

The Douglas DC-3 75 Years of Service

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DECEMBER 17, 2010, MARKED THE 75TH ANNIVERSARY OF "THE PLANE THAT CHANGED THE WORLD. THE DOUGLAS DC-3 WAS A REVOLUTIONARY AIRFRAME THAT, WITH SOME INTERIOR RECONFIGURATION, BECAME A VERSATILE MILITARY TRANSPORT CALLED THE C-47.

IT WAS THE FIRST AIRCRAFT THAT COULD MAKE money flying passengers, without relying on the generous mail subsidy the US Government provided to commercial carriers. It had safety features unheard of: propeller feathering technology; adjustable pitch propellers; an insulated cabin; hot meals, and more. It gave the public a feeling of safety and comfort and fostered major growth in commercial aviation both in the United States and around the world.

But what events led to the creation of the DC-3?

On March 31, 1931, a TWA Fokker F-10A trimotor crashed into a Kansas wheat field, killing all on board. As a result of the crash, and until the cause could be determined, all 33 of Anthony Fokker's F-10As were grounded. This caused a near standstill in the operations of TWA, Pan American Airways and others relying on that aircraft.

The Department of Air Commerce investigation showed the aircraft had 1887 hours on the airframe, and the wing root had rotted away, causing the wing to break off in the turbulence. Fokker's name was so well respected that no provision had been made for inspection panels for critical parts of the airframe. The crash ruined Fokker's reputation.

The air transport business was in its infancy, and numerous crashes had caused the public to lose confidence in commercial aviation. Although Fokker's F-10A aircraft later went back into service, the major airlines had abandoned them. That set in motion events that would change the world.

NEED FOR SAFE AIRCRAFT

In Seattle, Washington, William Boeing, had struggled through the economic depression of the post-World War I aviation industry by building military aircraft. Boeing had developed an all-metal, open cockpit bomber design. However, his design, the XB-9, lost out in a government competition to a Martin company design.

Boeing saw its potential as a civilian air transport manufacturer. The bomber was modified extensively, and what rolled out was the Boeing 247 a streamlined, stressed skin, all-metal, twin-engine, lowing monoplane. It had steam heat, and a cabin insulated from weather and noise.

TWA went to Boeing to place an order to replace its aging Ford Tri-Motors and Fokker F-10As. Boeing was agreeable to an order, but only after it filled an order for 60 for United Airlines. The order tied up Boeing's factory, thus ensuring that United's competitors would not share the prestige of flying the first modern all metal airliner for at least two years. Boeing's refusal to increase its manufacturing capacity forced TWA to look to the Douglas Aircraft Company.

THE DC-3 IS BORN

On December 17, 1935, Donald Wills Douglas witnessed the first flight of his DC-3. The events that led up to the first flight began three years earlier. On August, 2, 1932, Donald Douglas opened a letter from Jack Frye, TWA vice president of operations. Frye wanted to purchase 10 or more all-metal, trimotor monoplanes. Douglas later called the letter "*The Birth Certificate of the DC Ships.*"

The specifications called for a gross weight of 14 000 pounds, a range of 1 000 miles, a capacity to carry 12 passengers, two pilots, and takeoff at gross weight on two of the three engines. After the Douglas engineering team developed a proposal, Arthur Raymond, Douglas' assistant chief engineer,

and Harold Wetzel, general manager, boarded a train for New York to present the proposal to TWA. "We travelled by train for two reasons," Raymond told this author in 1988. "We had much ground to cover and hundreds of details to layout, and I needed secluded time to work out my performance figures. Also, we really wanted to get there."

The airlines had seen a sharp increase in accidents and neither man wanted to become a statistic. The state of commercial air travel in 1932 was expensive, unreliable, and dangerous.

Raymond flew part of the way home on a TWA Ford Trimotor. He knew what TWA was looking for - something like the Ford Trimotor, only better. When Raymond boarded the aircraft, he received a "comfort pack," which included cotton for his ears, smelling salts for if he felt faint, and an airsick cup. The trip radically changed Raymond's idea of what to design.

"Frye had specified a trimotor design because it was axiomatic the capacity for flying with one engine dead between the two highest points on their route would require three engines," said Raymond.

"Right from the start we ruled out a trimotor, and considered a bi-motor meeting the engine out requirement. The ability to fly with one engine dead was a very important consideration in commercial aviation in those days."

What came off the Douglas drawing board was a twin-engine, low-wing, all-metal monoplane. For safety, the engineers decided the wheels would not fully retract into the newly developed NACA streamlined nacelles, and they would deploy by gravity in case of a hydraulic failure.

In a wheels-up emergency landing, the low wing would help shield the passengers, and the half-extended wheels would cushion the landing, or so the design logic went.

This was a radical departure from the multi-engine aircraft in commercial service. Most US aircraft, including the Fokker, Ford and Boeing tri-motors, were high wing, with fixed gear.

DOUGLAS COMMERCIAL SERIES BORN

On July 1, 1933, 332 days after Douglas received Frye's letter, the main gear of the DC-1 left the ground. It was the end for the Fokkers, Condors, and other wood and fabric aircraft.

The takeoff was perfect, but just barely a hundred feet off the ground the left engine sputtered and quit. A moment later, the right engine did the same. Carl Cover, the pilot, knew they had a problem, but did not know how serious it was needing altitude to maneuver, and with only seconds to react, Cover pushed the yoke forward to gain airspeed. Both engines suddenly cut back in. After a 12-minute, white-knuckle roller coaster-like flight, he landed the DC-1 and taxied into the hangar. They quickly discovered the cause of the almost fatal flight was reversed carburetors.

The DC-1 met TWA's requirements, and the airline ordered 20 more. With TWA's suggested changes, the DC-2 was born. Producing an improved DC-1 meant new drawings, a mock-up, and new tooling.

The Wright Engine Company had just introduced its 855 hp engine, and with the increased power, Douglas could stretch the DC-1 airframe. He added two feet to the fuselage, which allowed for another row of seats. Stretching the cabin changed the center of gravity so the wing had to be moved, effectively creating a new transport.

The Douglas engineers reviewed the changes and decided to call the new aircraft the Douglas Commercial 2 or DC-2. In deciding to manufacture the DC-2, Douglas took a risk. The DC-1 had cost the company more than \$350,000. TWA agreed to pay \$65,000 for each DC-2 (sans engines). Douglas was betting the DC-2 would catch on so he could recoup his research and development costs. When the 76th DC-2 rolled off the line, it put Douglas in the black, clearing the research, development, of the DC-1, and the first 25 DC-2s.

DC-2 BUGS

The DC-2 was a revolutionary aircraft but it did have some undesirable characteristics. Landing gear malfunctions made some landings unpredictable. Pilots also complained that the aircraft was "stiff legged". The aircraft absorbed the shock of landing, but they felt it was like an old man, afraid to bend his legs in fear his joints would crack. Pilots had good cause to worry, the landing gear sometimes tended to collapse.

The difficulty in landing and taxiing besides being dangerous was frustrating. Ernest Gann, an ex-DC-2 pilot, and author, in his book, *Flying Circus*, summed up the futility: "When taxiing, the braking system in the DC-2 was activated by a heavy horn shaped handle protruding from the left side of the instrument panel. By simultaneous use of the rudder and handle, the desired left or right brake could be applied.

"Since there was an inevitable lag between motion and effect, the DC-2 was stubbornly determined to chase its own tail on the ground, and in the cross-winds, sometimes switching ends to the embarrassment of all aboard."

Gann also relates in *Fate is the Hunter* as a copilot, his captain once admonished him, "There are two kinds of airplanes. Those you fly, and those that fly you. With the DC-2 you must have the distinct understanding at the very start who is the boss ... you will learn to love this airplane; and you will also learn to hate it."

DOUGLAS SLEEPER TRANSPORT

Douglas' first real commercial success began when American Airlines entered the picture. American had a fleet of Curtiss Condor biplane sleepers, Ford and Fokker tri-motors, and needed to modernize its fleet. The airline wanted a modern aircraft, with sleeper berths, since that attracted the luxury passengers. The airline ordered several DC-2s. The DC-2 was a vast improvement over its previous aircraft, but it was too narrow to fit a comfortable sleeper berth.

Cyrus Rowlett (C.R.) Smith, president of American Airlines, and William Littlewood, vice president of engineering, had both flown in the DC-2 and did not like some of its performance characteristics. It had the highest rated engines in use at the time, but they felt it lacked power. It could not make New York to Chicago non-stop, although it was faster than any other airliner on that route. Littlewood sat with his engineers and began to redesign the DC-2. His drawings suggested the new design would be wider, and have the DC-2 center section and outer wing panels, but have a larger fuselage. When Douglas engineers reviewed Littlewood's drawings, they estimated they could re-use about 80% of the original DC-2 design. Smith, looking for something larger than the DC-2, telephoned Donald Douglas with a proposal. He convinced Douglas to modify a DC-2 to American's sleeper requirements.

THE DC-3

On July 8, 1935, Smith sent Douglas a telegram, ordering 10 of the new transports. The actual specifications for Smith's proposed aircraft arrived at Douglas Aircraft on November 14, 1935, a month before the first flight of the DC-3. American Airlines had also increased its initial order to eight DSTs, and 12 DC-3s. The actual contract was signed on April 8, 1936. In 1935, American Airlines, and Douglas had such faith in each other's dependability, and integrity that the construction came first and the contract after delivery.

American Airlines flew a Curtiss Condor to Santa Monica so the Douglas engineers could study the berths and improve on them. Littlewood and Harry Wetzel lay down in the mock-up berths to judge the size and to find the best position for the reading light, call button and airsick cup.

When Wetzel felt closed in, they decided to install a small window (unique to the 38 DSTs manufactured) in the upper berths to prevent claustrophobia.

Douglas engineers discovered certain color combinations tied into a general uneasiness among passengers. The DC-3 did not use certain shades of green, since tests revealed it gave some passengers balance problems and airsickness. Patterns in colors, although the colors were satisfactory, also caused passenger discomfort.

Carpets in the DC-3 were dark to give the feeling of strength and security underfoot. The walls and ceiling were light in color to prevent an uncomfortable feeling of confinement, and evoke a feeling of "airiness and freedom."

What rolled off the assembly line on December 14, 1935, was much more than Littlewood had put on paper. It was a new aircraft, both in design and size. It had a wider and longer fuselage, greater span, larger empennage area, stronger landing gear and more power than the DC-2.

On December 17, 1935, the DC-3 lifted off the runway at Clover Field. The lives of millions of people throughout the world for decades to come were about to change.

The flight, like the maiden flight of the DC-1, went virtually unnoticed by the press, but turned out to be one of the most significant events of the 20th century. The historic flight drew so little corporate attention that no one thought to photograph the event.

The DST configuration was the first aircraft off the production line, and American Airlines used it in the 21-passenger day-plane configuration until the DC-3 came off the line in September 1936. Coast-to-coast air travel on American Airlines' new DST sleeper service began on September 18, 1936. American's DC-3 "Flagship Mercury Service" reduced coast-to-coast time to 15 hours westbound and 19, 5 hours eastbound. The American Airlines' DC-3/DST was the first American airliner to have hot kitchen facilities. No longer did captive passengers have to eat boxed lunches consisting of a cold sandwich and a piece of fruit. Now flight attendants served hot, full course meals - and they were free. In 1936, the DC-3 helped American Airlines show its first profit in years-\$4 590.

By 1937, its earnings were up more than \$1400, with a 22 percent increase in revenue passengers. The DC-3 enabled the airline to fly passengers only and show a profit. By 1939, 90 percent of the airlines in the United States were flying DC-3s.

WORLD WAR II

American general of the Army, Dwight D. Eisenhower, Supreme Commander of the Allied forces in Europe during World War II, said the four pieces of equipment among the most vital to Allied success in Africa and Europe were the bulldozer, the Jeep, the 2)12ton truck, and the Douglas C- 47.

In September 1939, war broke out in Europe, and the Douglas Aircraft Company was swamped with orders for the C-47, which was still on the drawing board. As a stopgap measure, Douglas engineers modified the DC-2. They assembled a DC-2 fuselage to a DC- 3 tail, added more powerful engines, and called it the C-39. The US Army ordered 35 of them, and it became the nucleus for the army's first Air Transport Group.

By December 7, 1941, the US Army Air Corps had ordered 957 C-47s, and Douglas had opened a plant in Long Beach, California. Before war production ended, Douglas opened plants in Oklahoma City and Tulsa, Okla. By December 1942, Douglas had orders for 5 500 C-47s and its variants.

The next massive order came in February 1944, when the army asked Douglas to manufacture an additional 2 000 C-47s which he delivered by April 1944, in time for the D-day invasion. June saw another order for 1100 C-47s. The last order, for 1469 C-47s and its variants, came in July 1944, but not all of this order was completed.

By that time, the Oklahoma City plant was turning out a record 1,8 C-47s an hour, besides the other aircraft it was producing. In May 1944, two plants, Oklahoma City, and Long Beach, produced 573 completed C-47s. Working 31 days, the production output was equivalent to 18,5 aircraft a day.

In May 1945, the Long Beach plant alone produced more than 415 C-47s, in addition to 120 Boeing B-17 bombers in the same month.

The C-47 was almost the twin sister of the DC-3; the astrodome and the "barn door" were the most obvious differences. Beneath the surface, the C-47 presented many design challenges for Douglas. "The C-47 wasn't a very hard airplane to sell; it was just a question of putting the right type of door on it," said Arthur Raymond.

The US Army wanted a large cargo loading door. Douglas engineers realized that to cut the door opening they would need to reinforce the airframe or the tail would fall off. With the new door opening, the army could roll a Jeep or small artillery piece into the aircraft, but the floor would not support the weight. Reinforcing the floor added more weight to the airplane.

Engineers trimmed and changed the shape of the rudder and stabilizer slightly until they got the desired results. Although the C-47 was a universal transport, the constant military modifications resulted in such an assortment of to track them. In all, there were 69 variants, all having their roots in the DC-2 and DC-3.

The C-47 had a major influence on the outcome of the war. During the first airdrop of the Sicilian Campaign, called *Operation Ladbroke*, on June 9, 1943, 147 aircraft, including 112 C-47s towing 137 Waco CG4, and eight Horsa gliders carried 1 600 British troops. It was a most successful aerial assault. The glider missions that followed were disasters.

Operation Huskey 1 involved 226 C-47s and 3 400 paratroopers from the 82nd Airborne Division. Eight C-47s were lost to enemy action. *Operation Huskey 2* was nearly a complete disaster. One hundred forty-four C-47s dropped 2000 troops to reinforce the 82nd Airborne, 23 C-47s were lost, and more than 60 were badly damaged. *Operation Fustian*, on July 13, involved 132 C-47s. Of those, 14 C-47s were lost and 50 badly damaged; 27 returned without completing their drops. After that, the USAAF used special "invasion stripes" for all Allied aircraft.

D-DAY

On June 6, 1944, D-day, the ground invasion of Europe by Allied Forces began. Part of this contingent was the largest airborne armada ever assembled to that point. The first wave of transports included 821 C-47s. In the first 24 hours, there were at least 1 674 sorties by C-47s, towing 513 gliders, from more than 20 bases in England. At the height of the invasion one C-47 took off every 11 seconds, with an average of 20 paratroopers aboard each aircraft. They flew in waves of four abreast, and stretched more than 200 miles from the southern coast of England to the Cherbourg Peninsula. "The steady stream of transports kept coming and coming in an endless skytrain," CBS correspondent Charles Collingwood reported: "The awe of it stopped the fighting in some sectors as men looked skyward with unbelieving eyes."

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The late Captain Len Morgan, US Army C-47 pilot, airline pilot, and author, remembered the C-47: "The C-47 groaned, it protested, it rattled, it leaked oil, it ran hot, it ran cold, it ran rough, it staggered along on hot days, and scared you half to death. "Its wings flexed and twisted in a horrifying manner, it sank back to earth with a great sigh of relief, but it flew, and it flew, and it flew."

"It took us and 10 000 crews around the globe where we had to go and brought us home again, honest, faithful and the magnificent machine that it is."

By the end of the war, the C-47 had carried 22-million tons of goods and flown 67-million passenger miles, and evacuated more than 750 000 wounded. The C-47s under the Air Transport Command logged on the average 15 to 19 hours a day in the air.

30 NICKNAMES

For every use found for the C-47, someone created a new nickname. Americans called it the *Gooney Bird*, *Doug*, *Dumbo*, *Old Fatso*, *Charlie 7*, *Skytrain*, *Skytrooper* and *Tabby*. American paratroopers called it the *Vomit Comet*.

To Berliners and the Berlin airlift personnel it was the *Candy Bomber* or *Raisin Bomber*. The British called it the *Dak* and the *Dakota*, a clever acronym, *DACoTA*, which stood for Douglas Aircraft Company Transport Aircraft.

The RCAF called one squadron of Dakotas, *The Flying Elephants*. The Russians called it the *PS-84* and the *U-2*. The North Atlantic Treaty Organization gave the Russian Li-2 the code name *CAB*. The French Navy called it *The Beast*. It even enjoyed the fleeting nickname *Biscuit Bomber*, after dropping 5 000 cases of rations to Gen. Patton's troops in France. Civilian pilots called it the *Three*, *Old Methuselah*, *The Placid Plodder*, *The Dowager Duchess*, *the Flying Vagrant* and the *Dizzy Three*. In Vietnam, it earned the sobriquets *Puff the Magic Dragon*, *Puff*, *Spooky* and *The Dragon Ship*. The EC- 47 used for psychological warfare was called the *Bolshevik Bomber*.

Most people remember *Gooney Bird*. Some say the name came from the South Pacific where small atolls were the home of the wandering albatross, the giant seagull-like bird noted for its powers of flight, and sometimes unflattering, but safe landings. Some GIs said the C-47 looked like the bird, with a heavy body and long wings, and mimicked the bird in its struggle to get off the rain-soaked dirt fields.

BACK TO CIVILIAN LIFE

After the war, the DC-3 went back into civilian use with the major airlines. Hundreds more were sold as surplus to entrepreneurs who often formed "fly-by-night" operations. Captain Morgan, when flying for the airlines said: "We ate our lunch, a box of sandwiches with a small salad and a Dixie cup of milk. We would throw the leftovers out the window. "There were times when you cursed "There were times when you cursed the job and imagined yourself safe behind a desk. On hot summer days it pitched along, and made the passengers sick. You bucked headwinds that reduce ground speed to 80 miles an hour. You ran along the edges of squalls at night, waiting for lightning flashes to illuminate the cloud base. You emerge from rain showers soaked to the skin because the cockpit leaked water like a sieve.

"You got caught in thunderstorms and fought to keep the airspeed within a safe figure and the ship more or less right side up. You watched it fall from under you, even with the engines screaming at max power. You sweated out crosswinds on icy runways. The DC-3 takes second place to no other airplane at being able to give you a hairy ride."

BERLIN AIRLIFT

On June 24, 1948, the Cold War heated up when the Russians blockaded the land routes into the Allied sector of Berlin. The USAF and the RAF used C-47s (and C-54s) as the leading edge of a 321-day airlift of food, medicine and fuel that neared the total tonnage moved during World War II. At first, C-47s comprised 85 percent of the aircraft flown. Many flew with 8 000- pound payloads, greatly exceeding the Douglas specifications. Through an error in an invoice, one C-47 flew 13 500 pounds of steel, more than twice the weight recommended. Of course, the plane protested, and was reluctant to fly, but did anyway. When it landed, tail wheel first, the weight blew both main tires. The full extent of

the C-47's help may never be known, but in the first three months of the blockade, C-47s made more than 12 000 round trips between West Germany and Berlin. One C-47 flew continuously for 327 hours, 27 minutes. The C-47s flew around the clock, in every type of weather.

Later the US Air Force standardized the airlift operations, using the Douglas C-54 Skymaster. On September 23, 1949, the Russians blockade of the city ended and the last C-47 flew into Berlin. The C-47/Dakota had kept West Berlin alive, and the world out of another war.

SPOOKY

Twenty years later, in Vietnam, 20 years after production had ceased, the C-47 was born into a new role. What Donald Douglas designed as a basic passenger air plane evolved into a highly efficient gunship, designated the AC-47. Initially designated FC-47F (Fighter-Cargo) it was later changed to AC-47D (Attack-Cargo).

USAF Captain Ronald W. Terry had seen DC-3s delivering mail to remote jungle areas in South America. The aircraft would circle in a steep pylon turn, and lower a bucket on a long rope. The bucket would orbit in a tight circle, suspended from the cargo door, and someone on the ground placed mail in it. Captain Terry suggested replacing the rope with a line of machine gun fire.

The USAF tried the idea with .30 caliber machine guns mounted in the windows and door of a C-47. The idea worked, and the air force replaced the machine guns with three General Electric, six barrel, rotating guns, reminiscent of the Civil War Gatling guns. The 7,62 mm guns were capable of covering a football field with one round, every square foot, in one minute. The pilot would activate the guns with a trigger on the yoke. The guns provided 18 000 rounds a minute of murderous firepower. The tracer bullets coming from the gunship were so awesome the Viet Cong called the old Gooney Birds "*Dragon ships*". We called it "*Spooky*."

"Whoever built '*Puff*' had a sick mind," one soldier said. "At night it looked like a red line of light coming from the heavens, like Hell leaking fire."

"Once '*Puff*' had done his work on an NVA company, we went out on patrol to count bodies," said another soldier. "We walked for about a mile and didn't see anything. First, we could smell it, and then we couldn't believe what we saw. What were once 200 men was now a stream of slush. '*Puff*' had shredded them to bits leaving nothing but Communist mush. It was just like putting 200 men through a meat grinder.

"When '*Puff*' did his work there wasn't enough left to put in a bag and send home to Mama." The gunship flew with a crew of eight: the pilot, co-pilot, navigator, mechanic, two ordnance men (to load the machine guns), a flare launcher and a Vietnamese observer.

THE DC-3 FLIES ITSELF

Many pilots regard the DC-3 as psychic and exceptionally forgiving. The aircraft, they say has the knack of anticipating pilot errors and compensating for those mistakes. Some insist it can fly itself. In 1957, a USAF C-47 ran out of gas over Missouri. Everyone bailed out and made it to the ground safely. The C-47 glided over the horizon and made a perfect, unassisted landing in a cornfield. Although it is very rare for an aircraft to land without a pilot, it is equally unusual to have monkeys assisting in a landing. In 1959, John Stevens was flying a planeload of monkeys from Akistan to Morocco in a DC-3. He ran into a storm, and several crates broke loose, giving the monkeys the run of the aircraft. The pilot, concentrating on his flying, did not notice the carnival behind him. When the monkeys invaded the cockpit, it was too late for him to do anything. Buttons, switches, and levers were all fair game for the playful primates. Stevens never admitted the monkeys helped land the 'plane but he said he'd rather fly through a monsoon than with a cockpit full of monkeys again.

BREAKING RECORDS

The DC-3 has been known to do some impossible feats. Built to carry 21 passengers, one routinely carried 40 in the Philippines. On flights from Australia to New Guinea, Qantas rigged its DC-3s with slings and carried 50 people.

Another DC-3 carried 76 people out of war-torn China, including 21 fully equipped Chinese soldiers, 15 women, 22 children, 15 Chinese civilians, the pilot, copilot, and Colonel Jimmy Doolittle, who was returning from the raid over Japan. They removed the seats, and the passengers sat on each other's laps, rode in the waist and forward mail compartments, and stood in the aisle. Doolittle remarked to the pilot that, if he had known he was crazy enough to take off with so many people, he would have walked home.

In 1949, a DC-3 carried 93 people out of an earthquake ravaged Bolivian village. Many were small children, but it is still a feat that defied the designer's slide rule.

Twenty-five years later, the DC-3 broke its own record again. On March 23, 1975, a Continental Air Services DC-3 flew from Ku Lat, Vietnam to Saigon with 98 orphan children, five attendants, and three air crew, a total of 106 people.

LOVE FOR THE GOONEY BIRD

There were so many C-47s spread around the world, so many service men and women carried in them, and so many lives owed to them that the stubby little aircraft became regarded with reverence. To compare a person with an airplane is risky. The men who lived with, and flew the C-47, developed a genuine affection for the aircraft, and they wrote and spoke of it in terms we normally reserve for a loved one.

The men were young, far from home, and lonely, and often trusted their lives, and those of their passengers to this cherished ship. Living day in and day out with the same aircraft, an emotional attachment between man and machine developed. It was these young men who, lacking a sweetheart, mother, or wife, fell in love with this aircraft, and gave it the feminine gender.

After the war a Canadian banker, and ex-RAF wing commander, wrote to Donald Douglas and described the relationship he had with the Dakota. The Japanese destroyed his Dakota on the ground. "I miss her as a person," he said, "not as a piece of machinery. "And that, to a 'driver' who gets a 'right' plane in his hands, is the spell of the DC-3. If ever an inanimate object earned, deserved, and received the love of a man, your DC-3 was that object. I, and probably thousands of others, consider it insensitive to call her inanimate," he wrote. The stories and the tales of the Dakota are endless. The profound worldwide effect of the DC-3 was the result of a combination of filling a need, sound economics, and one man, Donald Douglas, whose engineering and management ability pulled together the forces that created the most successful multiengine prop-driven airplane ever to fly. "Never in our wildest dreams did we imagine what the next half-century would bring," Arthur Raymond, said. "Ten thousand DC-3s? Are you crazy?"

IN SUMMARY

There have been many attempts to record accurately the production figures for the DC-3/C-47 and the variants. There was a problem of duplicate serial numbers issued, and some historians counted remanufactured aircraft twice. According to McDonnell Douglas' records this author saw, there were 10632 airframes built. No civilian transport before or since has been built in such numbers. The total military versions of the C-47 variants was 10291. Douglas records also show that of the 10 632 built, three were spares; this figure does not include the post-war DC-3C, DC-3D and DC-3S (Super DC-3), which were remanufactured airframes and, in the case of the Super DC-3, assigned new construction numbers.

An additional 487 Japanese DC-3s were manufactured by the Showa Company, and according to one reliable source, 6 157 Russian Li-2s were manufactured, bringing the grand total to at least 17 276 airframes.

Today there are less than 75 airworthy in the United States, and somewhere between 600 and 900 airframes in various condition worldwide. Low-lead fuel has taken its toll on the piston engines. High maintenance costs - as high as \$1 600 per hour-has resulted in some survivors heading to the scrap pile, or a museum. For those of us who have piloted, or flown in one, we will remember the magic. She always brought us home.

75 YEARS OF SERVICE

The Last Time was an organization created for the sole purpose of reuniting flying examples of the DC-3/Dakota and the people associated with them, for one last time. The goal of the organization was to celebrate this aircraft and these people.

The journey began with almost 50 DC-3 and C-47 aircraft lifting into the skies in late July 2010. Their destination is a central meeting point. A staging area where the group can assemble and plan the last large DC-3 / C-47 formation in the world, and the beginning of their story of their final flight over the heartland of America - in the skies, together, for the last time.

On July 27, 2010, 37 DC-3/C-47s (including one DC-2) arrived AirVenture, in Oshkosh, Wisconsin. Almost a dozen more unflyable aircraft were sitting at the Basler Turbo Conversion plant across the field waiting to be converted into turbine aircraft. It was certainly the gathering of the largest number of DC-3/C-47s since World War II and surely, the last time we will ever see such a collection of "The Plane that Changed the World" in one place.