**The personality that built an aviation empire also contributed greatly to its downfall.**

# The Rise and Fall of Donald Douglas

By Walter J. Boyne

World Cruiser. DC-3. Dauntless. DC-4. Invader. DC-6. B-66. Globemaster. Skyhawk. DC-9. The list of great Douglas airplanes goes on and on. Each one creates in the mind's eye an instant image of pioneering success, from victory in the 1942 Battle of Midway to the 1949 defeat of the Berlin Blockade.

The aircraft, magnificent as they were, constitute but a fraction of the legacy of Donald Wills Douglas, one of aviation's true giants. Though not a pilot, Douglas was an aviation star of the first magnitude. His combination of intelligence, integrity, and management skill placed him at the forefront of aeronautics for almost four decades.

Even after the greatest of the airplanes had been made, Douglas kept going, moving all the way into space. Douglas-built aircraft were the first to fly humans around the world, but Douglas spacecraft also helped get men to the moon.

Ironically, and sadly, the characteristics that brought Donald Douglas such immense success also ultimately produced the downfall of the Douglas empire after decades of triumph.

Douglas achieved aviation immortality in a series of brilliant designs that began in 1921 with his ambitious Cloudster aircraft. Each of his great aviation achievements demonstrated the belief that aviation success depended on evolution rather than revolution.

Acceptance of this precept was the reason that Douglas' enterprise grew from a backroom operation in a Los Angeles barbershop into an international industrial giant.

Donald Douglas was born in Brooklyn, N.Y., in 1892, the second son of William and Dorothy Douglas. Bill Douglas was an assistant cashier in a bank, but he indoctrinated his sons, Harold and Donald, with a great affection for ships and the sea. Both boys were groomed for the Naval Academy at Annapolis, where Donald began his higher education as a midshipman in 1909. Yet he was soon caught up in the excitement of aviation—excitement caused by his witnessing Orville Wright going aloft in his flying machine at Ft. Myer, Va.

## Making His Move

In 1912, at age 20, Douglas demonstrated his decisive personality by quitting the Naval Academy to pursue aviation by furthering his education at the Massachusetts Institute of Technology. His father backed him, as he would often, and Douglas promptly embarked on a backbreaking schedule at MIT. He earned his bachelor of science degree in two years.

In short order, Douglas moved through a series of jobs in what was then a small but highly dedicated aviation industry. He showed the ability to meet any challenge—except the first one.

Douglas was first employed by the Connecticut Aircraft Co. of New Haven, where he was hired to help design and manufacture a dirigible. The DN-1 proved to be a failure, and before its first flight, Douglas left the firm.

Quitting was a providential step, because it caused Douglas to move into


***Donald Douglas, shown in 1957 with models of the Douglas M-2 mail airplane (left) and the DC-6B, routinely worked an eight-hour day and traveled as little as possible.***

the aircraft industry by joining Glenn L. Martin in California. Martin was the Johnny Appleseed of American aircraft manufacturers. He had an excellent eye for talent, and many Martin protégés went on to head their own companies. Martin was reportedly taken aback by Douglas' youthful appearance when he reported for duty as chief engineer, at the age of 23. Douglas, for his part, was dismayed by Martin's primitive (in his view) and intuitive approach to engineering.

After a one-year stint with Martin, Douglas resigned. He accepted the invitation of Col. Virginius E. Clark to become the chief civilian aeronautical engineer of the US Signal Corps. Douglas did not fit in with the bureaucracy of the time and left in 1917 to rejoin the Glenn L. Martin Co. after its move to Cleveland. There he directed the design and construction of the famous Martin GMB bomber.

The GMB was a great success, the first indigenous American warplane to enter production with a performance comparable to its European counterparts. However, the GMB's first flight on Aug. 17, 1918, was soon followed by the World War I armistice. Only 10 production articles were built.

Douglas wanted to return to California and yearned to build commercial aircraft in a company of his own.

In 1920, Douglas met the wealthy David R. Davis, who wished to make the first nonstop flight across the continent. Douglas promised Davis that he could design and build the airplane to do it. They formed the Davis-Douglas Co., with $40,000 in capital.

One year later, they rolled out the Davis-Douglas Cloudster, a large biplane powered by the ubiquitous Liberty engine.

The Cloudster was reputed to be the first aircraft able to carry a useful load in excess of its own weight, and only a routine engine failure halted its June 27, 1921, transcontinental attempt. Later it was converted to become a 10-passenger airliner on the Los Angeles-San Diego Air Line and was thus the antecedent of the long line of Douglas passenger airplanes.

## The Foundation

More importantly, the Cloudster laid the foundation for Douglas' first military contracts. He purchased Davis' interest with a $2,500 promissory note and renamed the firm the Douglas Co. The company designed the Douglas DT-1 torpedo airplane for the Navy with a contract in April 1921. One hundred fourteen of the big torpedo airplanes were ultimately purchased.

The Army also was interested in the design and in November 1923 issued a contract for five versions that would gain fame as the Douglas World Cruisers. The 1924 World Cruiser flight around the world in 371 flying hours established Douglas as a first-class company.

He next sold two variations of the Cloudster to the Army, which over time bought 26 C-1 cargo airplanes and 246 O-2 observation airplanes. All during this turbulent but highly successful

*The Douglas Cloudster, shown in 1921 shortly after roll out, was reputed to be the first aircraft able to carry a useful load. The Cloudster eventually was converted to a 10-passenger airliner.*

period, Douglas maintained his family in a small, unpretentious two-bedroom home in Santa Monica, Calif., and kept, as he always would, a modest office at work.

A master of evolutionary design, he met Army Air Corps and Navy needs with a succession of observation airplanes and trainers and expanded his patrol and torpedo airplane offerings with the twin-engine, twin-float P2D-1 and T2D-1.

He continued to bring new talent into his growing organization, obtaining the services of fellow MIT graduate Arthur E. Raymond and James H. Kindelberger in 1925.

Douglas recognized that the biplane formula was obsolete and introduced a new design that catered to his inveterate interest in the sea. It was the twin-engine Dolphin amphibian featuring a wooden wing but an all-metal hull. Some 58 of these were built, including one for his arch rival, William E. Boeing.

The company carried metal construction over into a new line of observation airplanes and the much more radical twin-engine, gull-wing bomber, the Y1-B7. Many of these would serve in the Air Corps mail-carrying exploits in 1934.

It was in all-metal aircraft that Douglas' selective choice in engineers paid the biggest dividends. Douglas had financed the Northrop Co. as a partially owned subsidiary in 1932. There, John Knudsen Northrop developed a new metal construction method that he demonstrated in his famous Alpha, Gamma, and Delta series of monoplanes. (See "The Low-Drag World of Jack Northrop," October 2005, p. 76.)

Then on Aug. 2, 1932, Trans World Airlines turned to the Douglas Co. for an airliner to rival the new Boeing 247. Douglas used Northrop's multicellular wing construction.

The result was the DC-1, built at the then-enormous expense of $306,778, an amount that kept thrifty Douglas awake at night. The all-metal, twin-engine monoplane incorporated advanced cowlings and engine nacelles and was clearly the most advanced airline transport in the world.

There followed a succession of brilliant airliners that dominated the world's market for the rest of the decade. The DC-2 was succeeded quickly by the DST (Douglas Sleeper Transport) and the DC-3.

## Success with C-47

The budget-tight military bought small numbers of the DC-2 and DC-3 with scarcely remembered designations, but it was the C-47 that was the magic number.

Douglas built thousands of C-47s, bringing total DC-3/C-47 production to 10,654. As many as three thousand more were built under license in the Soviet Union and Japan, and the aircraft soldiered on to serve America in World War II, Korea, and Vietnam.

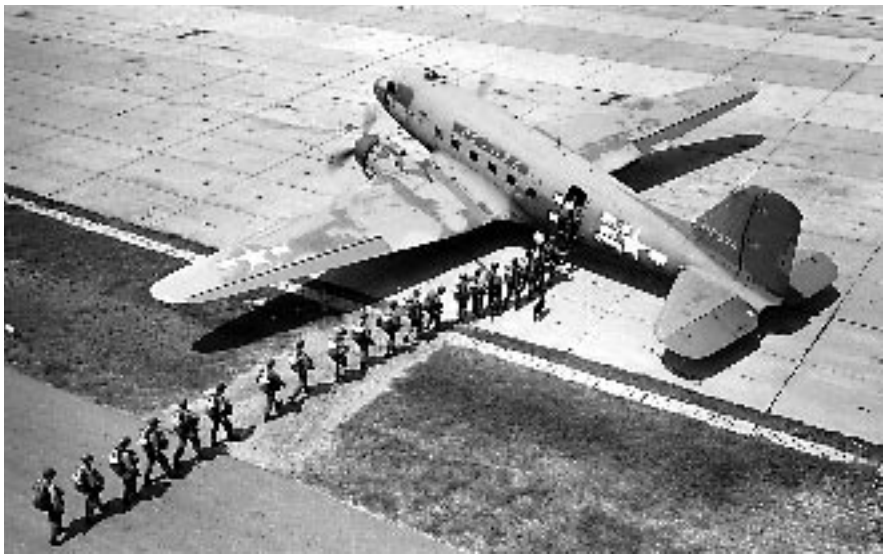
The basic design also served as the basis for some stopgap Douglas bombers of the era, including the stodgy B-18 and the more streamlined B-23.

Northrop's contributions to the Douglas line were enhanced by another capable self-taught engineer, Edward H. Heinemann, who became chief engineer at Douglas in 1936. Heinemann brought the basic Northrop Alpha formula to war-winning height in a series of attack airplanes, culminating in the Douglas SBD Dauntless.

Among more than a score of combat aircraft that Heinemann designed for Douglas were the A-20 Havoc, A-26 Invader, and early versions of what became the A-1 Skyraider.

Donald Douglas' engineering acumen was matched by his business prowess as he oversaw the wartime growth of the company from a one-man band to an

*In this 1924 photo, Douglas World Cruisers are being prepped for takeoff. The World Cruiser's ability to circumnavigate the globe in 371 flying hours established Douglas as a first-class company.*



***Students at the airborne school at Ft. Benning, Ga., in 1946 file onto a Douglas C-47 for a practice jump. Douglas built thousands of C-47s, and as many as 3,000 were built under license in the Soviet Union and Japan.***

international conglomerate with massive plants in Santa Monica, Long Beach, and El Segundo Calif., Chicago, and Oklahoma City and Tulsa, Okla. From a handful of workers, employment grew to more than 160,000 as the Douglas plants churned out nearly 30,000 airplanes between 1942 and 1945.

All during this rapid growth, Douglas' business habits rarely varied. He routinely worked an eight-hour day, traveled as little as possible, and spent his evenings at home in an almost reclusive fashion.

Douglas was given to pithy comments when something displeased him—and that something was usually an expenditure he considered questionable.

He doted on his four children, and daughter Barbara Jean in 1944 made the most notable military-industrial-complex marriage of all time. She wed William Bruce Arnold, son of the future General of the Air Force, Henry H. "Hap" Arnold.

Douglas knew the end of the war would mean the end of the era of huge military contracts. He also recognized that he would have to shut down his government-leased plants and confine the Douglas Aircraft Co. to its El Segundo, Long Beach, and Santa Monica facilities.

Douglas Aircraft's interest in rockets as weapons led to its direct involvement with space. The company's first effort was the ROC radar-guided missile of 1941. Other ROC variants were built including infrared and visual guidance, but none were employed in combat.

Next in line was the Sparrow air-to-missile. It entered service with the McDonnell F3H-2M Demon fighter, but was largely unsuccessful. The Sparrow design was later developed into the successful AIM-7 series of air-to-air missiles.

Douglas also developed the Honest John surface-to-surface missile for the Army and the Thor IRBM for the Air Force. Thor became an important part of Great Britain's nuclear deterrent.

The firm also moved into the construction of huge launch vehicles, beginning with the Thor and including the Saturn S-IV/S-IVB used for NASA's moon missions.

## Hanging On

Douglas pursued the development of the basic DC-4 design far too long after the jet engine had arrived on the scene.

Douglas wanted to have his son, Donald Douglas Jr., succeed him at the head of his company. Unfortunately, the son did not possess the management and leadership skills of the father. Further, Douglas Jr. became president of the firm at a time when it faced extraordinary production, management, and financial challenges.

More than 1,200 four-engine DC-4s were built. They served admirably all over the world and starred in the Berlin Airlift. The basic DC-4 design was trumped by the introduction of the pressurized Lockheed Constellation, which quickly gained popular favor. Douglas responded somewhat later with the equally well-liked DC-6, building 770 of them.

A reckless competition ensued, with both companies trying to improve their transports to maintain airline customer loyalty. Lockheed's last effort in this race was the elegant L-1649A Starliner, powered by four Wright R-3350 turbo-compound engines. Douglas offered the DC-7C, which used a variant of the same power plant. (The reliability of the early R-3350 turbo-compound engines

Boeing photo

***Douglas and his DC-4. The four-engine airplane served admirably all over the world and starred in the 1948 Berlin Airlift.***

USN photo by Photographer's Mate 1st Class John S. Lill

***An A-4 Skyhawk performs a touch-and-go landing on USS* Ronald Reagan. *The aircraft's designer, Ed Heinemann, was an engineering wizard, but was forced out by Donald Douglas Jr. in 1960.***

was notoriously poor, and both aircraft were jokingly called "the world's fastest trimotors.")

During this piston-engine airliner race, Douglas was building a wide variety of military jet aircraft, and Donald Douglas had personally monitored the development of the de Havilland Comet airliner.

His conservative nature, backed by the judgment of his vice president of engineering, Arthur Raymond, caused him to avoid the huge investment necessary to field the first American jet transport. Instead he spent his time considering the possibility of having a turboprop transport follow the DC-7 into service.

Unfortunately for the Douglas Aircraft Co., Boeing had been flying multiengine swept-wing jets since 1947 and had acquired vast experience building the B-47 and B-52 bombers. This experience was parlayed into the Boeing 367-80, the 707 airliner prototype, which made its first flight on July 15, 1954. It was not until almost a year later, on June 7, 1955, that Douglas announced a decision to build the DC-8 to compete with—and he hoped outsell—the 707.

A combination of issues paved the way for the 1967 merger with McDonnell, resulting in the new McDonnell Douglas Corp. and the eclipse of the influence of the Douglas family. The issues were complex, but reflected the effect of Douglas' longtime conservatism and his determination to develop evolutionary aircraft at a time of great changes in aircraft engineering.

## The Successor

Douglas had a hotly contested divorce in 1953, and Donald Douglas Jr.'s support of his father helped repair a falling-out. The younger Douglas had moved up slowly in the company from his first employment in 1939, but in 1953, he was made a board member. Four years later, he succeeded his father as president of the company, at age 40.

Douglas Sr. became chairman of the board. He was only 65—but he was tired.

Despite the best efforts of the firm, the DC-8 did not make its first flight until May 30, 1958—three years and 10 months after Boeing's 707. A rush to production resulted in design deficiencies, particularly in higher-than-predicted drag.

Eventually, the DC-8 proved to be an excellent aircraft, but for a long, critical period, sales did not meet expectations. By 1962, Boeing had sold 320 of its 707s and 720 variants, to only 178 DC-8s. From this point on, Douglas could not match Boeing's ability to build airliners tailored to varying route lengths and widely differing customer requirements.

At this crucial time, vice president for engineering Raymond became ill, and Douglas Jr. was not as able as his father in either personnel management or production expertise. Quick tempered, he had a gift for antagonizing his father's most trusted collaborators. Perhaps his most egregious personnel mistake was made in 1960, when he forced Ed Heinemann to resign from his position as vice president for military aircraft.

Heinemann had been an engineering gold mine for Douglas for 24 years. His leadership in creating classic first-line aircraft—such as the A4D Skyhawk and the very advanced F4D Skyray—kept Douglas profitable. Nonetheless, Douglas Jr. forced him out by abolishing his position and offering him an unacceptable substitute. Heinemann never forgave his dismissal.

By the mid-1960s, the conservative Douglas firm found itself in financial hot water. It lost more than $16 million in its attempt to win the contract to build the C-5 transport.

At this time, Douglas had spent more than $300 million on the DC-8 program, which was still about 75 aircraft short of reaching its break-even point. Ultimately, 556 DC-8s were sold, but not in time to save the company.

By 1966, radical change was coming.

One of the changes was Douglas Sr. resuming control of the company at age 74. Despite his best efforts, the value of Douglas stock continued to erode. In the end, Douglas was forced to announce to his board of directors that the firm was bankrupt.

James S. McDonnell already owned 300,000 shares of Douglas stock—about 30 times the amount that Douglas Sr. and his son owned. McDonnell presented the best offer to buy the Douglas company, and on April 28, 1967, the new McDonnell Douglas Co. was formed. Some niceties were observed as Douglas Sr. was made honorary chairman of the new firm, and Douglas Jr. received a long contract for his services.

The elder Douglas spent his retirement years quietly, with no public expressions of resentment. He died on Feb. 1, 1981, leaving behind a legacy of achievement that few have matched and a reputation for vision and integrity that anyone would envy.

Most of all, he left the world with the memories of those wonderful aircraft. ■

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