

## History of Rockwell International Corporation

One of five companies in the United States supplying the federal government with military aircraft fighters and bombers during the 1990s, Rockwell International emerged from the end of the Cold War as an increasingly commercially-oriented company. In addition to its aerospace and military hardware business, Rockwell was a major manufacturer of high-speed modems and factory automation products, business lines that predicated the company's growth during the 1990s. These businesses were complemented by Rockwell's involvement in manufacturing newspaper printing presses, other graphic arts equipment, and automotive vehicles. In a changing economic climate for military aerospace manufacturers, Rockwell represented a company headed toward genuine diversification, away from government-funded contracts, and one of the most successful companies of its kind.

Charles Lindbergh's flight across the Atlantic in 1927 generated such interest in aviation that suddenly even small aviation companies were deluged with money from investors. So much capital was made available by investors (almost one billion dollars by 1929) that holding companies created hundreds of airlines and airplane manufacturers. Three companies in particular emerged in the late 1920s as the largest aeronautic concerns: the Aviation Corporation of the Americas (Avco), run by Averell Harriman and the Lehman Brothers investment firm; the Boeing/Rentschler consortium known as United Aircraft and Transportation; and North American Aviation, the predecessor of Rockwell International, organized by a New York financier named Clement Keys.

Once the engine manufacturer Pratt & Whitney had secured two airplane manufacturers and a major airline, the United Aircraft consortium, as exclusive customers, Clement Keys recognized that his company needed a similar affiliation if it was to survive. He finalized an arrangement wherein the Wright Engine Company became the exclusive supplier of engines for North American Aviation.

North American's major airline, National Air Transport, was one of 45 aviation companies operated by Keys; the list also included the Curtiss Aeroplane & Motor Company and Wright Engine. Curtiss was a successful manufacturer of such airplanes as the Condor, and Wright manufactured some of the highest quality aircraft engines of the day. North American also owned Eastern Air Lines, the pioneer of air service along the eastern coast of the United States, and Transcontinental Air Transport. These subsidiaries made the parent company's stock even more attractive. Money continued to flow into North American from investor groups, making the original stockholders (Keys among them) extremely wealthy.

The bright future of the aviation companies came to an abrupt end on October 24, 1929 when a financial disaster hit Wall Street. Virtually all stocks were inflated in value and backed only with borrowed funds. When investors realized that the market could no longer support the inflated values of their stock, they flooded brokerage houses with orders to sell. The large number of claims led people, banks, and companies into bankruptcy. The resulting stock market crash brought about a ten-year world depression.

In 1930, North American lost its majority control of National Air Transport to the United Aircraft company. The buyout provided temporary relief to financially troubled North American, which was purchased by General Motors four years later. General Motors was one of the few companies with capital available to refinance a business which held such promise for the future. General Motors

acquired North American in an attempt to diversify, since its own product was not selling well during the Depression.

Keys retired from business in 1932 because of ill health, and James Howard Kindelberger, who was with Donald Douglas during development of the DC-1 and DC-2, was made president of North American in 1935. He was trained as an engineer but knew the automotive business so well that his managerial acumen overshadowed his engineering skills.

General Motors, which held a substantial amount of stock in Trans World Airlines, sold its holdings in that company in 1936. In the same year, North American (still a subsidiary of General Motors) sold its Eastern Air Lines unit to the airline's director, Eddie Rickenbacker. The divestiture of airline companies from airplane manufacturers was forced upon the three largest aeronautic conglomerates by Senator Hugo Black, who also advocated the break-up of numerous other monopolies. North American Aviation was no longer an airline company but merely a manufacturer of airplanes and parts for airplanes.

During World War II, North American manufactured thousands of P-51 Mustangs for the U.S. Army Air Corps. The P-51, one of the last mass-produced piston engine airplanes, saw action in every theatre during the war. The company also built the B-25 Mitchell bomber and T-6 Texan trainer. The company built more airplanes for the U.S. military than any other company during the war years. The rapid expansion of the company was financed mostly by the government, which was North American's largest customer.

When the war ended, North American's military contracts also ended. Like the Grumman Corporation, North American opted to avoid entering the competitive commercial airliner market. Instead, the company focused its resources on the development of the next generation of military aircraft, namely, jets. Working from designs and prototypes of jet aircraft captured from the Germans after the war, North American built its first fighter jet called the F-86 Sabre. Because the Sabre's supersonic wings were developed from German designs, the company saved millions of dollars in research and development costs.

In the years after the war, North American attempted to enter the private airplane market, with a small four-passenger plane called the Navion. However, poor sales of the Navion convinced company management of the futility of entering the private market. In 1947, the design and production rights to the Navion were sold to Ryan Aeronautical.

North American continued to develop new equipment for the military. The company built a number of fighters and trainers for the Navy's aircraft carriers, in addition to a new jet called the F-100 Super Sabre. North American also constructed the first experimental supersonic aircraft, the rocket-powered X-15 and X-70.

When General Motors sold its share of the company in 1948, North American diversified its product line, becoming involved in the development of rockets, guidance systems, and atomic energy. It created Rocketdyne, Autonetics, and Atomics International as new divisions to pursue research in those individual fields. Here again, Rocketdyne was assisted by the Germans; much of its rocket and missile technology was acquired from captured German data.

Kindelberger, who had been promoted to chairperson, and the company's new president, J.L. Atwood, planned the company's diversification before the war ended. They both knew that in order for the

company to survive the postwar environment, they would have to prove the company's worth to the government by leading the development of the newest defense systems. The government could then justifiably be asked to fund much of the costly development of any new systems.

The company's greatest success was in its Rocketdyne division, which produced the Thor, Jupiter, Redstone, and Atlas rockets. The research and development of an atomic-powered missile was abandoned when the system was declared impractical and unworkable. Research from the ambitious but ill-fated project was converted for use in the development of nuclear reactors.

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When the Soviet Union put Yuri Gagarin into space in 1961, the U.S. space program was jolted into action. North American's Redstone rocket was used to launch Alan Shepard and Virgil Grissom into space during the Mercury space program in 1961. Later, John Glenn was launched into orbit aboard a Mercury spacecraft perched on top of an Atlas rocket. North American Aviation enabled the United States to recover its technological edge in the space race with the Soviet Union.

In order to meet President Kennedy's challenge to land a man on the moon before 1970, the National Aeronautics and Space Administration (NASA) contracted North American to build the three-passenger Apollo space capsule. On January 27, 1967, a flash fire swept through a manned Apollo capsule during a ground test. Killed in the accident were Virgil Grissom, Edward White II, and Roger Chaffee. The astronauts' widows each received \$350,000 in a legal settlement, but North American was still harshly criticized. Despite the fact that most of its business involved government contracts, the company suffered severe financial reverses which threatened it with bankruptcy. Within two months of the accident, North American Aviation was a prime candidate for a takeover.

Rockwell-Standard made a \$922 million bid for North American Aviation in March of 1967. Rockwell was established in Wisconsin in 1919 as a manufacturer of truck axles. At the time of the bid, Rockwell was primarily a manufacturer of industrial machinery and light and heavy vehicle parts.

Under the terms of the merger, J.L. Atwood, president and chief executive officer of North American, would assume the same duties at the new company, while Colonel Willard Rockwell, of Rockwell-Standard, would serve as chairperson. The merger was delayed for a few months by the Justice Department, which argued that the merger would be anti-competitive. The problems were finally resolved and the smaller Rockwell, with sales of \$636 million, took over North American, with sales of \$2.37 billion.

Atwood said the merger was "in furtherance of North American's previously announced objective to diversify its activities into the commercial and industrial sector." What the company management really wanted was to improve its public image. Its association with the Apollo space capsule tragedy was never forgotten. The merger with the Rockwell company would recover the reputation of integrity that management thought North American deserved. It was clear that Colonel Rockwell would be firmly in charge of the new company, which was called North American Rockwell.

Rockwell's role in the U.S. space program continued, but the company maintained a low profile. It spent much of its first years after the merger manufacturing car and truck parts, printing presses, tools,

industrial sewing machines, and electronic instruments for flight and navigation. The company devoted much of its resources to the development of space systems, including the enormous Saturn V rocket engines, which launched later Apollo missions to the moon. Later, the company was chosen as the primary contractor for NASA's space shuttles. During this time, it also became NASA's largest contractor, a position it continued to hold into the 1990s. In 1973, the company changed its name to Rockwell International when it was merged with another separate company created by Willard Rockwell Jr., the Rockwell Manufacturing Company.

Willard Rockwell, Jr., who took over from his father in 1967, retired in 1979, and Robert Anderson assumed the position of chairperson. Anderson had joined Rockwell in 1968 after he left the Chrysler Corporation. He was named president of Rockwell in 1970 and chief executive officer in 1974. Anderson's background in the automotive business made him a conservative and cautious manager. Generally regarded as an engineer more than as a financial manager, he had a strategy for the company's growth and expansion that was markedly different from that of his predecessor. Anderson himself later remarked, "it's fair to say that we disagreed on the direction of the company altogether."

Under the junior Rockwell, the company made some high risk acquisitions, stretching its balance sheet to an uncomfortable degree. At one point the company was reportedly losing a million dollars a day. Rockwell was trying to establish the firm's business in high profile consumer markets, like Admiral television, which Anderson sold in 1974.

Anderson, who was originally hired to smooth the transition of management and resources during the 1967 merger, had little tolerance for the waste usually associated with defense contracts. He introduced the General Motors policy, which required all company divisions to submit profit goals for various production periods. As a result of Anderson's strict management, Rockwell's debt-equity ratio (the company's debt divided by its net worth) fell from 99 percent in 1974 to 50 percent in 1977 and to nine percent in 1983.

Rockwell had initially planned to build the B-1 bomber, but in 1977 the Carter administration cancelled the program, favoring instead the development of Northrop's stealth bomber. By 1983, however, the Reagan administration had reactivated the B-1 project as part of its ambitious military program. Production of the B-1 bomber was expected to generate a profit of approximately \$2 billion a year for Rockwell, but subsequent orders for more of the bombers ceased. Once again, Rockwell and its B-1 were summarily excluded from consideration for the production of the United States' next strategic bomber. The company still had other defense contracts, however: the MX "Peacekeeper" missile (designed to replace the nation's stock of aging Minuteman missiles), five space shuttles, and a navigation satellite called Navstar.

Willard Rockwell, Jr. resigned as a consultant to Rockwell in 1984 due to a conflict of interest between the company and a separate concern he founded in 1979 called Astrotech. Astrotech was negotiating to purchase one or more of NASA's space shuttles in the belief that only private enterprise could make shuttle flights profitable.

That venture was indefinitely postponed by the explosion of the space shuttle Challenger in January 1986. An investigation of the accident later revealed that one of the booster rockets malfunctioned and caused the rocket to collide with the huge external fuel tank. The resulting explosion decimated the

orbiter and killed all seven of its astronauts. A few months later President Reagan announced the order for a new shuttle from Rockwell to replace the Challenger.

Shortly before the accident Rockwell was implicated in a government investigation into illegal overcharges on various government contracts. The company was banned from further contract awards until Anderson himself convinced Air Force Secretary Vernon Orr to reinstate the company in December 1985. Anderson promised to fire senior managers involved in any illegal activities.

In 1985, Anderson oversaw the first major acquisition of his career at Rockwell with the \$1.7 billion purchase of the Allen-Bradley Company of Milwaukee. Rockwell was suffering from a decrease in business after the cancellation of the B-1 bomber and the completion of the space shuttles. Allen-Bradley, a successful manufacturer of industrial automation systems, provided Rockwell with a steady profit from its operations and helped to reduce the company's dependence on government contracts.

Robert Anderson retired in 1988, relinquishing control of the company to its president, Donald R. Beall, who had been priming himself for Rockwell's leadership position for a decade. Ten years earlier, in 1978, when Beall was president of Rockwell's electronic division in Dallas, he reportedly spent one evening composing notes delineating what he would do if given control of Rockwell. Ten years and 14 pages later, he was given that opportunity and immediately set himself to the task of redefining the company's future.

A principal component of Beall's strategy was to reduce Rockwell's dependence on federal defense contracts and increase its presence in the electronics market. Specifically, this meant an expansion of Rockwell's telecommunications operations and a more significant role for the company's Allen-Bradley subsidiary, which Beall had encouraged Anderson to acquire. To make the company more responsive to customers, Beall granted company managers nearly autonomous control of their operations and then sharply reduced the bureaucratic layers of management that had accumulated over the years. Seven management levels were compressed into three, the company's headquarter staff was cut by more than half, and Rockwell's various businesses were reorganized into four major categories: electronics products, automotive products, a graphics unit (which manufactured high-speed newspaper presses), and aerospace.

Before Beall could complete his transformation of Rockwell, however, economic conditions soured, sending the national economy in a tailspin and shrouding Beall's efforts to create a more diversified, commercially-oriented company. Despite the economic downturn, Beall funneled more than \$250 million into Allen-Bradley to create a new generation of factory automation products, which, coupled with the company's commanding presence in the market for high-speed modems (a product of Rockwell's 1973 acquisition of Collins Radio Co.), provided two stable, commercially-oriented legs for the company to stand on once economic conditions improved.

When conditions did improve, the fruits of Beall's strategy were unveiled. Government-funded business, which as recently as 1988 had accounted for 50 percent of Rockwell's sales, contributed only 23 percent to the company's sales total in 1993, a span during which 40,000 government-funded jobs within the company had been eliminated. Conversely, Rockwell's commercial business had grown substantially, fueled by Beall's efforts to expand the company's telecommunication business and bolster Allen-Bradley's market position. By 1994, Rockwell's telecommunications unit was manufacturing 80 percent of all modems in computers and fax machines sold throughout the world, while the company's

investment in Allen-Bradley began paying dividends, buoyed by a more favorable economic picture. In early 1994, Allen-Bradley was recording \$8.1 million in sales per day, the greatest amount in the company's history and cause for much optimism for Rockwell's future as a more dynamic player in the commercial electronics market.

With the changes effected by Beall driving Rockwell's growth, the aerospace and electronics manufacturer entered the mid-1990s pursuing additional changes. Rockwell's aerospace and defense businesses were expected to plateau in the wake of the Cold War, while its commercial businesses were expected to continue their expansion and profitability. As Rockwell charted its future, its products and corporate priorities reflected the demand of a marketplace gearing for the twenty-first century.

Principal Subsidiaries: Allen-Bradley Company, Inc.; Rockwell-Collins International Inc.; Rockwell Graphic Systems, Inc.; Rockwell International Finance Corp.; Rockwell International of Canada (Ontario), Ltd., Rockwell International Holdings, Ltd.; Rockwell International, Ltd. (England); Rockwell International Sales Corp.

Additional Details

Public Company

Incorporated:1928 as North American Aviation

Employees:78,685

Sales:\$10.84 billion

Stock Exchanges: New York

SICs:3823 Process Control Instruments; 3812 Search and Navigation Equipment; 3764 Space Propulsion Units and Parts; 3724 Aircraft Engines and Engine Parts; 3714 Motor Vehicle Parts and Accessories; 3861 Photographic Equipment and Supplies; 3661 Telephone and Telegraph Apparatus

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