

A BUSINESS HISTORY OF THE  
LEAR JET CORPORATION, 1959-1964

by

DWIGHT L. HAYDEN

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A MASTER'S REPORT

submitted in partial fulfillment of the  
requirements for the degree

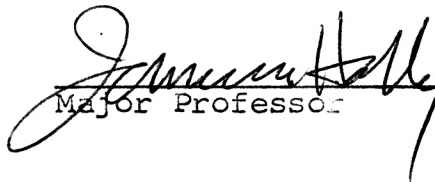
MASTER OF SCIENCE

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## INTRODUCTION

The American economic system allows a freedom for individual initiative that is probably unmatched in the world. Perhaps only in the United States could a boy leave formal education at the eighth grade, enter business for himself, and six years later at the age of twenty be earning a monthly salary of \$2,000 as an electronics consultant. This is how the sixty-two year old William P. Lear, Sr. began a career as inventor and manufacturer of industrial electronic components.

As president and principal owner of Lear Jet Corporation, he continues to depart from long-accepted industrial maxims in the development of new products. His latest is a jet aircraft designed for corporate executives. Mr. Lear believed that executives utilize aircraft primarily to reduce travel time, and hence, do not require the large, luxurious walk-around passenger cabins that are common in competitive models. He incorporated this utilitarian concept into the design of the Lear Jet 23, and achieved speed and safety plus the utility and economy of a small aircraft.

Mr. Lear invested \$10,600,000 of his money in the corporation; and prior to the public stock offering on November 30, 1964, he owned 100% of the common stock. A single owner-manager speeded development of the corporation because important decisions could be made quickly without time consuming management conferences. As Mr. Lear said, "I would hold a Board of

Directors' meeting every five minutes and the decisions were always unanimous."

## OBJECTIVES AND METHODOLOGY

The purpose of this study was to compile and present a business history of the Lear Jet Corporation. Results of the study furnished answers to the following questions: How has complete ownership and management by one man (to November 30, 1964), affected the development of Lear Jet Corporation? Why did the sixty-two year old William P. Lear, Sr. risk his \$10,600,000 fortune to develop the Lear Jet 23 aircraft? Has the evolution of Lear Jet Corporation been unique in the aircraft industry? Were the Corporation's design and marketing policies unusual in the aircraft industry?

In a study of this type, no definite conclusions are offered. However, the concluding section contains some personal observations and potential problems within the Lear Jet Corporation.

The material on which this study was based was obtained from Lear Jet Corporation records and interviews with representatives of management, designers, production specialists and customers.

## HISTORY

In 1930 William P. Lear, Sr. founded Lear Corporation to produce electronic instruments which he had designed and



patented. The company grew rapidly, and played an important part in developing electronic instruments for aircraft during World War II. Following the Korean War, Lear Corporation established manufacturing facilities in Europe. Mr. Lear decided to direct this foreign expansion program himself by moving to St. Gallen, Switzerland.

In November 1959, Lear decided to design and produce a small executive jet aircraft for market primarily in the United States. Although no executive jets had been produced by 1959, he believed a market existed for this type of aircraft, and was intent upon assembling the men and materials necessary for its development. In April 1960, Lear incorporated the Swiss American Aviation Corporation in the state of Delaware, with principal offices in St. Gallen, Switzerland.

While in search of engineering talent, Mr. Lear met Dr. Hans L. Studer, the chief aircraft design engineer for the jet-powered Swiss P-16 fighter-bomber project. Lear told Studer of his intentions to develop an aircraft unlike any on the market at that time. The general specifications included the following: an executive jet aircraft; eight-passenger capacity; high-speed performance; and a total gross weight of less than 12,500 pounds.

Dr Studer was interested in the project and agreed to work with Lear. They started preliminary design studies, but could not decide on one that satisfied the stringent requirements established. Lear learned from Studer of the engineering refinements built into the supersonic ground-support fighter-

bomber (P-16) that was sponsored by the Swiss government. Three aircraft were tested extensively to determine capability as a possible addition to the Swiss Air Force. However, the P-16 project did not meet with full approval of the Swiss government, and was abandoned. None the less, Lear recognized the fine aerodynamic qualities and structural integrity of the P-16, and believed this design could be modified into his executive jet aircraft. Several major changes were necessary, however. The P-16 weighed 24,000 pounds (almost twice the desired 12,500 pounds), and it was designed to carry armaments. Lear's design eliminated all armaments and required less aircraft structure, thus allowing considerable reduction in weight.

Lear succeeded in hiring several of the engineers who had worked with Dr. Studer in designing the P-16. Thus he was able to acquire much of the P-16 technical data including wind tunnel tests. As a result, considerable time and money were saved in modifying the design into a passenger carrying aircraft. Time was of utmost importance because Lear believed that he could gain a market advantage if he were one of the first manufacturers to produce a small jet aircraft built exclusively for the civilian market.

Lear wanted his design to exceed all requirements. Many problems arose that required changes in the P-16 design, all of which Lear, as sole financier, personally authorized. Frequently the engineers would discuss design problems with Lear; and subsequently he would often devise solutions that were simpler or

lighter in weight than the solutions developed by the engineers. After the design was completed during the summer of 1961, preparations were begun for tooling-up to produce the aircraft.

A "name" was selected for the aircraft, the SAAC-23, which was derived from the company abbreviation and the twenty-three designs that were studied before a final selection was made.

Lear had set January 1, 1962 as the date for roll-out of the first completed aircraft. But by November of 1961, it was evident that this goal would not be achieved. The principal problem was an inability to obtain qualified employees. Very little unemployment existed in Switzerland. Furthermore, it was necessary that any employee (regardless of where hired), sign a contract which prevented him from leaving that job before the terms specified in the contract were fulfilled. This prevented Mr. Lear from hiring trained employees-under-contract away from other companies in Switzerland.

Many other problems existed. Employees refused to work on Saturday or Sunday, or to work overtime regardless of the wage bonus offered. Also, the Swiss celebrated approximately forty national holidays annually. The result was an average work week of four days.

Labor and material costs were rising. Between November 1959 and November 1961, labor costs increased nineteen percent. Raw material prices were fluctuating to the extent that suppliers refused to set a definite price on their products prior to

delivery. This meant that a manufacturer had no way of knowing the cost of material purchased for future production.

Another problem entailed the acquisition of United States Federal Aviation Agency certification, which permits a manufacturer to sell a passenger or cargo aircraft in the United States. The F.A.A. refused to certify the SAAC-23 aircraft in Switzerland because of the cost of operating a certification program outside of the United States. Finally, Lear decided to take the aircraft and test equipment to the United States in order to get F.A.A. certification.

#### Relocation

Confronted with a multitude of problems and realizing that production was far behind schedule, Lear decided to review his aircraft development program. He knew many problems such as hiring trained employees and obtaining F.A.A. certification would not exist if production were located in the United States. Several alternative solutions were considered; but in July 1962 he decided to move production tooling and materials from St. Gallen, Switzerland to Wichita, Kansas.

Several locations were considered in the United States. Many cities offered to provide production facilities or favorable tax moratoria, but Wichita was selected because of the availability of engineers and skilled aircraft workers. In the summer of 1962, Wichita experienced a serious unemployment situation that was caused by the release of several hundred

aircraft workers from Boeing Airplane Company's Wichita plant. With many skilled employees and cooperative city officials, Mr. Lear believed that Wichita was the best location for his new plant.

In August 1962, the city of Wichita agreed to lease a sixty-four acre tract of land adjacent to the municipal airport, and to construct a taxiway leading to the main runway. Also the city of Wichita constructed a building providing 96,000 square feet of floor space that was financed by a \$1.2-million revenue bond issue. The entire issue was purchased by the Lear family. By January 1, 1963 the plant facilities were ready for occupancy.

During the construction program, designs and equipment in Switzerland were being prepared for shipment to Wichita. Lear hired Henry Waring and nine other engineers from the Wichita area to study the designs and tooling in Switzerland before they were dismantled. All Swiss operations ceased in September 1962 and five hundred tons of equipment were shipped to Wichita at a cost of \$85,000.

Lear had planned to employ several Swiss technicians, but only one engineer, a technical interpreter, agreed to move. All others, including Dr. Studer, declined his offer.

The technical staff, numbering approximately seventy, began receiving shipments on January 15, 1963. Despite a delay caused by the dock workers strike on the eastern coast of the United States, all shipments were received by March 1, 1963. The plant then was ready to begin production of its first aircraft.



On April 1, 1963, Lear amended the Delaware incorporation papers of the Swiss American Aviation Corporation to change the company's name to Lear Jet Corporation. Also, the aircraft was designated the Lear Jet 23.

#### ORGANIZATION AND MANAGEMENT

The organization structure of the Lear Jet Corporation originated with Mr. William P. Lear. As both founder and financier, he held final authority for all decisions throughout the crucial aircraft development period. His immediate subordinates assumed the role of advisors without decision-making authority. Lear's refusal to delegate authority kept him well informed of the status of operations, although it caused many problems when he was absent. Lear would not delegate authority to anyone until he was assured that the subordinate would react to the problem in the same manner as he would. He wanted his organization to think as he did, even in his absence.

Mr. Lear experienced an unusual and challenging life. His importance to the development of the Lear Jet Corporation cannot be over-estimated. His experience in the electronic and aviation industries was a major factor contributing to the company's development. A brief vignette of his personal history follows.

In 1916, after completing the eighth grade, Lear began his career by starting a small radio repair shop in the suburbs of Chicago. At seventeen he enlisted in the Navy and became a radio repairman. Three years later, in 1922, he founded the

Quincy Radio Laboratory at Quincy, Illinois. His duties with that company were primarily research and consulting. In 1926, he was employed by Radio Coil and Wire Company and Galvin Manufacturing Company of Chicago to develop the first all-band radio coil, and was subsequently awarded a United States patent for his design.

In 1930, he founded and became president of Lear Developments, later known as Lear Incorporated. His first successful product was a radio receiver for aircraft. He had learned to fly and had purchased a small airplane which he used to test the radio receiver. He called his radio receiver the Lear Radioaire. Over 300 of these were produced and sold to the Stinson Company, an aircraft manufacturer.

Lear continued his inventions in the aircraft communication and navigation field, and manufactured them in his company, Lear Incorporated. During World War II, he was credited with developing the auto-pilot systems that were used on many of the allied bombers. For this outstanding achievement he was awarded the Collier Trophy by the President of the United States in 1950. Lear's many other awards include the following:

The Frank M. Hawks Award for the design of  
the Learmatic Navigator in 1940.

The Horatio Alger Award in 1954.

Sweden's Thulin Medal in 1960 for contributions  
to the aircraft industry.

The Great Silver Medal by the City of Paris  
for his aid in developing the auto-pilot  
for the Caravelle jetliner in 1962.

Honorary degree of Doctor of Engineering from  
the University of Michigan in 1951.

The organization structure of the Lear Jet Corporation as of December 31, 1964 is presented in Exhibit 1. The Board of Directors included the following:

William P. Lear, Sr., Chairman of the Board,  
President and Chief Executive Officer.

Moya Olsen Lear, the wife of William P. Lear, Sr.,  
Vice President and Director.

Fran D. Jabara, Dean and Professor of Accounting,  
College of Business Administration, Wichita  
State University.

Harold R. Boyer, retired in early 1964 as a  
Vice-President of General Motors Corporation  
after three decades of service.

A. Gilmore Flues, Washington, D. C., attorney  
and former Assistant Secretary of the  
United States Treasury.

Elroy McCaw, president of several radio and  
television stations, and active in numerous  
business interests.

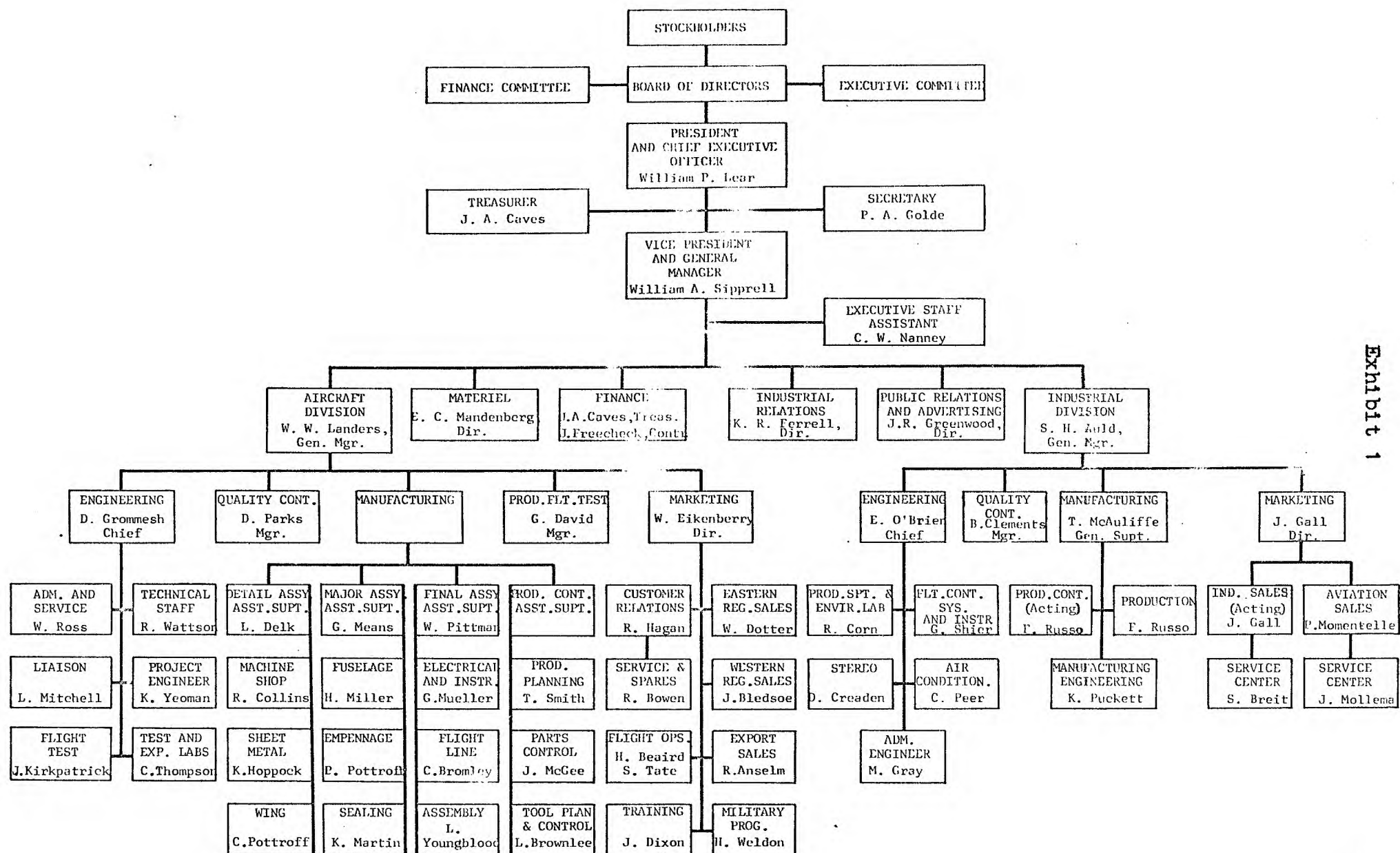
Daniel I. Sargent, Vice-President and Director  
of Philadelphia and Reading Corporation,  
formerly President of Huston Chemical Corp.

David Van Alstyne, Jr., senior partner of the  
investment firm Van Alstyne, Noel and  
Company, New York City.

Lear Jet Corporation's top-management group included nine men in addition to Mr. Lear. Mr. William A. Sipprell, Vice-President and General Manager, was responsible for all company activities. He was formerly President of Babb Company, manufacturers of aircraft components.

John A. Caves, Treasurer, was responsible for all financial activities. Formerly, he worked as a financial consultant with





Young Spring and Wire Company, and Haskin and Sells in Los Angeles.

Philip A. Golde, Secretary, formerly served as Senior Vice-President, Secretary and General Counsel of Lear Incorporated, Santa Monica, California.

C. W. Nanney, Executive Assistant, joined Mr. Lear in 1959, following retirement from the Los Angeles Police Department. Mr. Nanney had been with the Lear Jet program from the beginning in St. Gallen, Switzerland.

W. W. Landers, General Manager of the Aircraft Division, was formerly Vice-President of Fairchild Engine and Airplane Corporation, and associated with the Electric Boat Division of General Dynamics.

Samuel H. Auls, General Manager of the Industrial Division, was formerly Engineering Supervisor for Lear Incorporated, Santa Monica, California. Mr. Auld had worked closely with Mr. Lear in developing the auto-pilot for the Caravelle Jetliner.

James R. Greenwood, Public Relations Director, was formerly Manager of Press Relations for Beech Aircraft Corporation.

E. C. Mandenberg, Director of Material, was formerly associated with Martin Marietta Corporation as Manager of Material.

Kenneth Ferrell, Manager of Industrial Relations, previously served twelve years as Industrial Relations Administrator for Beech Aircraft Corporation.

These men constituted a management committee, with Mr. Sipprell as chairman, that met each Wednesday morning to facilitate intra-management communication.

## FINANCE

Mr. Lear was the first man to develop and certify a jet aircraft entirely from private capital. As of November 30, 1964, he had invested \$10,600,000 in the company, and with his wife owned 100% of the outstanding capital stock.

On April 29, 1960, Mr. Lear issued himself 1,000 shares of common stock for a total cash investment of \$100,000. During the ensuing period to July 1, 1964, Lear issued himself an additional 49,000 shares of common stock for cancellation of indebtedness owed by the company to Lear on loans (representing principal plus accrued interest), totaling \$4,900,000.

The Certificate of Incorporation of the company was amended on July 27, 1964 to increase the authorized capital stock to 3,000,000 shares of one dollar par value per share. On July 29, 1964, the 50,000 shares of \$100 par value common stock owned by Mr. and Mrs. Lear were exchanged for 1,500,000 shares of the new common stock of one dollar par value per share. Of the paid-in surplus, \$3,500,000 resulted from the purchase of the above shares by Mr. and Mrs. Lear, all but \$308,131.79 was applied to cancel the deficit in retained earnings of the company as of July 31, 1964. (Exhibit 2.) This deficit had arisen principally from a charge of \$3,192,510.51 because research and development costs to April 30, 1964 were not available to the company as deductions for income tax purposes. The stockholders, i.e., Mr. and Mrs. Lear, had elected Sub-chapter S of the Internal Revenue Code of 1954, thereby permitting the stockholders to

offset a company tax loss against personal income. This tax loss included gross research and development costs, net of taxes, which had been used as tax deductions in the year in which such expenditures were made. None of the loss that was incurred in company operations prior to April 30, 1964 was available to the Company for decreasing future taxable income.

On October 1, 1964, the Certificate of Incorporation was further amended to increase the authorized capital stock to 4,000,000 shares of par value one dollar. Also, on this date the Board of Directors authorized the issuance of six percent convertible debentures due in 1969 in the amount of \$4,000,000. Mr. Lear immediately cancelled debts totaling \$4,000,000 owed to him by the company in exchange for convertible debentures which were convertible after November 30, 1964 into common stock of the company at a price of eleven dollars per share.

Funds for construction of additional plant facilities to increase floor space to 220,000 square feet were provided by the city of Wichita through the sale of a \$1,250,000 industrial revenue bond issue.

The entire plant was owned by the city of Wichita and leased to the company under terms of a contract terminating on October 31, 1983. The company had an option to buy the plant and equipment covered by the lease at its termination for \$5,000.

With the production of the Lear Jet 23 increasing, and the Industrial Division expanding (see p. 20), the company was in need of additional capital. On November 30, 1964, Lear Jet

Corporation offered the first public stock issue of 500,000 new shares of common stock. The stock was offered to the public at a price of ten dollars, with a net proceed to the company of \$9.00 per share. The new stock issue was sold within a one-week period; and as of December 31, 1964, the stock had maintained a price averaging \$9.60 with light trading activity. The proceeds from the stock sale were to be used to pay a six percent bank loan of \$510,000 due on December 20, 1964, and to pay \$1,500,000 in accounts payable to material suppliers. The remainder was to be used for procuring additional tooling and equipment for increasing production of the Lear Jet 23, and to produce a substantial volume of Lear Stereo units. (See Production, p. 21.)

Mr. Lear had stated, "A total capitalization of \$20,000,000 would be required to sustain production of eight to ten aircraft per month and 1,000 Lear Stereo units per day." However, he did not think that the company would have another public stock offering in the foreseeable future.

#### ENGINEERING AND DEVELOPMENT

The major portion of engineering effort in Lear Jet was directed toward development of the Lear Jet 23. The original design was completed by the Swiss engineers whose primary effort went into redesigning the Swiss P-16 to meet the specifications of an eight passenger jet transport. The Swiss engineers were trained in precision designing and had little regard for the mass production techniques utilized in the United States.



However, they failed to appreciate the greater efficiency of the average worker in the United States compared to a Swiss worker.

After the move to Wichita, the design was translated into the English language. Then the Lear engineers modified the design to reduce production costs, but maintained industrial standards of quality. Also, the production jigs were "opened-up" by removing unnecessary structure to allow more working space around the jigs.

Specifications called for an aircraft with maximum gross weight of 12,500 pounds. In order to achieve this goal, it was necessary to shave weight from every possible component. The total weight for the design was approximately 500 pounds above the limit. Lear decided the only solution was to develop his own "avionics" (electronic flight control instruments), with emphasis on minimum weight and space requirements. Thus the Industrial Division developed from a need for component parts with special weight and space requirements.

Lear had developed the F-5A auto-pilot during World War II for use on American military aircraft. Also, he had developed the auto-pilot for the French-built Caravelle airliner with complete automatic landing capability. Lear knew from past experience that it was possible to develop a complete integrated flight control system for the Lear Jet 23. By utilizing integrated systems, many duplicate components could be eliminated.

Lear assumed the role of an advisor to his engineering team. He set the standards, made suggestions and the final decisions.

The complete aircraft design was re-evaluated with emphasis on reducing excess weight. Considerable weight reduction was achieved by redesigning components, thus eliminating unnecessary material. As an example, the instrument panel was re-manufactured from lighter weight materials. After the removal of all excess weight from the aircraft, and the installation of the new lightweight flight control system, the all-important goal of 12,500 pounds was achieved.

The flight control system contained the Lear three-axis auto-pilot with automatic landing capability. This device enables a pilot to land at an airport with zero visibility in the following way. The pilot intercepts a radio beam which gives altitude, distance, and azimuth from the runway. The auto-pilot then "locks-on" the beam and follows it throughout the approach and landing without the necessity of the pilot seeing the runway. This system has proven to be reliable and has been evaluated by United Air Lines for possible use in regularly scheduled service.

In May, 1963 a major problem arose in the design. Wind tunnel tests performed on a one-fifth scale model of the Lear Jet 23 showed that at high speeds, (approximately 690 miles per hour), the horizontal stabilizer and elevator control surfaces on the tail lost their aerodynamic effectiveness. This phenomenon caused the nose of the aircraft to drop, resulting in an uncontrolled dive. Although the aircraft was not designed to

fly faster than 620 miles per hour, it was conceivable that a pilot could accidentally exceed this speed.

The original tail was fitted with the horizontal stabilizer located behind the twin jet engines. In order to improve control effectiveness, the tail was redesigned with the horizontal stabilizer located on top of the vertical stabilizer, (Exhibit 6). Although this change created a two percent increase in drag, the control problem was eliminated.

#### First Flight

In September, 1963 the first aircraft was rolled out, seven months after production began. Test pilots Bob Hagan and Hank Beaird had studied the design and operating specifications from the start of production, and were prepared to start flight testing. The first aircraft, licensed as N801L, was ready for flight testing on October 7, 1963. That day the Lear Jet 23 successfully completed its first flight of twenty-five minutes, during which it was climbed to 10,000 feet and obtained a speed of 250 miles per hour. By February 1, 1964, the N801L had completed its eightieth flight and had 100 hours total flying time with no inflight emergencies. On March 5, 1964 the second Lear Jet flew with a veteran pilot at the controls, Mr. William P. Lear, Sr.



### Certification Program

On April 1, 1964 the Federal Aviation Agency issued an inspection authorization which marked the formal beginning of type certification for the Lear Jet 23. A certification program is conducted by the Federal Aviation Agency to insure that the aircraft meets all requirements prior to being used in public or private transportation.

Two aircraft were used in the certification program. Recording equipment was mounted in the passenger cabins for post-flight evaluation. A Lear pilot and a Federal Aviation Agency pilot conducted each test flight.

On June 4, 1964, Lear Jet N801L was destroyed by fire following an emergency landing in a wheat field approximately two miles southeast of Wichita's Municipal Airport. Federal Aviation Agency test pilot, Don Keubler, pilot in command, and co-pilot James Kirkpatrick of Lear Jet Corporation were performing a series of single engine take-offs with the aircraft loaded at maximum gross weight. On one such take-off, the wing spoilers were inadvertently left in the extended position from the previous landing. The aircraft reached an altitude of seventy feet before it was landed gearup in an open field. It skidded approximately 1500 feet before coming to a stop in an upright position with only minor damage to the lower fuselage and wing surfaces. Unfortunately, a ruptured fuel tank was ignited and the aircraft was consumed by fire before fire fighters could reach the scene. The two pilots escaped without injuries. The Civil Aeronautics

Board investigation showed the cause of the accident to be a pilot error in attempting a take-off with the wing spoilers in the extended position.<sup>1</sup>

The accident resulted in a six-week delay in the certification program, in addition to total loss of an aircraft and test equipment. However, the accident demonstrated the strength of the Lear Jet 23's structure because the entire aircraft remained intact through the crash landing.

The certification program continued without incident utilizing the remaining aircraft. On July 31, 1964 the Federal Aviation Agency announced that the Lear Jet 23 complied with all requirements, and issued type certificate number A5CE.

#### Industrial Division

The Industrial Division developed several electronic products from the knowledge gained in the aircraft development program. A static inverter with no moving parts was developed for transforming DC electrical power into 400 cycle AC power. Many competitive models had a rotating disk which increased noise and weight.

The most important development was the compact stereo-radio unit which was designed to fit into the standard General Motors auto radio compartment. The stereo unit operated from an endless tape (encased in a small cartridge), inserted into the front of the unit. In addition, the stereo unit contained an AM radio

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1. Aviation Week and Space Technology, June 8, 1964, p. 25.

without push-button controls. The automobile stereo unit had four speakers, two installed in the lower front side panels ahead of the doors, and two above and behind the rear seat.

The unit was adaptable to boats and airplanes, and was fitted with a cabinet for the home. All stereo models will utilize a standard tape cartridge containing one hour and twenty minutes of programming.

#### PRODUCTION

The Lear Jet has been unique in the aircraft industry because the first aircraft was built from production tooling. It had been customary to "hand-build" a prototype for testing prior to investing large sums of money in tooling. However, Lear believed his design was satisfactory, and by omitting the prototype, saved several months in attaining full production.

The Lear Jet 23 was produced from a single assembly line at the Wichita plant. On December 31, 1964 production was averaging three aircraft per month. Plans were to increase the rate to ten per month by June 1, 1965.

The Industrial Division realigned production facilities in anticipation of a stereo production rate of 1,000 units per day. However, this was not expected to occur until the 1967 car models went into production. One hundred stereo units were installed in Ford, General Motors and Chrysler cars for testing and evaluation by the automobile manufacturers. If their estimates were valid, stereos would be installed on ten

percent of the 1966 and twenty-five percent of the 1967 car models.

Lear had obtained patents on important design features and appeared to have the most compact unit on the market. As a result, Lear was in a position to obtain a large volume of the auto stereo market--as of December 31, 1964, estimated in excess of one million units per year. If this market developed, Lear was prepared to grant manufacturing rights on a royalty basis to other companies to produce Lear Stereos.

#### MARKETING

The Aircraft and Industrial Divisions each had separate marketing departments. The Aircraft marketing department was responsible for promotions and sale of the Lear Jet 23. It concentrated on fulfilling the demand for high speed executive transportation. The trend toward corporate mergers and diversification resulted in executives spending a greater proportion of their time in travel. A majority of their travel was on the major airlines. However, executives frequently were forced to use slower means of transportation to reach locations not served by an airline resulting in time lost from the job. This situation created a demand for a corporate aircraft capable of operating from small airports at jet airliner speeds, and was the market for which the Lear Jet 23 was designed. Furthermore, the Lear Jet 23 was priced below all competitive models and was better suited to the smaller corporations' budget. (Exhibit 3.)

The Lear Jet 23 design was based on Mr. Lear's concept that executives utilized an aircraft for high speed transportation, and that they do not require large luxurious interiors. The Lear Jet 23 provided "limosine comforts," while competitors furnished "pullman-car accommodations." The resulting difference in weight was reflected in the economy and performance of the Lear Jet 23.

Lear expected to obtain twenty-five percent of the corporate market, with projected sales of 600 aircraft over the next five years, exclusive of potential military sales. Air Force officials in Washington requested a demonstration of the aircraft's capability as a logistics-support aircraft. And although, Lear did not expect to create a major military market, an office for government coordination was established in Washington, D. C.

On August 1, 1964 the company franchised six domestic and four export distributors to handle all retail sales (except government purchases), of the Lear Jet 23. (Exhibit 7.) The distributors were large independent aircraft dealer respected in the aviation industry. Each distributor was assigned a geographic region that was allocated on the basis of sales potential. They were required to provide adequate sales and service facilities to accommodate all Lear customers in their respective region. In return they received a five percent discount from the retail sale price.

The marketing department vigorously promoted the Lear Jet 23



through the entire development and certification program. The first customer delivery was made on October 13, 1964 to the Chemical and Industrial Corporation in Cincinnati, Ohio. Initial sales were made directly to the customer by Lear Jet Corporation.

The Lear Jet 23 was priced at \$595,000. Each order required a non-refundable cash deposit of \$50,000 at the time the order was received. As of December 31, 1964, Lear Jet Corporation had received firm orders for eighty-nine aircraft at a sale value of \$52,955,000.

Customer response was so intense that individual distributors could not be furnished an aircraft for demonstration purposes. To solve this problem, Lear Jet Corporation delivered aircraft to customers with an agreement that the aircraft could be returned to Lear Jet Corporation for demonstration purposes. However, the company was planning to provide each distributor with a "demonstrator" by March, 1965.

The Lear Jet was the lowest priced executive jet on the market. (Exhibit 3.) In comparison with competitive models, it had the highest thrust-weight ratio--a ratio that reflects a greater efficiency of operation. The nearest competitors are the Jet Commander and the DeHavilland DH-125. However, the Lear Jet was priced far below either model and had performance features which exceeded all competitors. The most important feature of the Lear Jet was that it was the only executive jet aircraft licensed below 12,500 pounds maximum gross weight.

This allowed the Lear Jet to be licensed under the same regulations as any light aircraft, thus considerably reducing the restrictions placed on its operation. Also, it could be used for commercial air taxi operations without the requirement for a commercial air carrier permit. This permit is required of all commercial aircraft weighing in excess of 12,500 pounds, and includes the same rigid regulations imposed on the commercial airliners. Thus, the Lear Jet was the only passenger jet on the market which qualified for air taxi certification.

#### Lear Stereo

The Industrial Division developed a stereo unit designed for use in automobiles, aircraft, boats, and console models for the home. The outstanding feature of the Lear Stereo was its compact size in comparison to competitive models. It was combined with an AM radio and would fit into a standard automobile radio compartment. (Exhibit 8.)

The Lear Stereo appeared to have a considerable marketing advantage over competitive models. One advantage was that the unit operated from an endless tape enclosed in a standard size 300 cartridge. (Exhibit 8.) The cartridge could be changed by merely pulling it out and reinserting another.

In order to promote sales of the Lear Stereo, the company contracted with the Radio Corporation of America (RCA) to provide the taped music. The major automobile manufacturers were then contacted and given a demonstration. They showed enthusiasm

toward the Lear design, and agreed to purchase one hundred units for testing and evaluation. These units were sold for \$250 each. However, it was anticipated that the price would decline to \$125 per unit when production increased. Mr. Paul Momenteller, marketing director for the Industrial Division stated, "We would never have sold a test unit if we had not previously contracted a major recording company to furnish the music."

As of December 31, 1964 the company was in contract negotiations with General Motors, Ford and Chrysler to produce Lear Stereos for the 1966 and 1967 automobile market.

#### INDUSTRIAL RELATIONS

After the move to Wichita, the company began hiring skilled aircraft production workers in the Wichita area. A majority of them had worked for Boeing Airplane Company, a manufacturer of heavy military and commercial transport aircraft. The Boeing Company decreased employment in mid-1962 that caused a serious unemployment problem in the city. This supply of unemployed skilled workers was the main factor in Mr. Lear's decision to move to Wichita.

But hiring workers temporarily unemployed from other manufacturers resulted in a problem of excessive employee turnover. This was caused by many employees returning to their original jobs when recalled by their former employers. However, the company succeeded in maintaining a full work force without providing an employee training program. On December 31, 1964 the



company employed 1,300 individuals of which 1,100 were in the Aircraft Division and 200 in the Industrial Division.

The International Association of Machinists, AFL-CIO was elected by the employees as their collective bargaining unit on July 8, 1964. Of the 1,300 employees at 1964 year-end only 800 factory employees were eligible for affiliation with this union. As of December 31, 1964 the union organization was still in process and no union-management contracts were being negotiated. Management believed that labor rates and other labor conditions in the company's plant were equal or better than those found in similar plants in the area. Therefore, it was not anticipated that reaching an agreement with the union would present any major problems. There had not been any strikes, work stoppages or slowdowns of production; and none were foreseen.

To provide an employee incentive, the company established an Employee Savings Stock Purchase Program in which all employees could participate, including officers and directors. The program consisted of a savings fund plan and a retirement thrift plan. Classes under the program were formed at the beginning of each calendar year. Employees could enroll in either plan, providing they had at least one year of service with the company at the time of enrollment. Each employee could contribute up to ten percent of his salary, and the company contributed an amount equal to fifty percent of the employee's savings. The employee's savings and the company's contribution were turned over to a trustee-bank which invested one-half of the employee's savings

and the company's entire contribution in common stock of the company. The remaining half of the employee's savings was placed in United States Government Series E Bonds.

All classes under the savings fund plan matured on December 31 of the fifth year following the year of formation. Savings and securities accumulated to that date are to be paid to the employee during the following January.

Under the retirement thrift plan, all classes which had been in effect at least five years following formation matured when his employment terminated. If his employment terminated prior to completing five years of employment, the Employee received an amount equal to his savings contributions.

#### CONCLUSIONS AND INSIGHTS

The Lear Jet Corporation resulted from William P. Lear's desire to make a contribution to aviation through the development of a small executive jet aircraft. Lear was in a position very few men experience. He had the creative talent, initiative, financial capital and the courage to embark on a program which many industrial experts said "could never be done."

At sixty, when most men are finalizing retirement plans, Lear was spending twelve to fifteen hours per day directing his aircraft development program. To Lear, money had no purpose unless it could be used to create a new product or improve one in existence.

Although possessing a keen mind and creative talent, Lear

had little use for a formal organizational structure and believed the only way to "get things done" was to personally supervise operations.

He was a condemner of inter-office memos. In order to improve the internal communication, Lear had other management offices moved into a large room adjacent to his office. Lear said, "You would be surprised what this did for communication."

Lear's importance to the company decreased as it continued to grow and assume the stature of a mature corporation. His designs and marketing policies, firmly implanted within the corporation, continued to function without Lear's personal supervision. But a problem which Lear appeared to disregard was the effect that his death could have had on the corporation. Lear's Vice-President and General Manager, William A. Sipprell would have been the most likely candidate to succeed Mr. Lear as President. However, Sipprell was experienced as an administrator and not as an engineer. Many of the technical duties previously performed by Lear would, out of necessity, have been delegated to subordinates if Sipprell had become president.

Lear may not have properly planned his aircraft development program prior to beginning design studies in Switzerland. Had he investigated the labor conditions in Switzerland, he would undoubtedly have discovered the low supply of skilled workers and the rather unique contract situation existant in Switzerland. Also, Lear could have requested Federal Aviation Agency certification in Switzerland prior to beginning the development

program. Had this been done, he undoubtedly would not have started his program in Switzerland.

Lear's persistent refusal to delegate authority caused much unrest among his immediate subordinates. The design engineers were allowed to make suggestions, but Lear reserved the authority for final approval. As a result, it was necessary for Lear to work many extra hours each day during the aircraft development program in order to supervise all operations. Many projects were delayed pending Lear's approval, and some projects were rushed through critical design and testing phases resulting in inferior quality products and subsequent redesigning.

Lear had acquired a reputation for designing and producing superior quality products from his many endeavors as an inventor-manufacturer. However, he also had a reputation for not providing satisfactory post-sales service and replacement inventory. This was the primary reason Lear had not succeeded in selling his products to the commercial airlines. A Lear competitor once remarked, "If Lear would improve his service and increase his inventory stocks, he would put his competitors out of business."

It appeared that Lear may have realized his weakness because he began offering a five hundred flight-hour factory warranty on the Lear Jet 23, and also, prepared to furnish full maintenance and replacement parts at the Wichita factory.

Analysis of the financial statements shown in Exhibit 2 reveals that as of July 31, 1964 the liquidity position of the Lear Jet Corporation was precarious. The current ratio of 1.0

was below the industry average of 1.75. A normally accepted acid test ratio is between 0.9 and 1.0, but Lear's was 0.4. The ratio of cash to total assets was 1.4%. The common stock equity ratio was twenty-six percent of total capitalization. Normal manufacturing industry standards for equity ratios were approximately sixty percent of total capitalization. However, prior to November 30, 1964, Lear owned all outstanding capital stock and maintained an adequate cash balance by periodically loaning funds to the corporation. Lear had elected to use his personal funds for financing to the maximum extent possible rather than use debt capital until the corporation began profitable operations.

The public stock offering of November 30, 1964 improved the capital structure of the Lear Jet Corporation. The stock was sold to the public at a price of ten dollars per share, and on February 12, 1965 closed on the open market at seventeen dollars per share.

As the Lear Stereo production was expanded, additional capital was required to finance increased inventories. With the common stock increasing in price, the company appeared to be in a favorable position to offer another public stock sale.

Mr. Lear was an individual who was unafraid to risk his entire fortune developing a product that he believed was good. Lear had experienced failure along with success. But he was a true entrepreneur, a breed so rare in modern corporate life that President Johnson urged a national effort to revive it. With little use for traditional marketing surveys, Lear relied

on his part-intuitive, part-analytical sense in these matters. He credited most of his success to his ability to discern a market--before there was any proof that one existed.

## APPENDIX



## Exhibit 2

## LEAR JET CORPORATION

Statement of Assets, Liabilities and Stockholders' Equity<sup>1</sup>

July 31, 1964

(Dollar figures in thousands)

## ASSETS

Current Assets:

Cash..... \$ 126

## Accounts receivable:

Customers, less collection  
allowance of \$2.5.....\$ 45  
City of Wichita..... 1,056  
Miscellaneous..... 11 \$1,112

## Inventories

Raw materials and purchased parts....\$ 745  
Work in process..... 905  
Finished goods..... 10 \$1,660

Prepaid insurance and commissions..... 61  
Deposits with suppliers..... 66

Total current assets..... \$3,025

Property

Plant and office equipment.....\$ 109  
Automotive equipment..... 28  
Aircraft..... 725  
Total.....\$ 862  
Less accumulated depreciation..... 70

Net property..... \$ 792

Research and Development Costs--Net..... \$4,728  
Excess Production Costs..... 262  
Long-Term Prepayments..... 82  
Organization Expense..... 3

TOTAL ASSETS..... \$8,892

## LIABILITIES AND STOCKHOLDER'S EQUITY

Current Liabilities:

## Notes Payable:

Banks (current maturities).....\$ 182  
Stockholder..... 820 \$1,002

## Accounts payable:

Trade.....\$ 952  
Due on conditional purchase contracts... 185  
Withholding taxes & payroll deductions.. 48  
Other..... 23 \$1,209

## Accruals:

Salaries and wages.....\$ 167  
Payroll and property taxes..... 33  
Interest..... 85 \$ 285

Deposits received on aircraft sales..... 499

Total current liabilities..... \$2,995

Long-Term Notes Payable:

Stockholder--5%, due Nov. 1, 1965.....\$4,085  
Banks..... 4

Total long-term notes payable... \$4,089

Stockholder's Equity:

Capital Stock, \$1 par value per share;  
authorized 3,000,000 shares; issued &  
outstanding, 1,500,000 shares.....\$1,500  
Paid-in surplus..... 308  
Retained earnings..... Nil

Stockholder's equity..... \$1,808

TOTAL LIABILITIES AND  
STOCKHOLDER'S EQUITY..... \$8,892

<sup>1</sup>Source: Lear Jet Corporation's financial statements.



Exhibit 3

COMPARISON OF EXECUTIVE JET AIRCRAFT<sup>1</sup>

<u>Name</u>	<u>Price</u>	<u>Number of Passengers (Incl. Crew)</u>	<u>Cruising Speed (mph)</u>	<u>Range in Miles</u>	<u>Gross Weight (Pounds)</u>	<u>Number of Engines</u>	<u>Total Thrust (Pounds)</u>
JET COMMANDER	\$770,000	8	490	1800	16,000	2	5700
DeHAVILAND DH-125	790,000	8	470	1520	20,500	2	6240
SABRELINER	900,000	9	480	1750	18,650	2	6000
JET STAR	1,600,000	10	500	2000	41,500	4	12000
LEAR JET 23	595,000	8	530	1875	12,500	2	5700

<u>Airplane</u>	<u>Manufacturer</u>
JET COMMANDER	Aero Commander Division, Rockwell Standards
DeHAVILAND DH-125	Hawker Siddeley Aviation, Ltd. (England)
SABRELINER	North American Aviation, Inc.
JET STAR	Lockheed Aircraft Corporation
LEAR JET 23	Lear Jet Corporation

<sup>1</sup>Source, Respective Manufacturers

## Exhibit 4

ESTIMATED COST OF OPERATING LEAR JET 23  
PER FLIGHT HOUR AT SELECTED TOTAL FLIGHT HOURS

FIXED COSTS	<u>300 hrs./yr.</u>	<u>500 hrs./yr.</u>	<u>800 hrs./yr.</u>
Depreciation--7 year straight line to 40% residual value (\$51,000/yr.) .....	\$170.00	\$102.00	\$ 63.75
Insurance			
Hull (2%) \$11,500/yr.....	38.33	23.00	14.37
Liability 1,476/yr.....	4.92	2.95	1.84
Med. & Hosp. 180/yr.....	.60	.36	.23
Hangar 3,000/yr.....	10.00	6.00	3.74
Misc. 5,000/yr.....	16.66	10.00	6.25
TOTAL FIXED COSTS.....	\$240.51	\$144.31	\$ 90.18
VARIABLE COSTS:			
Maintenance & Inspection			
1. Airframe & Engines			
a. Periodic Insp. (50 hrs. @ \$5.00/hr--\$250.00)...	2.50	2.50	2.50
b. 400 hr "Hot Section"			
Total 50 man-hrs. @ \$5.00 /hr = \$250.00.....	.63	.63	.63
c. Routine Maintenance....	.85	.85	.85
d. Other Equipment.....	.38	.38	.38
Total Main. & Insp.....	\$ 4.36	\$ 4.36	\$ 4.36
Overhaul			
1. Engines (800 hrs TBO)*....	45.00	45.00	45.00
2. Other Equip. (1200 hrs)...	4.25	4.25	4.25
3. Airframe.....	.35	.35	.35
Total Overhaul	\$ 49.60	\$ 49.60	\$ 49.60
Fuel & Oil			
1. Fuel--200 gal/hr @ 27/gal.	54.00	54.00	54.00
2. Oil--.8 gal/hr.....	1.30	1.30	1.30
Total Fuel & Oil.....	\$ 55.30	\$ 55.30	\$ 55.30
TOTAL VARIABLE COSTS.....	\$109.26	\$109.26	\$109.26
TOTAL COST OF OPERATION**	\$349.77	\$253.57	\$191.44
Block speed.....	450 mph	450 mph	450 mph
Miles per year.....	135,000	225,000	360,000
Cost per airplane mile.....	\$ .78	\$ .56	\$ .43

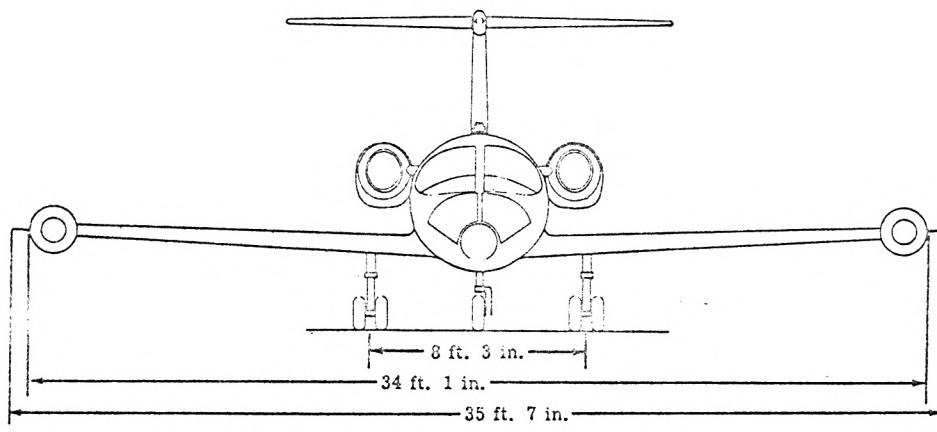
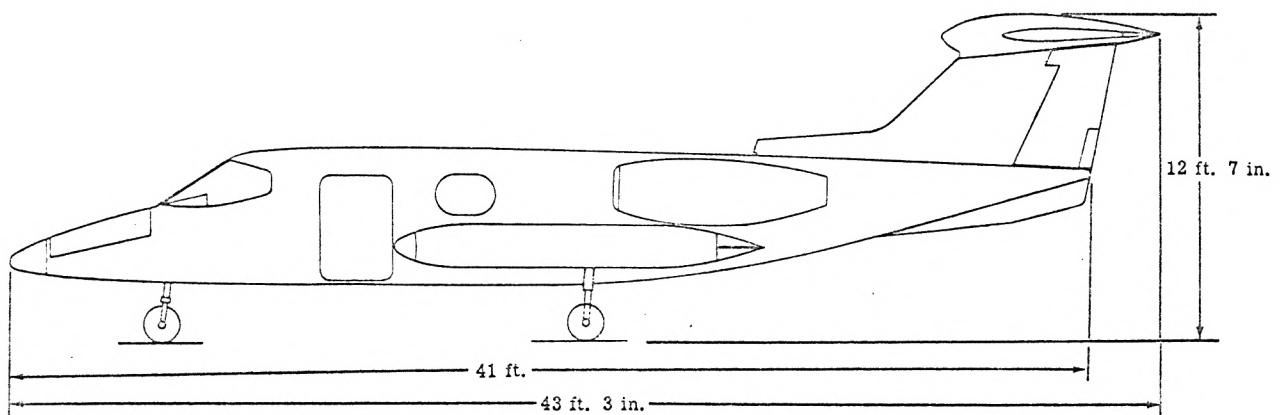
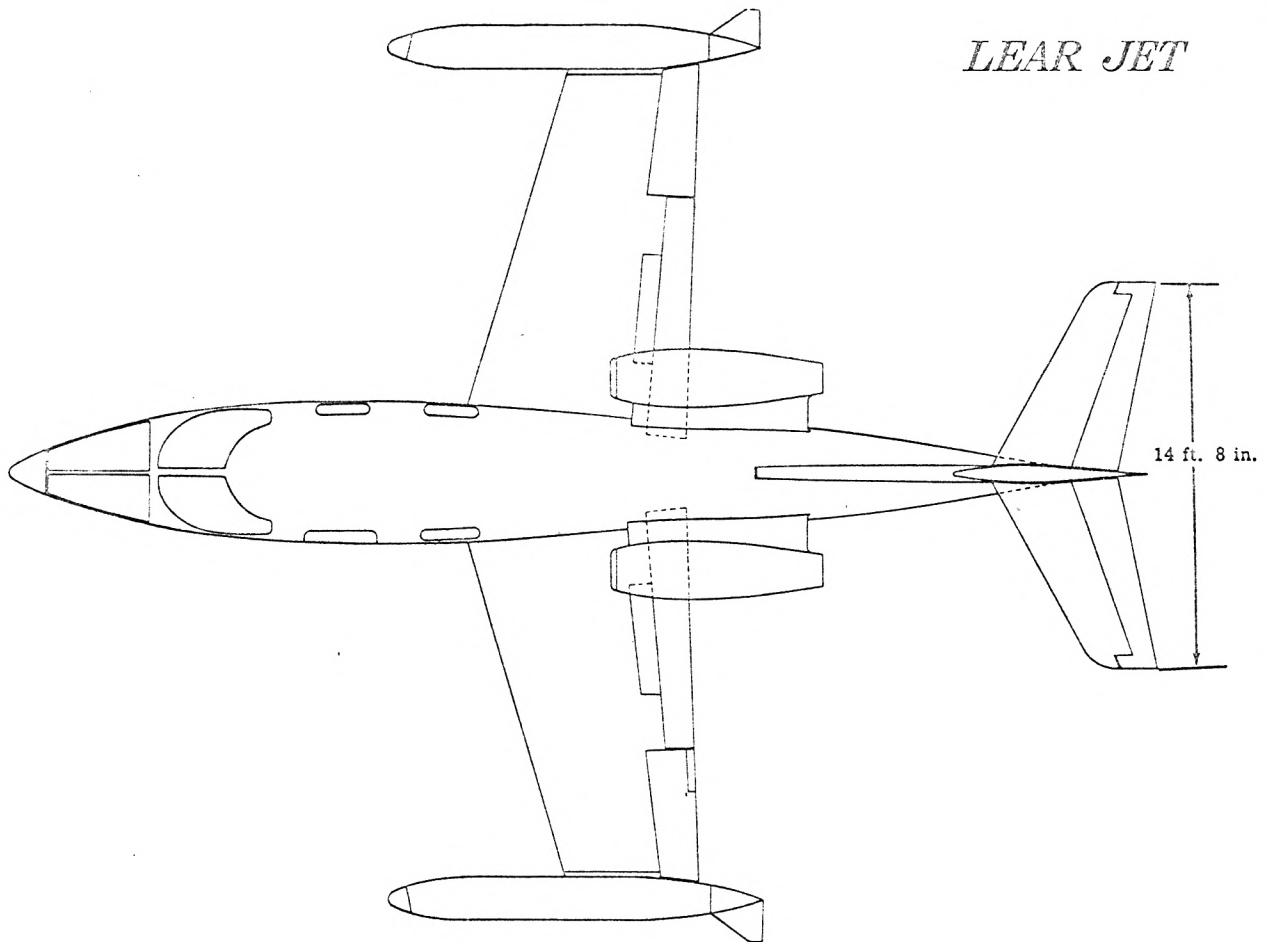
\*Includes estimated lease charges, etc. for loaner during overhaul.

\*\*Exclusive of crew costs.

Source: Lear Jet Corporation



Exhibit 5  
Lear Jet 23

*LEAR JET*

## Exhibit 7

LEAR JET CORPORATION  
Wichita, Kansas

Domestic DistributorRegion

CALIFORNIA AIRMOTIVE CORP.  
Mr. Allen E. Paulson, Pres.  
7139 Vineland  
North Hollywood, California

Region 1: Washington,  
Oregon, Idaho, Nevada,  
California, Arizona,  
and Utah

W. F. LONG & ASSOCIATES  
Major W. F. Long, Pres.  
P.O. Box 35781  
Dallas, Texas

Region 2: Colorado,  
New Mexico, Oklahoma,  
Louisiana, Arkansas,  
and Texas

AMERICAN LEAR JET, INC.  
Mr. Harry Barr, Pres.  
Municipal Airport  
Lincoln, Nebraska

Region 3: Nebraska,  
Wyoming, North and  
South Dakota, Kansas,  
Montana, Missouri,  
Minnesota, and Iowa

EXECUTIVE JET AIRWAYS  
Mr. Phillip Lovett, General Manager  
808 International Bldg.  
1319 F Street  
Washington, D. C. (Sales headquarters  
to be located at  
Columbus, Ohio)

Region 4: Wisconsin,  
Michigan, Kentucky,  
Illinois, Indiana,  
and Ohio

AIRKAMAN, INC.  
Mr. W. R. Miller, Pres.  
Bradley Field  
Windsor Locks, Connecticut

Region 5: Pennsylvania,  
New Hampshire, New York,  
Massachusetts, Maryland,  
West Virginia, Vermont,  
Rhode Island, New Jersey,  
Connecticut, and Maine

ROBERT GRAF, INC.  
Mr. Robert Graf, Pres.  
2431 Barcelona Drive  
Ft. Lauderdale, Florida

Region 6: Tennessee,  
Mississippi, Virginia,  
Delaware, North and  
South Carolina, Florida,  
Alabama, and Georgia

## Exhibit 7 cont.

LEAR JET CORPORATION  
Wichita, KansasExport DistributorRegion

## EXECUTIVE AVIATION

Mr. W. P. Lear, Jr., Pres.  
P.O. Box 18  
Aeroport Cointrin  
Geneva 15, Switzerland

Europe, Africa, the  
Near and Middle East

## AVIANDES, S. A.

Mr. Alejandro Orfilo, Pres.  
Garibaldi, 7-8º Piso  
Mendoza, Argentina

Central and South  
America, excluding  
Venezuela

INTERNATIONAL HELICOPTERS (AUST)  
PTY, LTD.

Mr. J. A. L. Archer, Pres.  
10-14 Leicester St.  
Carlton, Victoria  
Australia

Australia and New  
Zealand

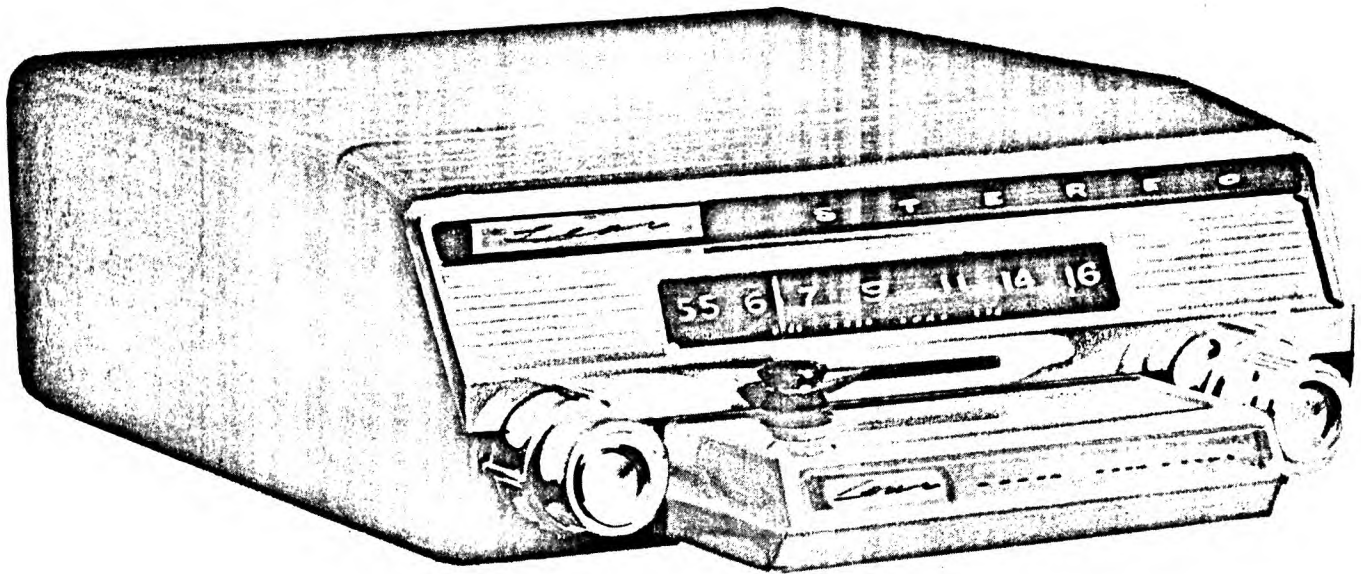
## HORIZONTE AERO INTERNATIONAL C.A.

Mr. Raymond Urquiza, Pres.  
P.O. Box 503  
Miami 48, Florida

Venezuela



# Makes every flight a pleasure ...for you...for your passengers



## LEAR STEREO Cartridge Tape Player

- In the air or on the ground, the world's finest music—always interference free.
- Plug in a Lear 8-Track Stereo Tape Cartridge. Enjoy an hour and twenty minutes of high fidelity stereo music. Listen to news, sports, and special events on the AM radio.
- Unaffected by engine vibration or air turbulence.
- Operates independently of existing radio-navigational systems.
- EASY TO INSTALL, ANYWHERE. Weighs only 10 lbs.
- One complete package. Includes Lear Stereo Cartridge Tape Player (with stereo-headphone output jacks), Lear Stereo Speakers, AM radio and mounting hardware.
- Available in 12V or 24V DC models.
- Widest range of tape choices. Choose your favorites from the entire RCA record library of popular—classical—show music, etc.

LEAR JET CORPORATION • MUNICIPAL AIRPORT  
P.O. BOX 1280 • WICHITA, KANSAS

**LEAR JET**

## ACKNOWLEDGMENT

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Special thanks is given to my wife, Dixie, for her encouragement and valuable assistance without which this report would not have been written.

Without the consent and cooperation of the management and employees of the Lear Jet Corporation, a study of this type would not have been possible. The company was most receptive to the project and cooperated to the fullest extent, which is deeply appreciated and gratefully acknowledged.

A BUSINESS HISTORY OF THE  
LEAR JET CORPORATION, 1959-1964

by

DWIGHT L. HAYDEN

B. S., Kansas State University, 1963

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AN ABSTRACT OF A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

College of Commerce

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1965

The purpose of this study was to compile and present a business history of the Lear Jet Corporation. The material on which this study was based was obtained from Lear Jet Corporation records and interviews with representatives of management, designers, production specialists and customers.

The Lear Jet Corporation was developed to design and produce an executive jet aircraft to be marketed in the United States. The sixty-two year old William P. Lear, Sr., president and principal owner of the company, continued to depart from long-accepted industrial maxims in the development of new products. His latest departure was a jet aircraft designed for corporate executives. Mr. Lear believed that executives utilize aircraft primarily to reduce travel time, and hence, do not require the large luxurious walk-around passenger cabins that are common in competitive models. He incorporated this utilitarian concept into the design of the Lear Jet 23, and achieved speed and safety plus the utility and economy of a small aircraft.

Another factor that "caused" the Lear Jet 23 to be built was that the increase in corporate mergers and diversification resulted in executives spending a greater proportion of their time in travel. A demand was thus created for a corporate aircraft capable of operating from small airports at jet airliner speeds. This was the market for which the Lear Jet 23 was designed. It was priced below all competitive models, and was better suited to the smaller corporation's budget.

A side product that resulted from the aircraft development program was the Lear Stereo that was designed to fit into a standard automobile radio compartment. The Lear Stereo design had been patented and was being tested by several major auto manufacturers as a new-car accessory item. It was expected to be included on twenty-five percent of the 1967 car models.

Mr. Lear was the first man to develop and certify a jet aircraft entirely from private capital. As of November 30, 1964, he had invested \$10,600,000 in the company, and owned all of the outstanding common stock.

Mr. Lear experienced failure along with success. But he was a true entrepreneur, a breed so rare in modern corporate life that President Johnson urged a national effort to revive it. With little use for traditional marketing surveys, Lear relied on his part-intuitive, part-analytical sense in these matters. He credited most of his success to his ability to discern a market--before there was any proof that one existed.