very interesting to see if Boeing responds to the renewed interest in the B-717 by Delta, and others. Will they once again get in to the business of building this airplane, which is now considered to be a regional airliner, or will Boeing allow others like Canandair and Embraer move in to their market like Airbus did?

The Boeing question is an interesting one but another good question is how may airports only have the regional airlines serving their community? I went to the RAA website and found this chart below:

US Airports Served Exclusively by Regional Airlines
for the Lower 48



ABI	Abilene TX	CDR	Chadron NE	ESC	Escanaba MI	IPT	Williamsport (Regional) PA	MLS	Miles City MT	SBA	Santa Barbara CA
ABR	Aberdeen SD	CEC	Crescent City CA	ESD	Eastsound WA	IRK	Kirksville MO	MLU	Monroe LA	SBP	San Luis Obispo CA
ABY	Albany GA	CEZ	Cortez CO	EVV	Evansville IN	ISN	Williston ND	MMH	Mammoth Lakes CA	SBY	Salisbury/Ocean City MD
ACK	Nantucket MA	CGI	Cape Girardeau MO	EWB	New Bedford MA	ITH	Ithaca NY	MMU	Morristown NJ	SCE	State College PA
ACT	Waco (Municipal) TX	CHA	Chattanooga TN	EWN	New Bern NC	IWD	Ironwood MI	MOD	Modesto CA	SDY	Sidney MT
ACV	Eureka/Arcata CA	CHO	Charlottesville VA	FBS	Friday Harbour WA	IYK	Inyokern CA	MQT	Marquette MI	SGU	St. George UT
AEX	Alexandria (Intl) LA	CIC	Chico CA	FKL	Franklin PA	JBR	Jonesboro AR	MRY	Monterey CA	SHD	Shenandoah Valley VA
AHN	Athens GA	CIU	Sault Ste. Marie (Chippewa) MI	FLG	Grand Canyon (Pulliam) AZ	JHW	Jamestown NY	MSL	Muscle Shoals AL	SHR	Sheridan WY
AIA	Alliance NE	CKB	Clarksburg WV	FLO	Florence SC	JLN	Joplin MO	MSS	Massena NY	SHV	Shreveport LA
ALM	Alamogordo NM	CLD	Carlsbad CA	FMN	Farmington NM	JMS	Jamestown ND	MVY	Martha's Vineyard MA	SJT	San Angelo TX
ALO	Waterloo IA	CLL	College Station TX	FOD	Ft. Dodge IA	JST	Johnstown PA	MWA	Marion IL	SLK	Saranac Lake NY
ALS	Alamosa CO	CLM	Pt. Angeles WA	FRD	Friday Harbor WA	KEH	Seattle/Tacoma (Kenmore) WA	OAJ	Jacksonville NC	SLN	Salina KS
ALW	Walla Walla WA	CMI	Champaign IL	FSM	Ft. Smith AR	LAR	Laramie WY	OGS	Ogdensburg NY	SOW	Show Low AZ
AOO	Altoona PA	CMX	Hancock MI	GBD	Great Bend KS	LAW	Lawton OK	OLF	Wolf Point MT	SPI	Springfield IL
APN	Alpena MI	CNM	Carlsbad NM	GCC	Gillette WY	LBF	North Platte NE	OTH	North Bend OR	SPS	Wichita Falls TX
ART	Watertown NY	CNY	Moab UT	GCK	Garden City (Regional) KS	LBL	Liberal KS	PAH	Paducah KY	STS	Santa Rosa CA
ASE	Aspen CO	COD	Cody WY	GCN	Grand Canyon AZ	LCH	Lake Charles (Regional) LA	PDT	Pendleton OR	SUN	Sun Valley ID
ATW	Appleton WI	COU	Columbia MO	GDV	Glendive MT	LEB	Lebanon NH	PFN	Panama City FL	SUX	Sioux City IA
ATY	Watertown SD	CPR	Casper WY	GGG	Longview TX	LFT	Lafayette LA	PGA	Page AZ	SVC	Silver City NM
AUG	Augusta ME	CRW	Charleston WV	GGW	Glasgow MT	LKE	Seattle (L.Union) WA	PGV	Greenville NC	TBN	Ft. Leonard Wood MO
AVL	Asheville NC	CSG	Columbus GA	GJT	Grand Junction CO	LMT	Klamath Falls OR	PIB	Laurel/Hattiesburg MS	TEX	Telluride CO
AVP	Wilkes-Barre/Scranton PA	CVN	Clovis NM	GLH	Greenville MS	LNK	Lincoln NE	PIH	Pocatello ID	TUP	Tupelo MS
AZO	Kalamazoo MI	CWA	Wausau (Central) WI	GNV	Gainesville FL	LNS	Lancaster PA	PIR	Pierre SD	TVC	Traverse City MI
BFD	Bradford PA	CYS	Cheyenne WY	GRK	Killeen Gray AAF TX	LSE	La Crosse WI	PKB	Parkersburg/Marietta (Regional) WV	TVF	Thief River Falls MN
BFF	Scottsbluff NE	DBQ	Dubuque IA	GSP	Greenville/Spartanburg SC	LUK	Cincinnati (Lunkin) OH	PLN	Pellston MI	TWF	Twin Falls ID
BFI	Seattle (Boeing Field) WA	DDC	Dodge City KS	GTR	Columbus (G.T. Regional) MS	LWB	Greenbrier WV	PQI	Presque Isle ME	TXK	Texarkana AR
BFL	Bakersfield CA	DEC	Decatur IL	HHH	Hilton Head Isl. SC	LWS	Lewiston ID	PRC	Prescott AZ	TYR	Tyler TX
BGM	Binghamton NY	DHN	Dothan (Regional) AL	HIB	Hibbing/Chisholm MN	LWT	Lewistown MT	PUB	Pueblo CO	UIN	Quincy IL
BHB	Bar Harbor ME	DIK	Dickinson ND	HLN	Helena MT	LYH	Lynchburg VA	PUW	Pullman WA	VCT	Victoria TX
BID	Block Is. RI	DRO	Durango CO	HOB	Hobbs NM	MBL	Manistee MI	PVC	Provincetown MA	VEL	Vernal UT
BJI	Bemidji MN	DRT	Del Rio TX	HON	Huron SD	MBS	Saginaw MI	RDD	Redding CA	VIS	Visalia CA
BKW	Beckley WV	DUJ	Dubois PA	HOT	Hot Springs AR	MCE	Merced (Macready Regional) CA	RDM	Redmond OR	VLD	Valdosta GA
BLD	Boulder City NV	DVL	Devils Lake ND	HRO	Harrison AR	MCK	McCook NE	RHI	Rhinelander WI	WRL	Worland WY
BPT	Beaumont/Pt. Arthur TX	EAR	Kearney NE	HVN	New Haven CT	MCN	Macon GA	RIW	Riverton WY	WST	Westerly RI
BQK	Brunswick (Glynco) GA	EAT	Wenatchee WA	HVR	Havre MT	MCW	Mason City IA	RKD	Rockland ME	WSX	Westsound WA
BRD	Brainerd MN	EAU	Eau Claire WI	HYA	Hyannis MA	MEI	Meridian MS	RKS	Rock Springs WY	WYS	West Yellowstone MT
BRL	Burlington IA	EKO	Elko NV	HYS	Hays KS	MGM	Montgomery AL	ROA	Roanoke VA	YKM	Yakima WA
BRO	Brownsville TX	ELD	El Dorado AR	IGM	Kingman AZ	MGW	Morgantown WV	ROW	Roswell NM	YUM	Yuma AZ
BTM	Butte MT	ELM	Elmira NY	IMT	Iron Mountain MI	MHK	Manhattan KS	RST	Rochester MN		
BTR	Baton Rouge LA	ELY	Ely NV	INL	International Falls MN	MKG	Muskegon MI	RUT	Rutland VT		
CDC	Cedar City UT	ERI	Erie PA	IPL	El Centro/Imperial CA	MKL	Jackson TN	SAF	Santa Fe NM		

Source: OAG Schedules as of 6/15/2012

The regionals are a needed commodity but I don't think that they need to be a byproduct of the main line carriers. If the economy turns around I believe there

could be room for a few "Independence Air" type carriers, but as we talked about last week the reservation system of the main line carrier is a formidable opponent.

Who are the players in the regional airline industry and who do they fly for? I went to the RAA website and found that info and I was glad to see that there are some operators out there who fly there on colors; however, the most interesting point we have to consider is how many more of the large carriers like Comair will disappear and be replaced by a new ACMI carrier that will pay their people less and fly under contract at a reduced rate to get their foot in the door. There is a lot of money to be made by management.

Corporate Groupings of Top 50 Regional Airlines

(as of July 2012)

2011 Individual Carrier Rank	2011 Carrier Group Rank	Carrier	Primary Codes Shared in 2011	2011 Passengers Enplaned	Percent of Total	2011 Enplaned Group
	1	**SkyWest Airlines**				54,777,389
1		- SkyWest Airlines	DL/FL/UA/US	24,400,201	15.0%	
3		- ExpressJet Airlines	CO/DL/UA	16,196,456	9.9%	
4		- Atlantic Southeast	DL/UA	14,180,732	8.7%	
	2	**Republic Holdings**				20,752,897
6		- Republic Airlines	YS/YX/F9/US	10,438,839	6.4%	
12		- Chautauqua Airlines	AA/CO/DL/UA/US/YX	5,302,099	3.3%	
13		- Shuttle America Corp.	DL/UA	4,937,951	3.0%	
37		- Lynx Aviation[1]	F9	74,008	0.0%	
	3	**Pinnacle Airlines Corp.**				20,061,265
5		- Pinnacle Airlines	DL	10,473,996	6.4%	
10		- Mesaba Airlines	DL/UA	5,686,734	3.5%	
15		- Colgan Air	CO/UA/US	3,900,535	2.4%	
	4	**American Eagle**				19,979,647
2		- American Eagle	AA	17,347,693	10.6%	
18		- Executive Airlines	AA	2,631,954	1.6%	
	5	**Mesa Air Group**				8,315,828
7		- Mesa Airlines	UA/US	8,315,828	5.1%	
	6	**Trans States Holdings**				8,027,555
16		- Compass Air	DL	3,607,012	2.2%	
19		- GoJet Airlines	US/UA	2,492,135	1.5%	
20		- Trans States Airlines	AA/UA/US	1,928,408	1.2%	
	7	**US Airways Group**				7,870,168
14		- PSA Airlines Inc.	US	4,860,854	3.0%	
17		- Piedmont Airlines	US	3,009,314	1.8%	
8		**Horizon Air**	AS	6,617,371	4.1%	
	9	**Delta Air Lines**				5,956,105
11		- Comair, Inc.	DL	5,483,597	3.4%	
9	8	**Air Wisconsin Corp.**	UA/US	5,956,429	3.7%	5,956,429
21	10	**Commutair**	CO/UA	986,997	0.6%	986,997
22	11	**Cape Air**	CO/UA	700,774	0.4%	700,774
	12	**ERA Alaska**			0.0%	630,797
24		- Era Aviation		409,203	0.3%	
28		- Hageland Aviation		217,459	0.1%	
51		- Frontier Flying Service		4,135	0.0%	
23	13	**Great Lakes Airlines**		523,577	0.3%	523,577
26	15	**Gulfstream Intl/Silver Airways**	UA/CO	311,876	0.2%	311,876
25	14	**Island Air Hawaii**		401,250	0.2%	401,250
27	16	**Grand Canyon dba Scenic**		249,340	0.2%	249,340
29	17	**Peninsula Airways**	AS	215,995	0.1%	215,995
30	18	**Seaborne Aviation**		202,972	0.1%	202,972
31	19	**Grant Aviation**		118,131	0.1%	118,131
32	20	**Caribbean Sun Airlines**		106,691	0.1%	106,691
33	21	**Wings of Alaska**		101,771	0.1%	101,771
34	22	**Vieques Air Link**		94,692	0.1%	94,692
35	23	**Kenmore Air Harbor**		84,395	0.1%	84,395
36	24	**Bering Air**		75,726	0.0%	75,726
38	25	**Yute Air - Flight Alaska**		57,747	0.0%	57,747
39	26	**Pacific Wings Airlines**		42,268	0.0%	42,268
40	27	**Warbelows Air Ventures**		42,173	0.0%	42,173
41	28	**PM Air LLC**		34,684	0.0%	34,684
42	29	**Wright Air**		34,118	0.0%	34,118
43	30	**Taquan Air Service**		22,815	0.0%	22,815
44	31	**Island Air Service**		19,308	0.0%	19,308
45	32	**New England Airlines LLC**		19,064	0.0%	19,064
46	33	**Pacific Airways INC**		16,658	0.0%	16,658
47	34	**Iliamna Air Taxi**		15,128	0.0%	15,128
48	35	**Katmai Air**		13,758	0.0%	13,758
49	36	**Tradewind Aviation**		13,367	0.0%	13,367
50	37	**Homer Air**		11,957	0.0%	11,957
Total Traffic Activity - Top 50 Airlines				**162,990,175**		
Total Traffic Activity				**163,058,846**		
Top 50 Airlines as a Percent of Total				**99.96%**		

Notes:

1 Lynx Aviation ceased operations in March 2011.

Source: OAG Form41 iNET

Regional Airline Partnerships

(as of September 2012)

Mainline Carrier	Regional Brand	Operating Partners
Alaska Air Group	N/A	Horizon Air
		Peninsula Airways
		SkyWest Airlines
AmericanAirlines	American Eagle	American Eagle
		American Eagle/Executive
	American Connection	Chautauqua Airlines
	N/A	Cape Air
DELTA	Delta Connection	Chautauqua Airlines
		Comair[2]
		Compass Airlines
		ExpressJet Airlines
		GoJet Airlines
		Pinnacle Airlines
		Shuttle America
		SkyWest Airlines
FRONTIER	N/A	Great Lakes Airlines
		Chautauqua Airlines
		Republic Airlines
jetBlue AIRWAYS	N/A	Cape Air
UNITED	United Express	Cape Air
		Chautauqua Airlines
		Colgan Air[1]
		CommutAir
		ExpressJet Airlines
		GoJet Airlines
		Great Lakes Airlines
		Mesa Airlines
		Republic Airlines
		Silver Airways
		Shuttle America
		SkyWest Airlines
		Trans States Airlines
U·S AIRWAYS	US Airways Express	Air Wisconsin
		Chautauqua Airlines
		Colgan Air
		Mesa Airlines
		Piedmont Airlines
		PSA Airlines
		Republic Airlines
		SkyWest Airlines
		Trans States Airlines

[1] The final Colgan flight dba United Express ends September 5, 2012
[2] Comair ceased operations September 29, 2012

Source: OAG Schedules, July 2012

The issue concerning the RJs is no longer an unanswered question---they are finished and the 76 seat aircraft are in. How many 76 seat aircraft are required to replace the current fleet of RJ's/ERJs? Around 650 but if the B-717 becomes a player this number will change dramatically.

Before I close I want to address the issue of American Eagle and then pose a few questions for you to consider.

First - I have found nothing that says for sure that American Eagle will cease to exist but what I have found are three separate articles where Eagle Chief Executive Officer Dan Garton has said that there is a possibility of that occurring before year's end. I have no insider information to offer up but please remember that

American owns the paper on the airplanes just like Delta owned the paper on Comair's airplanes. American manages Eagle as did Delta managed Comair. Does American Eagle go the way of Comair because of cost, seniority issues, and per hour pricing? You decide, but for me I would say be prepared for the worse. I think Eagle will disappear shortly after the merger comes together and the newly packaged American, who appears to be run by US Air management, emerges back in to the market place. I know that no one in the regional community wants to see this happen because of the number of families that will be hurt; however, plan for the worst and hope for the best.

Now, let's think about these questions and we will see if we can address the specifics of each later this month as I continue to talk about the facts:

1. What do the main line carriers bring to the table, and add to the menu, for people in commercial aviation with the ACMI carriers they have chosen to operate their regional aircraft?

2. Do the ACMI carriers who are currently operating for the legacy carriers provide their people with the tools, pay, and benefits to ensure their day-to-day success?

3. Do the ACMI carriers provide long-term job security for those they employ?

4. What does the future hold for the US if all air service is controlled by the remaining legacy carriers?

I hope that the weekend affords time for everyone to enjoy some time with family and friends and thanks for stopping by. Take care, fly safe/be safe, and remember all aviators are **"Gatekeepers."**

Robert Novell

June 14, 2013

Tacit Blue
The Mother of Stealth Technology and the B-2 Bomber - June 28, 2013

Robert Novell's Third Dimension Blog

Good Morning---we are going to take a break this week and perhaps next week as well, from the RJ revolution topic and look back at a program that gave birth to the B-2 Bomber and other programs. The program was called "Tacit Blue" and those who worked the program simply called the airplane "Shamu" because it's profile reminded them of a killer whale.

Enjoy.....

Tacit Blue Program

In early April 1976, Lockheed received word that it had officially won Phase I of the XST competition. However, DARPA urged the Northrop team to remain together, and shortly thereafter, it successfully submitted studies for a **Battlefield Surveillance Aircraft, experimental** (**BSAX**) which was to evolve into a highly successful flight demonstration program that provided vital data for the subsequent B-2 bomber.

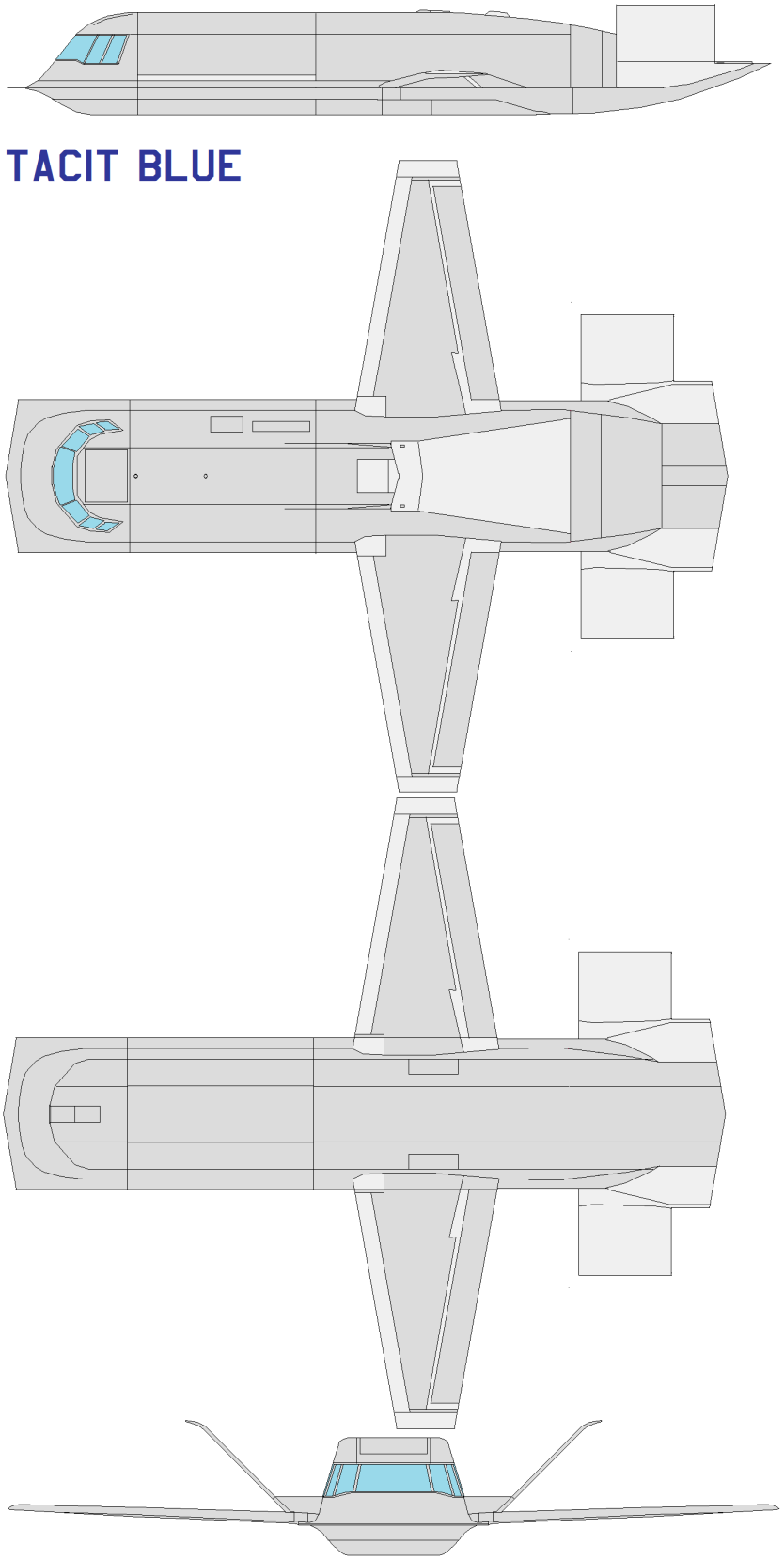
The USAF, DARPA, and Northrop teamed up for the **TACIT BLUE** Technology Demonstration Program from 1978 to 1985. The prototype validated a number of innovative stealth technology advances. Most notably, it was the first aircraft to demonstrate a low radar cross section using curved surfaces, along with a low probability of intercept radar and data link. TACIT BLUE initially 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. Such an aircraft could continuously monitor the ground situation behind the battlefield and provide targeting information in real-time to a ground command center.

The TACIT BLUE prototype was nicknamed "The Whale" or "Shamu" by the people who worked on it; the real name of the plane, if any, has never been revealed. TACIT BLUE featured a straight, tapered wing with a "V" tail mounted on an oversized fuselage with a curved shape. It had a wingspan of 48.2 feet and a length of 55.8 feet and weighed 30,000 pounds. A single flush inlet on the top of the fuselage provided air to two high-bypass turbofan engines. Flight control was supplied by a quadruply-redundant, digital fly-by-wire flight system that stabilized the aircraft about the longitudinal and directional axes.

TACIT BLUE owed some of its unique shape and size to the reconnaissance equipment it was designed to carry. Hughes multi-mode-side-looking radar

(SLAR) a predecessor to the ground surveillance radar used in Joint Stars, took up a large part of SHAMU's structure. The SLAR on TACIT BLUE was part of an effort to test if a LPI (low probability of intercept) radar could be flown on a stealth aircraft without compromising its presence. ELINT (Electronic Intelligence) antennas for intercepting enemy communications were also part of TACIT BLUE's reconnaissance systems.

TACIT BLUE was developed as a potential platform for radar sensors developed under the Air Force Pave Mover and Army SOTAS programs. In 1982, the Undersecretary of Defense for Research and Engineering (USDRE) combined the SOTAS and Pave Mover efforts into a joint program, later designated **Joint-STARS** or **J-STARS**. From 1982-1984, the services, OSD, and Congress wrestled over the development of requirements for the joint program, as well as the appropriate platform for the sensor. At the time, one option under active consideration was a two-phased program in which the radar would initially be deployed on ten conventional aircraft, with subsequent production focused on a stealth platform derived from the TACIT BLUE test aircraft. In May 1984, the Chiefs of Staff of the Air Force and Army made the final decision to put the Joint STARS radar on a 707 platform.


TACIT BLUE

TACIT BLUE was one of the most successful technology demonstrator programs in Air Force history, meeting all program objectives and most low observable and sensor performance goals. The aircraft made its first flight in February 1982, and subsequently logged 135 hours of flight over a three-year period. The aircraft often achieved three to four flights weekly and several times flew more than once a day.

There were a total of five pilots who flew the aircraft. The first was Dick Thomas, a Northop test pilot. The air Force pilots were Lieutenant Colonel Ken Dyson (who was also a HAVE BLUE pilot) and Lieutenant Colonels, Wes Easter, Don Cornell and Major Dan Vanderhurst. The program cost approximately $165 million and covered development, construction and flight test. As the prime contractor, Northrop received a $136 million contract to provide one complete technology demonstrator and a partially-developed back-up airframe. TACIT BLUE never went into production but yielded valuable engineering data that aided in the **B-2A Spirit** design. It also served as a basis for several UAVs and especially the later cancelled **M-137 TSSAM** tri-service weapon.

The TACIT BLUE prototype was finally declassified and unveiled to the public on April 30, 1996, at the Pentagon. It was then sent to the Wright-Patterson Air Force Museum, where it was first exhibited underneath the XB-70 'Valkyrie', and now below Boeing's "Bird of Prey".

Source Document

Astute aviation buffs were quick to notice that Tacit Blue looks remarkably like General Atomics
Predator UAV, an unmanned surveillance drone that is currently flying missions over Afghanistan and elsewhere. Another UAV, the Teledyne Ryan Tier can also claim Tacit Blue as a direct ancestor.

Although the Air Force couldn't be pinned down on how small Tacit Blue's radar signature is, an inside source at Northrop says that the Tacit Blue radar signature is about the size of a bumble bee. That's at least equal, if not smaller than the F-117 Nighthawk. Such an aircraft loitering at high altitude could continuously monitor the ground situation behind the battlefield and provide targeting information in real-time to a ground command center, without detection. The reconnaissance technologies explored through Tacit Blue, may have led to the development
of another still-secret tactical reconnaissance aircraft that aviation journalists and stealth chasers

refer to as the "TR-3A Black Manta." According to aviation insiders and eyewitness accounts, the TR-3A is a span-loaded flying wing design, about half the size of the B-2.

Have a good weekend and enjoy some quiet time. For most of us aviation is our lives but remember - there is life after aviation so keep friends and family close.

Robert Novell

June 28, 2013

The Land of OZ - July 24, 2013

Robert Novell's Third Dimension Blog

Good Morning---I suspect that some of you are trying to decide what the picture above is all about. Well, that is the "Great **"OZ"** from the movie, "The Wizard of OZ," and **"OZ"** is all knowing and all powerful. So, what does this have to do with aviation?

I have been working on the CRJ issue, along with the future of the regional airlines, and while I have found that almost all of the "Scope Clauses" for the main line carriers say the same thing about the use of 76 seat aircraft or less, I have not been able to find a single source that proposes a stand-alone regional airline system that contributes to the long term health and welfare of the aviation community at large.

So, I am going to express my concerns with a few words about the promises made by the **"Great OZ."** I invite you to comment here on this blog, or elsewhere, so that we can begin a dialog that may result in a change of how **"Aviators"** are viewed in the marketplace.

The Regional Airline System

(The Land of OZ)

If, as Shakespeare said, all the world is a stage and as a **"Professional"** you are center stage, with the lead role, why would you accept a compensation package that provides no benefits, no long term protection, and sub-standard wages?

Have we as **"Aviators"** been so misled by the business community, and the Aeronautical Universities, that we now believe that the yellow brick road to happiness, and prosperity, must be paid for by mortgaging our future, our dreams beyond aviation, and the future of spouses and children?

In the **"Land of OZ**" can there exist the possibility, for those **"Aviators"** who don't succeed in their quest to land a job at a main line carrier, that they will have an opportunity to receive the rewards they are due?

Will the **"Land of OZ,"** where success is predicated on the cost-cutting demands of the main line carriers, ever mature, and evolve, in to an entity which is capable of standing on its own in order to protect the interest of all **"Professionals?"**

To all **"Aviators"** who have not taken the time to understand the sacrifices made by those who came before you, I challenge you to re-think your position and not accept the slave labor practices that are being employed by **"OZ."** The imaginary pot of gold that **"OZ"** said is waiting for you, once you have paid him to fly his airplanes, is not there based on the numbers I am seeing, and no amount of smoke, exploding plumes of flames, and thunder will change that.

I congratulate all **"Aviators"** who have met the challenges of the **"Third Dimension;"** however, your quest is only now beginning. Each of you must harness the energy found in the collective spirits of your brothers, and sisters, and move forward as an organized group of airline professionals and demand the pay, and benefits, you deserve.

Today is yesterday's tomorrow and if your outlook for your future in commercial aviation remains obscured by clouds then perhaps you, and all who read this, need to bring about the change that is required. Those who will follow in your footsteps will follow your example as a **"Professional"** and remember:

If you always think what you've always thought,
you will always do what you've always done.

If you always do what you've always done,
you will always get what you've always got.

If you always get what you've always got,
you will always think what you've always thought

Now that you know how I feel I will get down off my soap box. Please join me again on Friday when we will be talking about United Airlines. Until then - Fly Safe/Be Safe.

Robert Novell

July 24, 2013

Pan Am Was the Chosen Instrument for the U.S. and Imperial Airways Was the Chosen Instrument of Britain - November 1, 2013

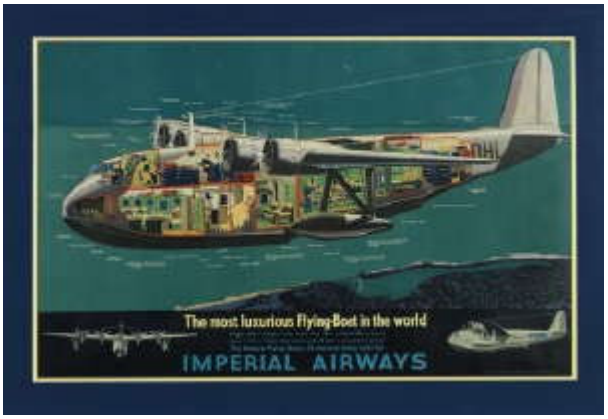
"Robert Novell's Third Dimension Blog"

Good Morning---Pan Am, my favorite airline of all time, was brought in to being to represent the U.S. domestically, and internationally, and was given preferential treatment on all fronts to ensure their success. There was another company 3000 miles away that also had the same status for their country. The company was Imperial Airways and the country was Great Britain.

I think what you will find interesting is that the Imperial Airways model looks very similar to that which the U.S. was doing with Pan Am; however, Imperial Airways began its operations in 1924 which was before Pan Am began its Miami Clipper operation. It would appear that Aeromarine paved the way for Pan Am in the Caribbean and Imperial Airways gave Juan Trippe a blueprint to follow as he pushed his airline to the forefront of commercial aviation.

Come with me now as we go back and explore the origins of British Airways. Enjoy.....

Imperial Airways



In 1923 a Government Committee was appointed to review the policy of subsidizing airlines. It duly reported and recommended that the main existing aircraft companies should be merged into one organization, with the mission of developing British Commercial Air Transport on an economic basis, and creating a company which would be strong enough to develop Britain's external air services. As a result, Imperial Airways Limited was formed on 31 March 1924, and on 1 April 1924 it took over the aircraft and services of: Handley Page Transport Limited, The Instone Air Line Limited, The Daimler Airway, and the British Marine Air Navigation Company Limited.

As the name 'Imperial Airways' implied, the organization had been formed to cast its eyes on more distant horizons than the boundaries of Europe. It was charged with the task of pioneering a chain of long distance intercontinental air services linking the countries of the British Empire with each other and with the United Kingdom. Between the two World Wars, it achieved that aim.

The start of the Empire routes occurred when surveys of the Cairo-Karachi air route had been completed by 1 October 1925. In 1926, there was a large increase in the company's fleet: A Handley Page W9 'City of New York', and four Handley Page W10s 'City of Melbourne', 'City of Pretoria', 'City of London' and 'City of Ottawa' were all christened at Croydon airport on 31 March. On 16 July the new Armstrong Whitworth Argosy, the airline's first three-engine airliner that introduced a new standard of roominess into air passenger flying came into service. On 1 May 1927, an Argosy inaugurated the world’s first named air service - it was the London-Paris 'Silver Wing' service on which meals were served. (Other European routes on which Argosies operated were those to Basle, Brussels and Cologne.)

On 20 December the first of the de Havilland Hercules airliners (ordered by Imperial Airways for service on overseas routes) left England for their new route from Egypt to India.

In January 1927 a service was opened between Cairo and Basra, in the Persian Gulf. To solve the difficulty of navigating across the trackless desert between Palestine and Baghdad, a furrow, several hundred miles long, was ploughed in the sand. It was probably the longest furrow ever ploughed. Further links were added at either end of the route and on 30 March 1929 the Short Calcutta (which was the first of Imperial Airways' flying boats to be built in 1928, designed to operate the Mediterranean sectors of the long-distance routes from the United Kingdom to Australia and South Africa), left London for Karachi on the first through air service between the United Kingdom and India. Later in the same year this route was extended to Jodhpur and Delhi.

On 16 June 1930, an internal service linking London, Birmingham, Manchester and Liverpool was run three times a week. This service connected with European services at Croydon and continued until 20 September when a lack of support closed the route.

In April 1930 the surveys of the Cairo-Cape Town route were completed, and on 28 February 1931 the first part of this route was opened with a weekly service between London and M'wanza in Tanganyika. Calcutta flying boats were used on the trans-Mediterranean section and south along the Nile from Cairo.

On 1 April 1931, the first experimental London-Australia air mail flight took place. The mail was transferred to an Australian aircraft at Koepang in the Netherlands East Indies, and it arrived on 29 April in Sydney.

In 1931, two types of four-engine airliner came on to the scene. The 27 of April saw the first of three Short flying-boats, 'Scipio', which worked in the Mediterranean, while the first of the Handley Page H.P. 42s, 'Hannibal', operated on the London-Paris route for the first time on 11 June. Two classes of H.P. 42 were made. The 'Heracles' class for European routes, with 38 seats, were based at Croydon, and the 'Hannibal' class for routes in Egypt, India, and Central Africa, with 24 seats (to allow for extra fuel and baggage), were based at Cairo. These airliners brought a new standard of service, comfort, and safety to passengers. Stewards served full course meals, the Pullman style upholstery was unrivaled, and even though each of the eight built flew over a million miles, no passenger was ever hurt.

On 20 January 1932, the England-Central Africa service was extended to the Cape for the carriage of mail. Passengers first left London by air for South Africa on 27 April.

In 1933 the Armstrong Whitworth AW15 Atalantas was introduced. It was the first monoplane ordered by Imperial Airways and offered the first significant increase in airliner cruising speed since 1919, cruising at 130 mph. It was described as 'the fastest and most luxurious aircraft designed and produced for the tropics, with ample room for passengers to walk about and chat and to enjoy refreshments'. The type operated from Central Africa to Cape Town and east of Karachi, as the service was extended to Calcutta on 6 July, Rangoon on 23 September and Singapore on 9 December. 1933 also saw Imperial Airways complete 10,000,000 miles of flying.

On 18 January 1934, the formation of Qantas Empire Airways Limited took place, which combined the interests of Imperial Airways and Qantas (Queensland and Northern Territory Aerial Services Limited).

The object was to operate in association with Imperial Airways on the Trans-Australian route. The 8th of December saw the London-Singapore route extended to Brisbane for mail, the Singapore-Brisbane section operated by Qantas Empire Airways. Passengers were carried over the entire England-Australia route from April 1935.

The operation of the Singapore-Brisbane section of the Australia route led to a new airliner which would be suitable - the de Havilland D.H. 86. This was de Havilland's first four-engine aircraft, and it was both designed and built in just four months for the Empire Air Route contract. Both Qantas Empire Airways and Imperial Airways placed orders for this type, and Imperial Airways commissioned the first of these new airliners, 'Diana', on 25 May 1934. The 'Diana' class made new European routes possible, and on 1 April 1935, a daily London and Budapest

via Brussels-Cologne-Prague and Vienna route was opened. During the same year the frequency of both the London-Singapore and London-Johannesburg services were doubled.

On 19 February 1936, the 'Diana' class was used on a weekly mail service between Kano in Nigeria and London, where it flew between Kano and Khartoum, from where the West African service joined the main Africa trunk route. This service later carried passengers and the route terminal was extended to Lagos on 15 October and to Accra on the Gold Coast on 13 October 1937. This route which Imperial Airways pioneered was to become a main supply route to the Middle East during the war.

On 14 March 1936, the type operated a new service between Penang and Hong Kong, linking with the main Australia route at Penang, which gave a weekly service between London and Hong Kong for the first time.

The Short S-23 Empire flying boat has been described as 'without question the most famous and successful of all pre-war civil transports'. The S-23 carried 24 day-passengers or 16 in a sleeping berth layout. A popular feature was its promenade deck. On 30 October 1936, the first of the Short Empire flying boats, the 'Canopus', made its first service flight on a trans-Mediterranean service. Imperial Airways were to make a bold move and order 28 of these aircraft, without awaiting trials of the first aircraft. The aircraft was a success, and further orders were placed, making a total of 42 airplanes. These flying boats were produced to put the Empire Air Mail Program into operation.

Previously Imperial Airways had to carry passengers by train between Paris and the Mediterranean on the Empire routes. The Empire flying boats introduced an all-air route from 16 January 1937, operating from Southampton by way of Marseilles-Rome-Brindisi-Athens and Alexandria. This improvement meant that all Empire services were operated from Southampton from 5th March, and Croydon was the base for European routes only.

During May 1937 Imperial Airways clocked up its 40,000 crossing of the English Channel, as well as its 1,000 flights from England to the Empire. On 15 May land aircraft were withdrawn from the England-South Africa route as far south as Kisumu in Kenya Colony to be replaced by the Empire flying boats which used the Nile bases employed by the Calcutta flying boats. On 2 June Flying boats took over the entire route.

On 16 June 1937, the first British Atlantic air service began when Imperial Airways and Pan American Airways began a joint service between Bermuda and New York, the British service being flown by the 'Cavalier'.

Imperial Airways became BOAC, British Overseas Airways Corporation, and BOAC was merged with BEA, British European Airways, to form British Airways. There are a lot of similarities between the two airlines, Pan Am and Imperial, but it is important to remember that Imperial began its quest to conquer the world in 1923 while Pan Am did not begin to take shape until after 1927. Have a good weekend, take some time to explore the history of Imperial Airways, and take some time to enjoy family and friends. Fly Safe – Be Safe - Be a Gatekeeper. Robert Novell January 19, 2013

Imperial Airways became BOAC, British Overseas Airways Corporation, and BOAC was merged with BEA, British European Airways, to form British Airways. There are a lot of similarities between the two airlines, Pan Am and Imperial, but it is important to remember that Imperial began its quest to conquer the world in 1923 while Pan Am did not begin to take shape until after 1927.

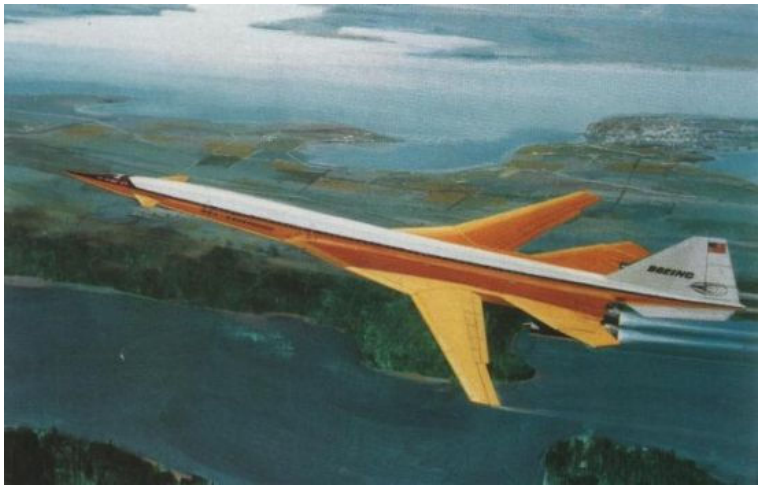
Have a good weekend, enjoy time away from aviation, and enjoy the related videos below.

Robert Novell

November 1, 2013

President Kennedy and the SST
November 29, 2013

Robert Novell's Third Dimension Blog



The Kennedy years were troubled years, sprinkled with some major accomplishments, and President Kennedy's commitment to put a man on the moon would prove to be the crowning jewel; however, how many of us know, remember, that it was also President Kennedy who started the race to build the Super Sonic Transport?

On June 5, 1963, during a speech being given at the Air Force Academy, President Kennedy announced that the government would team up with private industry to build the world's fastest commercial airliner that would be superior to any other country. Of course what the President was saying was that the U.S. would produce a superior machine to what the Anglo-French project called the Concorde. The president later remarked off camera that "We'll beat that bastard De Gaulle."

So began the race for speed……

President Kennedy's Quest for Speed

Boeing SST (Model 2700-200) variable-sweep wing version

The Kennedy administration was confronted with many difficult situations but amid the turmoil Kennedy established several milestones that would propel the U.S. forward, technologically, in an effort to maintain our position as number one. We are all familiar with the Apollo program but Kennedy was also responsible for the SST program.

The pressure was on the administration to respond to the Anglo-French Concorde, as well as the Soviet's TU-144, in order to protect America's leadership position in aerospace as well as the balance of payments in the international arena. Pan Am had already announced that they were taking options on six Concordes as well as BOAC and Air France had announced they would be signing options as well.

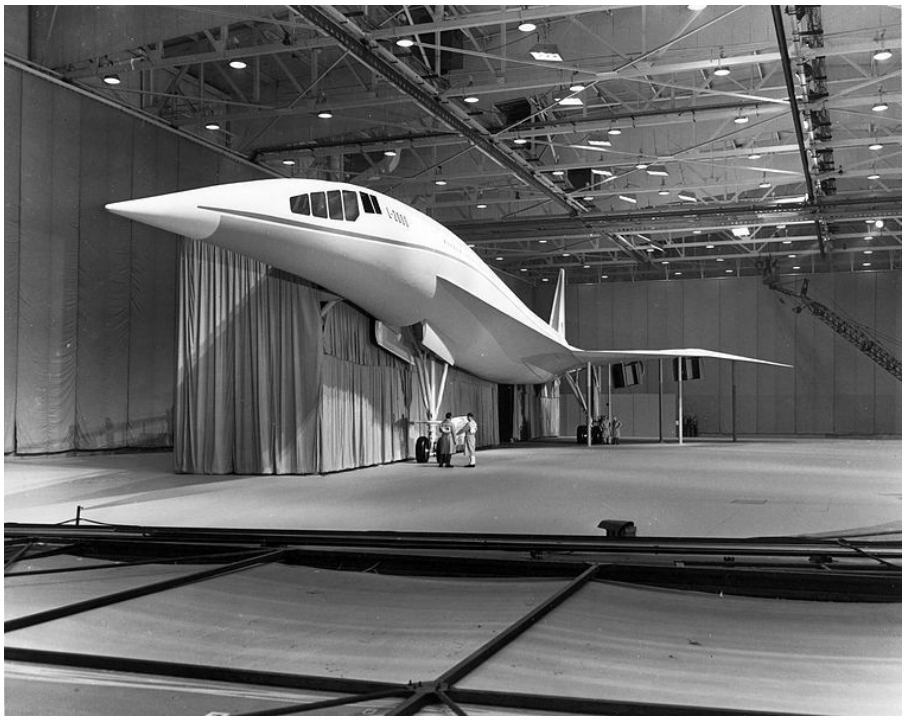
The administration's response was to propose a bigger, and faster, version of the SST. Kennedy had already been briefed by a multi-agency committee, headed up by Vice President Johnson, that a larger, and faster, version of the SST was feasible. The proposal revealed that an airplane capable of 2000 MPH, three times the speed of jet liners introduced only a few years earlier, carrying 300 passengers was attainable; however, Kennedy proposed to Congress that this could be done for one billion dollars which would prove to be way off the mark.

Although the U.S. was getting in to the race behind the Concorde, and the Soviets, the airplane Kennedy envisioned would be faster and more efficient than that which had been proposed, and administration officials pointed out that the Europeans, in their haste to be first, had sacrificed the potential to grow in speed and size. Finally, after months of review by the FAA four companies were asked to

submit final proposals. GE and Pratt and Whitney were to compete for the engine to power America's SST and Boeing and Lockheed would compete to be the manufacturer of the airframe.

Boeing came forward with the boldest design of all. Their concept used variable-geometry wings which was unprecedented for civil aviation. Boeing had perfected the swing wing design when they were competing for the multiservice fighter contract that was awarded to General Dynamics and their F-111 concept. In addition to the swing wing GE was proposing an updated version of the YJ-93 engine that they were using on the XB-70 (see photo below). GE designated the new engine the GE4 and their engine would develop supersonic speed by being the world's largest afterburner. While Boeing was the ultimate winner in the competition, along with GE, there were many difficult problems to overcome. However, the one problem they could not fix was the mindset of Congress.

Lockheed would put forth a design modeled after a secret reconnaissance aircraft that would later become famous as the SR-71 Blackbird. Lockheed's design would be faster at Mach 3, as opposed to Mach 2.7 proposed by Boeing, and would also carry 300 passengers; however, their design was rejected because of the "Delta Wing." What is ironic about this rejection is that Boeing was forced to abandon the "Variable-Geometry Wing," because of weight, and adopted the "Delta Wing" in its final design much to the surprise of Lockheed and others.



The showdown on continuing the construction of the two prototypes by Boeing came in 1971 when Congress was asked for another eighty-three million dollars to continue the program. All of the supporters of the program argued it would be foolish to cancel the program considering the one billion dollars already invested but Washington was not listening. The program was canceled.

Much of the blame for the cancelation was given to the environmental groups who had lobbied hard for their cause. These groups had taken out ads declaring the SST would shatter windows in homes, stampede cattle and other range animals, and would hasten the end of the "American Wilderness." However, in the final analysis Washington concluded that the project just didn't make sense. With air travel in a slump, and fuel prices soaring, even Boeing, GE, and most airlines had doubts about the success of the airplane.

Considering the lack of success by the Concorde the decision by Congress seems to have been the right one.

Cancelling the SST program idled over 13,000 aerospace workers and years later Boeing's CEO admitted that they came very close to declaring bankruptcy; however, they did survive, as did GE who had to idle more than 1600 employees, and both companies maintained their leadership role in the industry.

That is it for this week. I hope everyone has a good weekend and will enjoy some free time away from work. Please join me next week when I will talk about commercial aviation after the SST.

Robert Novell

November 29, 2013

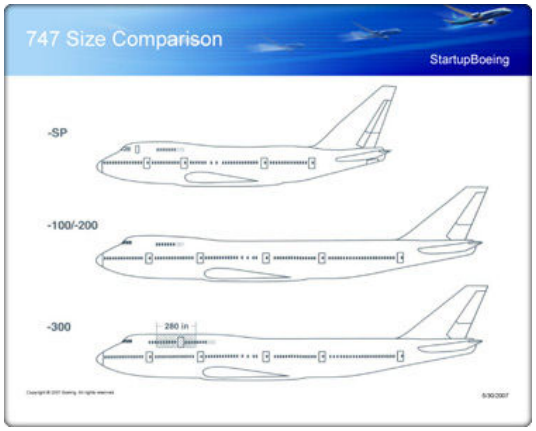
Boeing Rebounds from the SST Debacle - December 6, 2013

Robert Novell's Third Dimension Blog

Good Morning and welcome to the 3DB. Last week we talked about the launch of the SST program by President Kennedy and this week we are going to talk about a program by Boeing that was a game changer for commercial aviation.

SST advocates had clearly miscalculated when they assumed that speed would shape the air transport industry in to the next century, just as it had in the past, and the Boeing-747 that was taking form in a Boeing hangar, even as Boeing assembled its SST mock-up, would prove to be the shape of things to come.

The Widebody Revolution



“Oh my gosh. How are we going to get an engine big enough to carry that weight?” That was Joe Sutter’s, father of the Boeing 747, reaction when tasked with the challenge of building an airplane 2.5 times bigger than the 707 that could hold 350 to 400 passengers. It was the 1960s, and commercial aviation was growing. Sutter led “The Incredibles,” a group of 50,000 Boeing construction workers, mechanics, engineers, secretaries and administrators, which brought the behemoth to life.

The gigantic, efficient, and ubiquitous Boeing 747 transport is a symbol of the most important aspects of progress in civil aviation: the democratization and globalization of travel. At this instant, thousands of airline terminals around the world are crowded with millions of people representing every nation, all taking advantage of the availability of long-distance travel via flight.

Although modern, the Boeing 747 also symbolizes another era, when individuals like Juan Trippe of Pan American Airways and Bill Allen of Boeing could decide to undertake a venture of giant size, and great risk, and do so on their own, certain that their decisions would be approved by their boards of directors.

It was on December 22, 1965, that Trippe and Allen signed a letter of intent committing $525 million, for 25 aircraft, launching the largest airliner in history - the Boeing Model 747. The initial specifications called for a gross weight of 550,000 pounds, room for up to 400 passengers, a cruise speed of Mach .9, and a range of 5,100 miles.

It was a fantastic challenge, one whose failure had the potential to ruin both companies. New engines had to be designed and built as did a huge new factory that would house the largest building in the world in terms of volume. Even the world's airport runways, taxiways, and terminals had to be redesigned to handle the aircraft.

Jack Waddell was pilot on the first 747 flight, on February 9, 1969, and as all test pilots must do, he publicly called the giant new airplane "a pilot's dream." There would be delays in getting the 747 into service, primarily due to problems with the Pratt & Whitney JT9D engines, but it was soon apparent that the Boeing 747 was the new world standard in transportation.

Fast, comfortable, and reliable, Boeing 747s began racking up one record after another. By 1975, it had carried its 100 millionth passenger, signifying the beginning of the revolution in air transport. That revolution was confirmed by the

year 2000, when 3.3 billion passengers had been carried, and 747s had flown over 33 billion statute miles.

Now we all know that the 747 was a success, and began the widebody revolution, but let's talk about how Boeing managed to lose a contract that made them the winner in this new era.

The old saying "Be careful what you ask for - you may get it" holds true in the highly competitive world of aviation. In 1964 Boeing, Lockheed, and Douglas were players in an intense competition to win a contract for a very large military transport. It became apparent early on that Douglas was not going to win, the Boeing entry was favored by the Air Force, but the Lockheed bid was $250 million lower in price.

Lockheed was delighted when it was awarded the contract to build the C-5A, and Boeing was furious. However, the C-5A contract was a brand-new contractual instrument termed Total Package Procurement. It was an unfair arrangement that was essentially a firm fixed-price development program. The terms of the contract were harsh enough to cause Lockheed to lose hundreds of millions of dollars. Boeing, on the other hand, used the development experience to design the 747, and went on to make billions of dollars in the process.

Now you know the rest of the story.....

Source Document

Thanks for sharing your time with me, enjoy the videos below, and remember to join me next week when we will talk about the next game changer in commercial aviation.

Robert Novell

December 6, 2013

Commercial Aviation and the Jet Race
December 20, 2013

Robert Novell's Third Dimension Blog

Happy Friday and welcome to the 3DB. Over the last few weeks, we have discussed the progression in commercial aviation from the 1960s until the present. However, I purposely left out the biggest stepping-stone of all and I was saving that for last.

This week our topic is the race to be first in bringing jet engine airliners in to the commercial arena. We all know about the German technology that brought us in to the jet age and how the British and the Americans raced to be first with a jet-powered airliner but do you know about the man named Tupelev?

That is our topic this week. Enjoy.....

Andrei Nikolayevich Tupolev

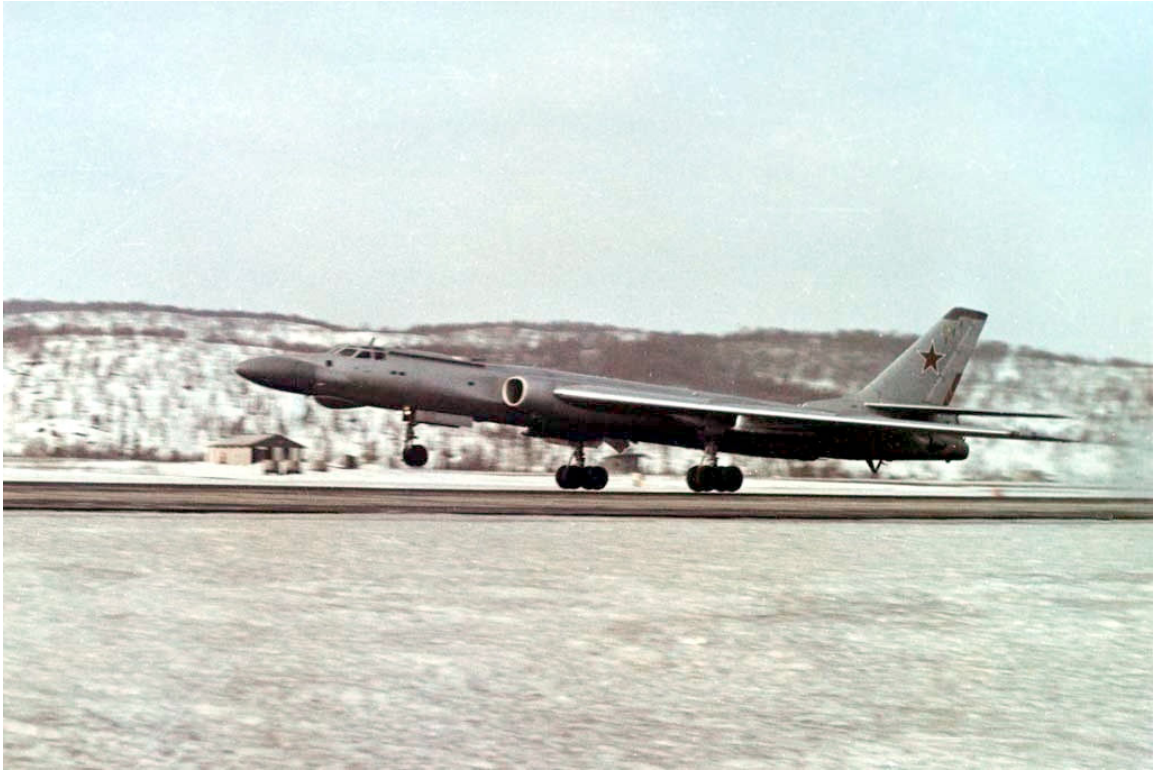
(1888 to 1972)

Before the Space Race, before the fatal fire on Apollo 1 or the deaths of three cosmonauts returning to Earth aboard Soyuz 11, there was a Jet Race, whose tragedies and triumphs are now mostly forgotten. Begun in the last years of World War II, when the combatants struggled to get military jets into the skies, the

competition continued into the 1950s, when the United States, the United Kingdom, and the Soviet Union were scrambling to field the first passenger jets.

The British were the first to build a passenger jetliner, the de Havilland D.H.106 Comet, which was tested in 1949 and started flying scheduled routes in 1952. But two years later, when two of the airliners broke up in mid-air within four months of each other, Prime Minister Winston Churchill ordered the fleet grounded. The Soviets can claim the first continuous commercial jet service, which they began with the -104 in 1956, two years ahead of the debut of the iconic Boeing 707 and the resumption of flights by the Comet. The -104 also had its share of disasters, but Tupolev and the Soviets managed to learn from them and keep flying.

Considering the breakneck pace of the -104's development, it seems a wonder that it flew at all. These days, when a new aircraft can spend a decade or more in design and testing, it is hard to imagine the pace of the early cold war, when aerospace manufacturers cranked out rapidly evolving generations of military aircraft and the technology spilled over somewhat haphazardly into civil aviation. The -104 was created in 14 months in 1954-55 on the platform of the Tu-16 long-range bomber, known in the West as the Badger, which was itself virgin technology.



(TU-16 Badger)

During this hectic period, Andrei Nikolaevich Tupolev was at the height of his long, eventful career. Born in 1888 near the central Russian city of Tver, Tupolev went to college at the Moscow Imperial Technical School. One of his professors was Nikolai Zhukovski, the revered father of Russian aviation, who in 1909 taught the country's first university course in aerodynamics.

Zhukovski and Tupolev stuck together after the Bolshevik revolution, creating the Central Aero/Hydrodynamics Institute, or TSAGI, in 1918, the cerebrum for a vast industry to come. The first aircraft with Tupolev's name on it, a half-wooden monoplane designated ANT-1, flew in 1923. Two years later, Tupolev launched his first military craft, a reconnaissance sesquiplane called ANT-3.

However, Tupolev was caught in the madness of Joseph Stalin's party purges. He was arrested as a saboteur in October 1937, and under torture confessed to a wide range of "crimes" against the Soviet people.

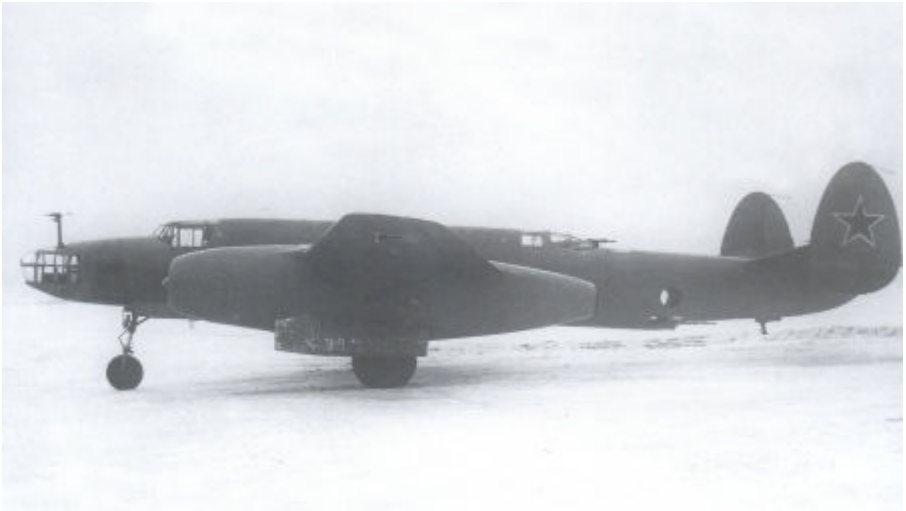
Stalin and his secret police chief, Lavrenti Beria, soon realized they had made a mistake, however. War was threatening Europe, and without its guiding spirit, Soviet aviation was in chaos. Tupolev was rescued from Moscow's Butyrskaya prison in late 1938, and transferred to Bolshevo prison to head a new design bureau controlled by Beria's secret police, the NKVD. There he created a Stalinist version of Schindler's list, handing his captors the names of some 150 imprisoned engineers and scientists whom he declared essential to his patriotic work. Beria dutifully retrieved this elite cadre from throughout the Gulag archipelago, undoubtedly saving the lives of most of them.

While still prisoners, Tupolev, and his fellow designers created the Tu-2 bomber. The Soviet Supreme Court granted Tupolev clemency as the Nazis overran western Russia in July 1941, just in time for him to evacuate his workshop to Omsk, in Siberia.

After the war, Soviet aviation was enriched by technology shared willingly or otherwise by the country's Western allies. In 1944, four American Boeing B-29 Superfortress bombers were forced to make emergency landings at Vladivostok after a raid on Japan. Stalin had them flown to Moscow and set Tupolev to work reverse-engineering them to create a Soviet version. The result was the Tu-4, which first flew in May 1947.

(TU-4)

Simultaneously the master designer developed the Soviet Union's first jet-powered bomber, using Rolls-Royce Nene and Derwent engines, which Britain briefly made available under license. This aircraft was the Tu-12, which flew in December 1947. In the early 1950s, Tupolev returned to turboprop technology for the Tu-95 strategic bomber—the Bear—which was still flying when the Soviet Union crumbled in 1991.



(TU-12)

(TU-95 Bear)

Even in this frenzy of military invention, Tupolev did not forget airliners. He scavenged parts of his precious Superfortresses to make a trial civilian version of the Tu-4. And as soon as the Tu-16 was aloft in 1952, he began lobbying the Communist hierarchy for a passenger variant. Tupolev's conversion plans made little progress while Stalin was alive. The dictator traveled, with rare exceptions, by train, and thought ordinary citizens should do the same. In Stalin's mind, airplanes and the limited resources available to build them were for war.

On the other hand, Nikita Khrushchev, the premier who took power after Stalin died in 1953, loved flying. He saw civil aviation as a pillar in his grand strategy to "catch and overtake" the West. Tupolev was invited back in late 1953 to pitch the civilian Tu-16 idea to the Communist Party Central Committee, and by June 1954 had an order to get cracking. The Tu-104 was on its way.

Converting a spanking new jet bomber to civilian use turned out to be not so simple. The bomb bay, for example, had to be transformed into a baggage compartment. But the core problem was that a passenger liner needed a pressurized cabin, and numerous extra holes cut into the fuselage for windows and doors.

The British investigation into the Comet failures was delayed because both crashes had taken place at sea, making wreckage recovery difficult. Tupolev from the first rightly suspected the airplane's body had suffered metal fatigue. One of his adjustments was simply to add heft to the -104, thickening the fuselage skin to 1.5 mm, compared to the Comet's 0.9 mm. The extra weight halved the -104's range to 1,900 miles and considerably increased fuel costs, but the apparatchiks approved of Tupolev's caution.

(British Comet)

Tupolev also opted for round windows instead of the Comet's square ones, eliminating the corners as pressure points. He built an enormous testing pool at TsAGI's headquarters, outside Moscow, where jet mockups could be submerged to simulate atmospheric pressures. And he outfitted the -104 with avionics that Soviet aircraft hadn't used before, such as radar.

By the late 1950s, Tupolev's shop had burgeoned to about 10,000 employees and occupied a sprawling complex in the industrialized eastern part of Moscow; across the street from the design center was a factory for prototypes. This mass of humanity was efficient enough that the -104's first test flight took place two months ahead of schedule, in June 1955.

By March 1956, Khrushchev was ready to use Tupolev's creation to score an international PR victory. He ordered the -104 to fly to London carrying officials who were laying the groundwork for an East-West summit there. According to a Russian TV documentary, Khrushchev himself wanted to ride the little-tested

jetliner into Heathrow, and Tupolev had to race to the impetuous leader's dacha to talk him out of it.

For British aviation professionals still mourning the loss of the Comets, the -104's arrival was a mini-Sputnik moment: an unsuspected Soviet technological advance falling from the sky, causing both admiration and anxiety. "The Russians are far ahead of us in the development of such aircraft and jet engines," retired RAF Air Chief Marshal Philip Joubert de la Ferté told the BBC at the time. "Many in the West will have to change their views on the progress made by Soviet aircraft technology."

Julia Tupolev's interior for the -104 was a sensation in itself. Confounding stereotypes of Bolshevik austerity, it offered lavish comfort in the air. "The cabin fittings seemed to be from the 1930s Orient Express school of luxury," with porcelain toilets and heavy curtains, a former ground staffer at Gatwick recalled decades later in an online enthusiasts' forum. Pilot Vladimir Ushof remembers that the cabin was "in the style of Catherine the Great." Within a year or two, economy conquered Mrs. Tupolev's aesthetics, and the -104 was reconfigured with standard row seating for 70 passengers rather than the original 50.

The aircraft's triumphant reception could not mask trouble under the hood. Tupolev had not managed or bothered to control the fiery exhaust the hastily converted bomber emitted at takeoff. "Sheets of flame from the aircraft's 'wet start' [starting a turbine engine with fuel already pooled in it] would cause a spectacular exodus of ground staff," a former Gatwick employee recollected.

Back home in Russia, first-generation -104 pilots were doing their best to iron out other serious wrinkles before the airplane took on innocent members of the general public. For one thing, runways both inside and out of the Soviet Union were too short for the new jet, which took off at 186 mph, compared with an average of 124 mph for piston-engine aircraft. According to the -104's specs, safe takeoff and landing required a 1.5-mile runway. When the airplane started flying, only one Soviet civilian airport, at Omsk in central Siberia, met the requirement. The tarmac at France's Le Bourget, where the -104 was naturally sent to show off at the biannual Paris airshow, was 1.4 miles long. Amsterdam, an early commercial destination, offered just 1.1 miles.

Landing was further complicated by the -104's absence of reverse. If a pilot felt the brake was insufficient to halt the barreling 67-plus-ton craft, he could deploy two

parachutes from the tail. This strategy held its own risks, though. If you had a crosswind, the plane could start spinning like a weather vane.

Nevertheless, the Tu-104 entered regular passenger service in September 1956 and served Aeroflot faithfully for more than 20 years. About 200 were built. They enabled those Soviets privileged enough to be cleared for foreign travel to fly nonstop around Europe, and ordinary citizens to more conveniently reach remote domestic destinations like Irkutsk, near Lake Baikal.

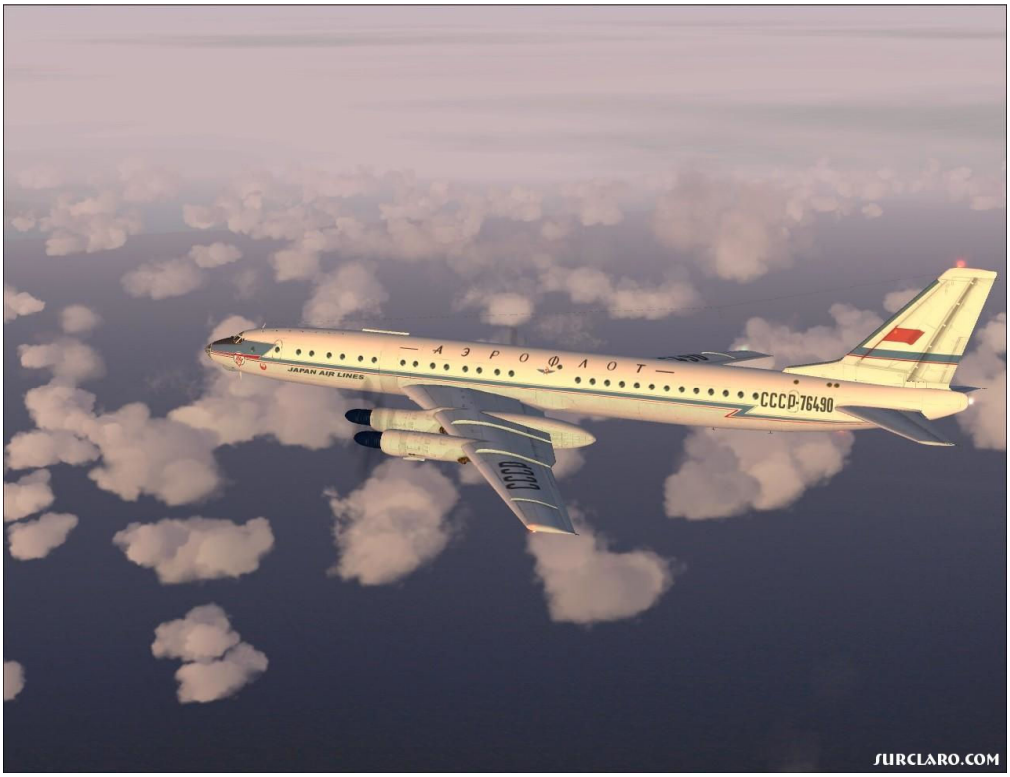
To prove the first journey to London was not a fluke, Khrushchev sent the Bolshoi Ballet back on a -104 later in 1956. At one point, Aeroflot landed three -104s at Heathrow simultaneously, to disprove a British press report that only one prototype was operational.

When the -104 did run into trouble, it was not from the takeoffs and landings that harrowed the pilots, nor from the fuselage, which Tupolev's measures indeed rendered sturdier than the de Havilland Comet's. Rather, the aircraft could not always remain stable in the wicked currents it encountered at its little-explored cruising altitude.

After four incidents of "the grab" in 1958, an inquiry was launched. With no public outcry to fear, the Kremlin kept the -104 flying, though reducing its maximum altitude to 10,000 meters (32,841 feet), and gave Tupolev a month to come up with remedies. Soviet engineers identified the basic flaw in the aircraft's angle of attack in flight, and changes were made in the wing design and flight controls, which resolved many, but not all, of the problems.

In the early 1960s a -104 squadron, devoted to ferrying government grandees, flew Khrushchev's successors, Leonid Brezhnev and Alexei Kosygin, on state business at home and abroad. (Khrushchev himself stuck mostly with a personal pilot named Nikolai Tsybin, who, the -104 flyers remember with some lingering superiority, never got the hang of handling jets.) But Soviet civil aviation's moment of glory on the world stage was brief. In 1958 the Boeing 707 began offering passenger service with a range of 6,250 miles, more than triple the -104's, and the Soviet Union never really caught up.

Transport bureaucrats wasted valuable years debating whether jet travel was suitable for civilians after all—today, the pilots guess that the doubts were partly spurred by the -104's serial accidents. Tupolev's own next effort, the Tu-114, was a conversion of the Tu-95 transcontinental bomber. The most prolifically produced Soviet airliner of the 1960s was another turboprop, the Ilyushin Works' Il-18.


АЭРОФЛОТ
JAPAN AIR LINES
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(TU-114)


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(IL-18)

It wasn't until 1972 that Tupolev returned with the first jet he designed from scratch as a passenger carrier, the Tu-154. Within the Communist sphere of influence, it was a hit. More than 1,000 Tu-154s were manufactured, and some 200 are still flying.

(TU-154)

Aeroflot retired the Tu-104 in 1979. The military kept a few around for staff transportation until 1981, when a -104 crashed on takeoff from Pushkin, near Leningrad, killing 52, including most of the top commanders of the Soviet navy's Pacific fleet. Investigations determined that the airplane was overloaded, but the catastrophe stirred the ghost of Garold Kuznetsov, and the rest of the fleet was mothballed.

In the post-Soviet period, Russian civilian aircraft makers have performed dismally. Aeroflot, which is still in service as Russia's international flag carrier, and the new privatized airlines that have taken over most domestic routes have all moved to retool with Boeings and Airbuses, despite steep import tariffs. Russian-made MiG and Sukhoi warplanes continue to sell around the world, but the only recent Tupolev sale on the civilian side was to Syria, whose national airline agreed in 2011 to buy three Tu-204s for a reported $108 million. Given subsequent events in Syria, even that deal looks questionable.

The Kremlin focused its civil aviation efforts over the past decade on developing the so-called Sukhoi Superjet, a 75- to 90-seat single-aisle craft designed to compete with Embraer and Bombardier in the global short-haul market. So far, the Brazilians and Canadians have little to fear.

(Sukhoi Superjet)

While the Superjet made what was supposed to be its maiden flight in 2008, just a dozen or so are actually in service today, mostly with Aeroflot. The only international customer to date is Armenia's national airline, Armavia. A contract with Indonesia's Kartika Airlines was set back—along with the Superjet's prospects in general—when a demonstration flight in May 2012 crashed into a mountain in West Java, killing all 45 people on board. Even the patriotic ex-Tu-104 pilots can muster little enthusiasm for the unlucky short hauler. "They can build it, but who will buy it?" quips Anatoly Gorbachev as he waits for a crowded bus that will creep through the evening rush-hour traffic from Sheremetyevo into Moscow.

Back in town, the great Tupolev Works on the Yauza River is physically as well as economically diminished. The design center soldiers on in the same unprepossessing building as Vladimir Rigmant's museum. But the factory has been torn down and in its place stand gleaming new condos sporting the name "Tupolev

Plaza." Yet the humble rooms, for decades, spawned technology that matched the world's best and sometimes claimed the title.

Source Document

Interesting to find out the Russians won the Jet Race, but even more interesting is that Stalin had Tupolev sent to Siberia as a spy. I am not sure where I acquired the fact that Stalin had twenty million of his fellow Russians killed but, if that is true, it is my hope that we, as members of the world community, can stop that from ever occurring again - Time will tell.

Enjoy the photos below, have a good weekend and remember to pass on a little Christmas cheer to all you see - it doesn't hurt.

Happy Holidays and Merry Christmas

Robert Novell

December 20, 2013

A source of national pride, the Tupolev Tu-104 jetliner drew a crowd at a 1959 national economy exhibition in Moscow, and at all its public appearances. ***(Ria Novosti)***

Wary of the risk of cockpit windows breaking, Tupolev designed the Tu-104 with a hermetically sealed wall between the cockpit and cabin. This feature was removed when the aircraft went into production. ***(Howard Sochurek / Time Life Pictures / Getty Images)***

The Tu-104's once-lavish interiors had been redesigned in the name of economy by 1958. ***(Howard Sochurek / Time Life Pictures / Getty Images)***

In 1956, when the Western press claimed there was just a single Tu-104 prototype, the Soviets proved the airliner was in production by landing three at London's Heathrow airport. ***(© Daily Mail / REX / Alamy)***

Soviet designers Andrei Tupolev and son Alexei (in fedoras in 1969). ***(Ria Novosti)***

Charley and the Wright Brothers

Robert Novell's Third Dimension Blog

Good Morning---Happy Friday and welcome back. Today we are going to talk about the man who made the Wright Brothers a success and then drifted into obscurity. The man – Charles E. Taylor – designed and built the engine for the Wright Flyer, helped develop the first wind tunnel, and he never sought notoriety from his work with the Wrights and few ever recognized his contributions. This article is a reprint from late last year but the story of Charley needs to be kept alive and here at the 3DB we will do our part to preserve his memory.

Enjoy……

Charles “Charley” Taylor

(Aviation’s First Mechanic of Powered Flight)

When we think of the first powered flight we automatically think of Wilbur and Orville Wright; however, there was a third person involved whose skills were an essential part of the Wright’s success. Charles “Charley” Taylor was that man and without his help the Wright Brothers may have lost their place in history.

Charley was born in Illinois in 1868 and at the age of twelve quit school to find his place in life. He quickly learned that his hands, and tools, were almost one in the same, and America’s first aviation mechanic for powered flight started down a path in life that would have him working for the Wright brothers and building the first engine for the Wright Flyer.

Charley started to work for the Wright brothers on June 15, 1901, doing routine repairs on bicycles, so that the Wright brothers could pursue their experiments with gliders, which included many trips to Kitty Hawk. After one of these trips, the brothers decided they needed information that is more accurate and decided they needed to build a small wind tunnel. With this, they would measure the amount, and direction, of air pressures on plane, curved surfaces operating at various angles, and improves their theories based on their gliding experiences.

Building the wind tunnel was the first job that Charley Taylor did for the Wright brothers that had any connection with aeronautics. The wind tunnel was a rectangular box with a fan at one end driven by a natural gas engine. The Wright

brothers did many experiments in their wind tunnel and from this data they began to make their 1902 glider with Charlie machining many of the parts.

On August 13, 1902, the brothers shipped the glider to Kitty Hawk. They did several flights with the glider and on October 31, 1902, the Wrights returned to Dayton to make plans for a powered airplane. Through their experiments, the Wrights were able to accurately predict the horsepower, which was needed to produce and achieve powered flight. The next problem was where to get a light engine that would produce eight horsepower. The Wrights knew that a steam engine might suit their purpose, but a gasoline engine would be safer and more efficient.

In December of 1902, the Wrights sent letters to almost a dozen automobile companies, and gasoline engine manufacturers, asking if they could produce or modify an engine that would develop eight to nine brake horsepower, weigh no more than 180 pounds, and be free from vibration. Most companies replied that they were too busy to undertake building such a special engine. Falling back on their own mechanical experience, the Wright brothers decided to design and build their own engine.

They estimated they could build a four cylinders engine, with four-inch stroke and four inch bore weighing no more than 200 pounds with accessories included, and by their calculations it would develop the horsepower necessary to power the glider in flight. Now the problem was who was going to build the engine; however, that problem was quickly solved when the brothers decided to give the task to Charley.

Charley was excited about his new challenge, and from his knowledge of mechanics, and design, he knew that the engine design was basic, straight forward, and simple. Charley had very limited knowledge about gasoline engines, but he used his craftsmanship, genius, and enthusiasm to tackle the task. Without any formal drawings available it was necessary for each part to be crudely sketched out by the Wrights, or Charlie, on a piece of paper, and after a thorough discussion with the brothers, Charley would pin the drawing above his workbench and go to work. Using these sketches, and specifications, he finished the engine in six weeks.

Now, you would think that Charley's accomplishments up to this point would be sufficient to satisfy most aviation pioneers but it wasn't to be. After the successful flight of 1903 Wilbur and Orville decided to have Charley build a more powerful engine and they started work on an improved airframe. When the new Flyer was

ready they received permission to fly it at a pasture near Dayton called Huffman Prairie. The flying was more difficult there and the Wrights crashed numerous times and Charley was heard to say, “Every time one of the brothers goes up I expect it to be the last time I’ll see him alive.” However, because Charley devoted most of his time to maintaining the airplanes and facilities at Huffman Prairie Charley actually became the first Airport Manager in US aviation history.

There were several other major accomplishments in Charley’s career that I will notate at the conclusion of my story but for now I want to tell you how this forgotten pioneer of aviation faded into obscurity and died a lonely man.

After Wilbur died in May of 1912, of Typhoid fever, the pioneering days of the Wright Brothers were finished. Charley traveled to California to look for work, during the Great Depression, and found a job as a factory mechanic. He invested what money he had in a few hundred acres of land near the Salton Sea and waited to make his fortune – nothing happened and he lost everything.

In 1937 he went to Greenfield Village and restored the Wrights’ bicycle shop, and home, to their 1903 condition and built a replica of the first engine. He later returned to California during the war and at the age of 73 went to work making cartridge shells but in 1945 Charley suffered a heart attack and was never able to work again. Now, all alone, the last of the original three men who had built the first successful airplane, he was almost destitute.

In November 1955, a reporter discovered Charlie in a Los Angles General Hospital's charity ward. His income was his Social Security check and an $800 a year annuity fund belatedly established by Orville Wright before his death in 1948. The aviation community immediately started a campaign to raise funds for Charlie and he was moved to a private sanitarium where he died a few months later on January 30, 1956 at the age of 88. Having no close relatives Charles E. Taylor was buried in the Portal of Folded Wings Mausoleum dedicated to aviation pioneers, located in Valhalla Memorial Park, Los Angeles.

Portal of the Folded Wings

The Portal of the Folded Wings is located just south of the Burbank airport in beautiful Valhalla Memorial Park. Originally built in 1924, (6 years before United Airport/Burbank was built) it was once the grand entrance to the memorial park.

On December 17, 1953 (the 50th anniversary of powered flight) the Portal was dedicated as a "Shrine to Aviation" and is now listed on the National Register of Historic Places.

24 Aviation Pioneers are laid to rest in the

Portal of the Folded Wings

Shrine to Aviation

Bertrand B. Acosta, co-pilot with Admiral Richard Byrd in 1927

Walter R. Brookins, flew for the Wright brothers.

Mark M. Campbell, stunt pilot and aircraft designer.

Col. Warren S. Eaton, early pilot who also built airplanes for Lincoln Beachy.

W. Bertrum Kinner, built 'Kinner' airplanes. Amelia Earhart flew a Kinner.

A. Roy Knabenshue, balloon and dirigible pilot who flew in the Dominguez Air Meet in 1910.

Elizabeth L. McQueen, one of Los Angeles's first women pilots.

John B. Moisant, won the Statue of Liberty Race in 1910; first to carry a passenger across the English Channel.

Matilde J. Moisant, the second licensed female pilot in the United States in 1911.

J. Floyd Smith, test pilot and instructor for Glenn Martin and manufacturer of parachutes.

Hilder F. Smith, aerial acrobat and parachute jumper.

Carl B. Squier, WWI aviator, barnstormer, test pilot, and salesman. As Vice President of Lockheed Aircraft he sold Charles and Anne Lindbergh their Sirius airplane in 1931.

Charles E. Taylor, machinist for the Wright brothers who helped design and build the first engine for the Wright Flyer flown at Kitty Hawk.

Source Document

So, what were Charlie's major accomplishments?

1. He was one of the three men responsible for the "First Flight."
2. He was the first aviation mechanic in powered flight.
3. He was Calbraith Perry Rodgers' mechanic on his monumental transcontinental flight in 1911.
4. He was the first man to fill the position of "Airport Manager."
5. He was one of the first men to be actively involved in accident investigation and as a result he improved his skills/product as well as the design of the Wright Brother's future craft.

Charlie never sought notoriety from his work with the Wrights and few ever recognized his contributions. He was never a part of aviation's inner circle nor was he ever invited to attend any of the big celebrations held in honor of the Wrights. It seems that if anyone had ever thought much about Charley they didn't take the

time to find him. Gone but not forgotten – Happy Friday Charley and thanks for making my world of aviation possible.

Have a good weekend, enjoy time with friends and family, and enjoy the holiday weekend.

Robert Novell

September 13, 2013