

A STUDY OF THE AIR TAXI FLEET IN
AIR MAIL OPERATIONS

by

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INTRODUCTION

Throughout United States history, technological advances in communications and transportation have promoted the dynamic growth and economic development of our nation. The postal establishment has been the very lifeblood of our person-to-person communications. Yet its services have been virtually taken for granted.

The Journals of the Continental Congress, May 27, 1773, show the original purpose of the Postal System was to provide "the best means of establishing posts for conveying intelligence through this continent."¹ The rapid changes in the United States Postal Service have been necessitated by our tremendous population growth and the evolution of faster transportation systems. Traditional methods of handling, routing and distribution have been updated to utilize a new National Transportation Scheme, optical scanners and airlift in expediting an ever increasing volume of mail. These changes have enabled the United States Post Office to better serve the free exchange of ideas in a free society and to speed the flow of written thoughts that make our dynamic economy possible.

¹United States Post Office Department, Information Services. History of the Post Office Department (Washington: Government Printing Office, April 1965), p. 3.

CHAPTER I

EMPLOYMENT OF AIR TAXIS IN AIR MAIL OPERATIONS

The purpose of this thesis is to show the possibility of transporting first-class mail by one of the most expeditious modes of transportation, air taxis. In particular, the author will compare the present and future capacity of air taxi operations with the present and expected volume of first-class mail to be carried by air.

The objective of this thesis is twofold: first, to investigate the future capacity of air taxi operations in terms of multi-engine planes available; and second, to investigate the probable volume of first-class mail that the Post Office will divert to air taxi operations. It might be said that the total purpose of this thesis is to point out to the Post Office Department the status of the air taxi fleet and its logistical capability for extensive employment in mail operations.

Limitations and Definitions

This thesis limits its scope to considering only the diversion of mail to air; thus, no consideration has been given to the utilization of any other mode of transporta-

tion. During 1966 and 1967, the gradual implementation of the ZIP Code System and the Post Office's long range goal of overnight delivery of mail has forced the utilization of faster modes of transportation with approximately the same or slightly higher incremental costs.

The scope of this thesis is limited to a treatment of first-class mail. Historically, first-class mail has always been handled in the most expeditious manner. As former Postmaster General Walter F. Brown reported to Congress in 1930:

First-class mail is given preferential treatment throughout the entire postal establishment. At every stage it is handled with maximum speed and security. All other mail matter must give way to mail of the first class, and all other mail matter receives incidental and deferred treatment.²

With the present expedited mail service, only first-class mail is being moved by air.

The aviation industry is broken down into three categories. Certificated trunk carriers such as TWA, Eastern and United Airlines comprise the first level. The second level of the air industry consists of the certificated local service carriers such as Piedmont and Delta Airlines and the general aviation fleet (smaller instructional, util-

²United States Post Office Department, Annual Report of the Postmaster General, for the Year ending June 30, 1930 (Washington: Government Printing Office, 1930), p. 5.

ity and business aircraft) comprise the third level. It is to this third level of the industry that I have limited my study.

The "air taxi" industry, as it is commonly called, is one category of the general aviation fleet. The encouragement of this sector of general aviation to grow will have financial benefits to all concerned. This growth will help the local-service carrier by relieving the obligation to serve relatively marginal points. At the same time, it will reduce the Post Office Department's subsidy payments. Consequently, the community can benefit from a better pattern of taxi schedules.³

The air taxi fleet is presently one of the best logistical means of air transportation in the general aviation sector. Its capability for handling the mail is enhanced by its flexibility, mobility, and ease of adding relatively small incremental volume units to the present air mail fleet.

Two handicaps in forecasting the future volume of mail to be carried by air are the legal aspects of this service and the inherent problems of dealing with a random mail volume and peak loads. As far as the Post Office can deter-

³"Air Taxis--Today's Regulatory Outlook." Remarks of A. M. Andrews, Director, Bureau of Operating Rights, Civil Aeronautics Board, before the National Air Taxi Conference, December 6, 1967, p. 6.

mine, the mail forecasting procedures for air taxi operations are best facilitated by using forecasts of air taxi routes rather than by estimated mail volume (pieces).

The preparation of long-term forecasts for the general aviation fleet, and air taxi operators, in particular is hindered by the lack of consistent, continuing historical data. The accuracy of the available data must be considered an important limitation, but they represent the only data which are available and therefore, were used. Other data gaps will be discussed as they occur in Chapter III.

As used in this thesis, the term "mail" will denote first-class mail. The Post Office Department defines first-class mail as follows:

1. Postal Cards.
2. Post Cards.
3. Matter wholly or partially in writing or typewriting, except authorized additions to second-, third- and fourth-class mail.
4. Matter closed against postal inspections.
5. Bills and statements of account.⁴

Methods Used in Securing Data for This Thesis

Data for this thesis were obtained from both primary

⁴United States Post Office Department, Postal Manual (Washington: Government Printing Office), p. 131.212.

and secondary sources, as documented in the footnotes. A questionnaire was sent to a randomly selected sample of air taxi operators employing multi-engine planes in order to ascertain the volume characteristics of the fleet.

In many instances, discussions and conferences were held with officials of the Post Office Department, Civil Aeronautics Board, and the National Air Taxi Conference. Documentary material was secured from the above sources, Federal Aviation Agency publications, other government documents, current periodicals and published books.

The Current Situation

To cope with the rising volume of mail (up twenty-eight percent in ten years), changing transportation patterns, and improved technology, the Post Office Department has undergone significant changes. These changes have led to several major postal innovations such as ZIP (Zone Improvement Plan) Code, sectional centers, and optical readers.

In July, 1965, the Postmaster General appointed the Special Assistant for Policy and Projects to act as chairman of a committee to study and plan for an eventual Priority Mail program, combining the present categories of first-class and airmail into one class with a service goal of overnight delivery for virtually all ZIP-Coded, priority mail.

Fiscal 1967 saw more overnight delivery air routes initiated.

The airlifting of first-class mail among the principal cities in the southern tier of States, between Florida and California, advanced the delivery of letters in this part of the Nation from 1 to 3 days.⁵

Moving with the changing transportation patterns in parts of the Midwest, the Post Office Department has initiated the airlifting of first-class mail between Des Moines and the Northeast, Far West, and South Central States. It is expected that within the fiscal year ending June 30, 1968 that the total number of first-class letters moved by air will exceed two billion on an annual basis.⁶

Plans were developed to obtain air taxis to fill schedule gaps and provide overnight delivery in areas not serviced by regular air carriers. Air taxis provided the vital link in the Florida plan for overnight exchange of mail. These operators were employed to improve air mail service by transporting the mail to national transportation centers for connection with scheduled airline service.

Fiscal 1967 saw the Post Office Department make a further commitment to new and improved air service. Now a

⁵United States Post Office Department, 1967 Annual Report of the Postmaster General (Washington: Government Printing Office, 1967), p. 39.

⁶Ibid., p. 40.

Master Schedule of Direct Air Service for mail has been compiled by computer, and portions of the new National Air and Surface Scheme System are operational. All mail transportation schedules are being stored on computer tapes to facilitate the analysis of proposed route initiations, discontinuances, and changes.

The data gathered by this portion of the system will be used to provide the Post Office with the best mail dispatches for each sectional center and major post office. A computer list is being compiled which shows each air carrier the amount of mail he is scheduled to deliver at the transfer points and the available time for effecting this transfer. This new list will enable the air carriers to improve their ground service to insure connections with minimum transfer time.

Trunk line carriers introduced new quick-change aircraft to provide passenger service by day and cargo service by night. These new planes, as they are brought into service, will help increase the night capacity of airlines and improve the movement of mail during the Post Office's critical late evening and early morning hours.

Air taxi mail operations experienced phenomenal growth over the past two years. In 1966, 11 routes produced \$187,000 in mail revenue. Last year the 80 routes were worth \$3.5 million. And as of May 23, 1968, there were

107 routes worth \$9.5 million. This number should increase by approximately 130 routes by October 1, 1968, said a Post Office official. These new routes will bring the number of air taxi mail routes close to the Post Office's estimate of 225 for 1968.⁷

Mr. A. M. Andrews of the Civil Aeronautics Board stated the present situation when he said:

We now find ourselves in the midst of a major experiment by the Post Office Department--to determine whether air taxis can supplant or improve on the mail services being discontinued by the railroads, in situations where certified route carrier schedules cannot meet the postal needs. The CAB's attitude seems clearly to be one of attempting in the public interest to accomodate the requirements of the postal service.⁸

The continuation of these operations appears to depend almost entirely on whether air taxis can meet the Post Office's transitional needs incrementally and with economical and efficient service.

⁷ Gordon Fletcher, "Turbulence, Growth Mark Air Taxi Progress," American Aviation, 31 (March 1968), p. 28.

⁸ Remarks of A. M. Andrews, op. cit., p. 3.

CHAPTER II

DEVELOPMENT OF POSTAL AIRLIFTS AND THE IMPLEMENTATION OF AIR TAXIS IN MAIL OPERATIONS

Throughout America's development the Post Office fostered most of the transportation systems that made our economic growth possible. The Pony Express, the stagecoach, the railroad, the airplane--all have seen extraordinary development in this logistical system. It is no accident that the United States Post Office moves two-thirds of the world's volume of mail.

Historically, the surface carriage of mail has been monopolized by trains. In the 1930's the Post Office had ten thousand trains involved in the daily transportation of mail. This number dropped to 2,000 in 1960, and today we have 741 trains involved in mail operations.¹ The shift to other modes of transportation has been necessitated by increased volume, changing service requirements, and the need for more schedules than can be economically handled by trains.

¹ Federal Aviation Agency, Department of Transportation, FAA and the Expanding Airmail Traffic (Washington, February 1968), p. 3.

Airlift of First-Class Mail

An airlift experiment based on the use of space available on planes after all passengers, air mail and air express items were loaded was conducted in 1953. This enabled the movements of certain increments of mail prior to the regularly scheduled surface carrier.

Between the years of 1920 and 1949 inter-city passenger miles via railroads dropped from 80 percent of capacity to 8 percent, and by 1957 this volume was down to 4 percent. This curtailment of passenger service created serious problems in scheduling night movements of mail.

In October, 1953, the Post Office inaugurated airlifts between Washington and Chicago and between Chicago and New York. The Post Office found that mail from New York and Washington bound for points as far west as Des Moines, Iowa, could arrive faster than if transported by surface carrier.²

The second phase of the first-class mail experiment was conducted in December, 1953. Fourteen local service carriers were contracted to carry holiday season mail between thirty cities. This was extended to 91 more cities by June, 1954.

²"Flying the U.S. Mail Today and Tomorrow," Remarks of E. George Siedle, Assistant Postmaster General, before the American Society of Mechanical Engineers, Aviation Conference, Statler Hotel, Los Angeles, California, March 14, 1956, p. 6.

The third segment was the Florida trunk line experiment, which was initiated in February, 1954. This trial covered first-class and other preferential mail (other than air mail and air parcel post) to be flown between Washington and Jacksonville, Tampa, and Miami, Florida. These routes were selected because they are subjected to heavy seasonal movements, and are at times the most dense routes in the country.³

November, 1954, was the beginning of the final experimental segment. This "West Coast Experiment" involved twenty-four cities in California, Oregon and Washington. The objective was to implement an integrated logistical system of air, rail and highway transportation in any combination to move the mail among these cities in the best possible time. These West Coast cities were chosen because their mail problems would be "typical" if all first-class mail were expedited on a national basis.⁴

After the experiment started it was noted that the surface transportation scheme was more effective in the San Joaquin Valley than the air transportation, while more connecting mail had to be flown between Portland and Seattle. This was a complete reversal of the operations that had been planned.

³Ibid., p. 4.

⁴Ibid., p. 5.

These airlift experiments had several benefits. First, the senders and receivers of first-class mail had their mail delivered faster than surface carriers could have provided. Second, the Post Office saved \$154,000 by these experiments between October, 1953 and March, 1955.⁵ Third, it also gained invaluable experience to be used when a fully expedited first-class mail program goes into effect. And fourth, the airlines that cooperated earned added revenues for their otherwise unutilized capacity.

In its aim to provide for "next day" delivery of first-class mail, the Post Office Department had to determine the quantities and distances that mail could be moved between the "critical hours" of 9:00 P.M. and 3:00 A.M. It became evident that the airlift was the only answer to the rapid delivery of first-class mail in many places.⁶

Mail Volume

Mail volume in 1967 reached 78.4 billion pieces of mail. This record volume was 3.7 percent greater than that of the fiscal year 1966. The 2.8 billion-piece increase in

⁵L. Moore, "Court Upsets CAB Formula," Aviation Week, 58 (May 18, 1953), 84-85.

⁶Arthur E. Summerfield, U.S. Mail (New York: Holt, Rinehart and Winston, 1960), p. 100.

1967 was the second greatest increase in the past thirteen years.

Of the total 78.4 billion pieces of mail processed in 1967, first-class mailings amounted to 42.0 billion pieces (53.6 percent of the total). The largest gain in pieces was the 1.6 billion increase in first-class mail last year.

Mail per capita also reached a new high in 1967. During 1967, each person received an average of 396 pieces of mail, a 2.6 percent increase over 1966. Since the population increased by only 1.1 percent, this was the third consecutive year in which the total mail volume grew more than our population.⁷

As mentioned before, first-class mail made up 53.6 percent of the total volume of mail. This left the remaining 46.4 percent of the mail volume among the six other classes of mail. Of this first-class mail, about 75 percent was business mail. These figures illustrate the importance of first-class mail in our daily lives. The faster this preferential mail is moved, the faster we can complete a great portion of our business transactions.

Today approximately 4.8 million businesses receive 75

⁷ 1967 Annual Report of the Postmaster General, Financial Supplement (Washington: Government Printing Office, 1968), pp. 2-3.

percent of the first-class mail or 31.5 billion pieces per year. Assuming that the percentage composition of mails does not change significantly, in the next three years, the projected 5.25 million businesses in 1970 will receive first-class mail at the rate of 46.6 billion pieces per year.⁸ These figures do not include the other classes of mail and parcels which a company receives in the course of a year.

This tremendous volume of mail has been anticipated by the Post Office Department and steps have been taken to meet this increased volume. Some measures included in the National Transportation Scheme were the ZIP Code System, the airlift of first-class mail and the use of sectional centers.

Postal Objectives

A mail volume rising at a faster pace than the population has forced the Post Office Department to undertake new service improvement programs to meet the increasing demands for a more efficient postal system.

The decline of railroad service and the development of the nation's air transportation network has shown Post-Office officials the need for a major revision in its

⁸See Table I, p. 16.

TABLE I

TOTAL MAIL AND FIRST-CLASS MAIL VOLUMES AND PERCENTAGE GROWTH
FOR THE FISCAL YEARS 1962 TO 1967 AND 1970

Fiscal Year	Total Mail *(Pieces) (000)	Percentage Growth	First-Class Mail (Pieces) (000)	Percentage Growth
1962 ^a	66,493,190	2.4	35,332,707	
1963 ^b	67,852,738	2.0	35,833,487	1.4
1964 ^b	69,676,477	2.7	36,943,064	3.1
1965 ^b	71,873,166	3.2	38,067,778	3.0
1966 ^b	75,607,302	5.2	40,421,755	6.2
1967 ^b	78,366,572	3.7	41,998,337	3.9
1970*	86,923,481	3.5	46,590,986	

^aSource: 1966 Annual Report of the Postmaster General, Financial Supplement (Washington: Government Printing Office, 1967), p. 31.

^bSource: 1967 Annual Report of the Postmaster General, Financial Supplement (Washington: Government Printing Office, 1968), p. 35.

*Computed with Post Office Department estimate of a 3.5 percent per year volume increase. First-class mail volume being 53.6 percent of total mail volume (Source b, p. 3.).

TABLE II

POPULATION, MAIL VOLUME AND SERVICE GROWTH
FOR SELECTED YEARS 1940-70^a

Year	Population (million)	Mail Volume Billion Pieces	Families Served (million)	Pieces per Capita	Businesses Served (million)
1940	131.7	28.0	27.0	210	
1965	193.5	71.8	46.5	370	4.50
1966	195.7	75.6	47.8	386	4.65
1967	198.1	78.4	49.0	396	4.80
1970*	207.4	84.0	53.0	405	5.25

^aSource: United States Congress, House of Representatives. Committee on Post Office and Civil Service, Hearings before the Subcommittee on Postal Operations. ZIP Code System in the United States Postal Service. 89th Congress, 1st Session, March-June, 1965. (Washington: Government Printing Office, 1965).

*Post Office Department estimate.

logistical program.

A comprehensive Post Office study of the nature and extent of present service, volumes of mail to be handled, and the means by which mail can best be processed, transported and delivered was published in 1960. The results of the findings of this report have just now, eight years later, been felt by the citizens.

Service objectives were formulated to guide the study and evaluation of postal activities. For preferential mail, three service objectives were established:

1. Within metropolitan areas, preferential mail posted by 5:00 P.M., the usual close of the business day, destined for points within the same area, should be delivered on the first delivery trip of the following business day.
2. Preferential mail posted before 5:00 P.M., moving between the nation's major cities and between metropolitan areas should be delivered on the business day following that on which it entered the mails.
3. Preferential mail moving between points anywhere in the nation, no matter how remote from each other, should be delivered no later than the second business day following that on which it entered the mails.⁹

The then existing transportation schedules called for departures before the greatest portion of originating vol-

⁹ United States Post Office Department. Nationwide Integrated Postal Service Plan (Postal Transportation Study) 1960. (Washington: Government Printing Office, 1965), p. 4.

ume could be ready for dispatch. When the main volume was ready, there remained little satisfactory transportation service.

Also, it was pointed out that even the best surface transportation, if ideally scheduled and utilized, would not provide sufficiently rapid service between more distant points. Most transportation schedules, both rail and air, were primarily for passenger service and did not depart when the Post Office needed its mobility. Also, much time was lost in the handling and sorting of mails.¹⁰

Like most businesses, the Post Office's major problem was the time element. The time involved in handling, sorting, and transporting had to be reduced. Adequate transportation to fill the Post Office needs had to be secured and implemented into a compatible time-frame.

The plan that was proposed and is now operational is the basis for our ZIP Code System.

National Transportation Centers

Based on population concentrations, commercial densities, and mail volumes, sixty-two points, including one each in Hawaii and Alaska, were designated National Transportation Centers. These centers were the hubs of high

¹⁰ Ibid., p. 5.

density metropolitan areas and also major transportation terminals.

Each National Transportation Center served its metropolitan area and a less highly developed contiguous area. This total territory served by each of these centers comprised its National Postal Service Area.

The rationale used in arriving at these centers is expressed as follows:

Excluding the proposed National Transportation Centers in Alaska and Hawaii, the remaining sixty and their immediate metropolitan areas generate about 80.5% of total postal revenue and volume of mail, and contain about 69% of the total population. The peripheral areas of the same sixty centers generate about 19.5% of the total postal revenue and mail volume, and contain about 31% of the total population.¹¹

Sectional Centers

Within each National Postal Service Area served by the National Transportation Center are located smaller strategically placed post offices called sectional centers. The function of the sectional centers in their areas parallels that of the National Transportation Center in the national postal scheme.

The primary function of a sectional center is to provide overnight delivery for all classes of mail within its own service area and to such other sec-

¹¹Ibid., p. 7.

tional center areas as best transportation patterns and media will permit.¹²

The sectional center is the sole supply of mail for its assigned satellite offices. Each center dispatches to and receives mail from other sectional centers in their own contiguous or adjacent states, and to and from National Transportation Centers.

Ideally, the sectional center is located near a certificated air stop point. The center's boundaries normally conform to state lines except in certain cases where a national trading area or community of interest requirements can not be satisfied.

A satellite post office is located within two or three hours' time of the sectional center; except in the case of more remote offices in sparsely settled areas, the boundary may be extended without impairment of service.

ZIP Code

The ZIP Code concept may be said to have been born of necessity. With our ever expanding population and economy, the mail volume of the United States has grown 158 percent in the last twenty-five years. The implementation of the

¹²United States Post Office Department, Bureau of Transportation, Sectional Centers - Original Concept Showing Sectional Centers of the United States by Region and State (Washington, 1963).

National Transportation Scheme to cope with this volume has been felt by practically everyone who uses the United States mails.

Basically, the ZIP Code concept is the geographical partition of the United States into ten regions. Each region's transportation scheme is comprised of National Transportation Centers, sectional centers, and satellite post offices conforming to the transportation and postal requirements of that region.

The ZIP Code is a five-digit numerical coding system used to more efficiently sort and deliver all classes of mail. Mail carrying a ZIP Code will bypass certain intermediate handlings and can be routed directly to its ultimate destination area from its point of origin. Each post office and postal delivery station has its own ZIP Code number.

The first digit of ZIP Code indicates one of ten national geographic area. The second digit indicates a State, a portion of a heavily populated State, or two or more less populated States. The third digit indicates either a major metropolitan post office or a mail concentration point known as a sectional center. The fourth and fifth digits indicate either a delivery station of a major metropolitan post office, or a smaller post office served through a sectional center. The country has been divided into 552 such sectional centers.¹³

¹³United States Post Office Department, U.S. Postal ZIP Code Directory, p. 1.

July 1, 1963 marked the introduction of ZIP Code in our postal system. The gradual transition from the traditional city addressing to the new national numeric coding system has not been easy.

Heretofore, mailing lists have been maintained on an alphabetical-geographical basis. That is, mailing plates have been grouped by city and State, and alphabetized within each grouping. The task of bulk mailers to assign every address a ZIP Code is fantastic. Not only must they do this but also sort their plates and mailings by code number instead of by State.

As we can see, to cope with the increasing volume of mail, the Post Office has shifted much of the mail preparation to the individual mailer. This has increased the mailer's costs tremendously rather than the Post Office's. January 1, 1967 was the deadline for ZIP Coding all second- and third-class bulk mailings. Business mailings make up about 99 percent of all second-class mail--about 8.6 billion pieces of mail per year. Third-class mailings amount to over 20 billion pieces per year. So at this moment we have mandatory ZIP Coding of approximately 29 billion pieces--14 percent of the total mail per year.

Complete five-digit sorting is not now a reality and probably will not be for some time. The mail is now sorted to three digits. These digits correspond to the sectional

center identifications. Subsequent sorting is done here. Five-digit sorting will require more facilities, compatible machinery, and educated manpower than the Post Office has now. Sorting directly to this level will not be feasible until the three-digit sorting problems have been substantially resolved.

Nevertheless, as the ZIP Code system is refined, machines and lists made compatible, and the public becomes more responsive to ZIP Code use in their first-class mailings, the delivery of letter mail will gradually decrease to overnight for most mail and twenty-four hour delivery for the remainder.

Air Transportation of Mail

The transportation of mail by air is authorized by Public Law 85-726 dated August 23, 1958. Under Sections 405 and 406 of the Federal Aviation Act, the Postmaster General is authorized to use aircraft within the provisions of the Act and under regulations of the Civil Aeronautics Board.

The airline industry's mail trade has proven to be very lucrative over the past five years. Prior to May 20, 1964, all transatlantic--including regular priority air mail, military mail shipped on a non-priority basis and foreign mail--was allotted by the Post Office on the basis

available schedules. Transatlantic mail was being flown for 53.5 cents a ton-mile and the Pacific mail at 46 cents per ton-mile. These routes produced a substantial portion of airline revenues and were jealously guarded.

In 1964 these rates were adjusted downward and the Post Office turned its attention to the domestic mails, where the present volume of mail was as great and the need for greatly improved service was more acute.¹⁴

An investigation of the domestic field found the trunk and local service carriers' large volume and around-the-clock schedules had monopolized the air mail business in 1963. Data submitted to the Civil Aeronautics Board in June, 1964 verified the fact that TWA, American and United handled 65.1 percent of the regular airmail traffic; other scheduled carriers handled 34.2 percent, and only 0.7 percent went to the all-cargo carriers. Domestic trunk and local service airlines' income from postal business, priority and non-priority mail amounted to \$65.7 million in 1964.

It has been hard for the small carriers to penetrate the priority field because of the certificated carriers' great scheduled frequency of flights and destinations served and the Post Office's policy to utilize them first when

¹⁴ Robert H. Cook, "Major Changes Facing Airline Mail Trade," Aviation Week and Space Technology, vol. 81, No. 2 (July 13, 1964), p. 27.

mail service is needed.

A 1965 study by the airlines' Air Mail Committee analyzed more than 2,000 city pairs to discover what overnight delivery would mean to first-class mail in a year. The committee determined that 6.11 billion letters could be delivered one day sooner, 971 million two days sooner, 338.4 million three days sooner and 19.4 million four days sooner.¹⁵

Table III illustrates the growth of the volume of mail transported by air over the last two years. The overall industry load factor of 1967 was 50.9 percent compared with 52.9 percent for 1966.¹⁶

Air Taxi Operations

With the advent of the jet age, particularly as the certificated carriers implemented the larger jet aircraft, as time between a major airport and the ultimate small town destination of the traveler assumes an increasing proportion of the total travel time, the air taxi is developing to fill a service gap created by the first two levels of the air

¹⁵ Joseph W. Carter, "Postal, CAB Officials Seeking Expedited Letter Mail Service," Aviation Week and Space Technology, vol. 83, No. 15 (October 11, 1965), p. 39.

¹⁶ Load factor is defined as the ratio of the average load over a designated period of time to the peak load occurring in that period.

TABLE III

GROWTH IN UNITED STATES AIRLINE MAIL
1967 OVER 1966^a

Aviation Category	U.S. and Foreign Mail Ton Miles (000)				
	1967	1966	% Increase	1967	1966
International	757,385	465,939	62.4	64.0	60.1
Domestic Trunks	388,135	277,439	40.1	32.8	35.8
Local Service	12,809	8,854	44.6	1.1	1.1
Alaska and Hawaiian	6,420	5,717	12.5	0.5	0.7
Helicopters	61	59	3.9	*	*
Cargo and Others	<u>18,498</u>	<u>16,903</u>	<u>9.4</u>	<u>1.6</u>	<u>2.2</u>
Industry Total	1,183,308	774,911	52.7	100.0	99.9 ¹

^aSource: Aviation Week and Space Technology, vol. 88, No. 12 (March 18, 1968), p. 247.

*Not significant.

¹Figures do not total 100 percent due to rounding.

industry. The air taxi services presently available are scheduled, "on demand," or on a contract basis.

Basically, air taxi operations involve the direct air transportation of people and/or property regardless of the frequency or regularity of service rendered, operating under exemptions from the operating requirements for the certificated air lines. Through these exemptions to the operating requirements these small planes have been permitted to fly their unsubsidized, uncertificated, unregulated routes.

Air taxi operators have to conform with rules set by two governmental agencies: the Federal Aviation Agency and the Civil Aeronautics Board. Within the domain of the Federal Aviation Agency, the air taxi operators are most directly affected by Parts 135 and 23 of the Federal Air Regulations. Part 135 pertains to operating rules and Part 23 to airworthiness requirements for aircraft not exceeding 12,500 pounds maximum gross takeoff weight.¹⁷ Part 298 of the Civil Aeronautics Board's Economic Regulations establishes a classification of air carriers known as "air taxi operators," provides certain exemptions from Title IV of the Federal Aviation Act of 1958, as amended, and establishes

¹⁷ See Appendix A for the exemptions to the 12,500 pound maximum gross takeoff weight.

rules for operations in all states, territories and possessions of the United States.

Air Taxi Mail

Air taxi mail authority was established with the issuance of Civil Aeronautics Board Economic Regulation 445 (November 4, 1965) granting blanket mail carrying authority to all air taxi operators. These operations are on a subsidy-free basis, but with restrictions. Air taxis are not permitted to fly between points served by certificated airlines, unless the operator obtains an exemption. Prior to 1968 these exemptions were obtainable only by a long legal process but, now the Post Office and the Civil Aeronautics Board are authorizing these exemptions by a more expeditious procedure.

The Post Office Department's main problem in diverting first-class mail to air is in the markets served by the certificated airlines. It needs adequate aircraft departures during late evening and early morning hours. The mail volume and the distance to be flown at these hours is often too small for an airline to carry economically in a large aircraft. But the load may be sufficient for an air taxi.

Air taxi operators have the flexibility and capability of picking up the mail deposited after the departure of the last scheduled surface carrier and of delivering it to the

National Transportation Centers in time for other scheduled connections. The larger airlines do not have this flexibility which makes possible the overnight delivery of a large portion of first-class mail. This integration of air taxi operations into the Post Office's logistical system has made the ZIP Code concept and its objectives a reality.

When the Post Office Department sees the necessity of adding a schedule, it goes first to the trunk lines and presents its needs. If the certificated carriers can not meet its requirements, the Post Office can then employ the smaller air taxi equipment.

In order to qualify for air mail operations, the air taxi operators must meet specific aircraft requirements, pilot qualifications and those regulations set forth in Part 535 of the Postal Manual.

All aircraft used in the transportation of mail must meet the following requirements:

1. Be multi-engine, capable of maintaining engine-out minimum en route altitudes as specified by the Federal Aviation Regulations, 135.145, between the points served.
2. Have complete de-icing equipment, as specified in Federal Aviation Regulations 135.85 (b) (2).
3. Have equipment for operation under Instrument Flight Rules.
4. All Federal Aviation Administration requirements for inspection and airworthiness pertain-

ing to that aircraft.

5. Be equipped with an automatic pilot unless a qualified copilot is to be assigned at all times.¹⁸

All pilots assigned to air taxi aircraft used for transportation of mail must meet the following qualifications:

1. Have current license or certificate, required by State and Federal agencies for Instrument Flight Rules operation under Part 135.
2. Have a minimum of 1,000 hours of actual flight time as a pilot, including at least 50 hours night operation, 50 hours of Instrument Flight time under actual weather conditions.
3. Pass such proficiency checks as may be prescribed by the FAA.
4. Have good record, in the judgement of the Post Office Department, regarding observance of FAA regulations.
5. Since pilots will have access to United States mail, they must have no record of arrests and convictions for other than minor traffic violations, etc.¹⁹

Part 535 of the Postal Manual delineates the requirements for service, the air taxi mail route operators' responsibilities, the conduct of his operations, methods of reporting and certification of service.

Air Mail Routes

One way in which the Post Office Department may con-

¹⁸United States Post Office Department Form 2750, March 1968. (See Appendix B).

¹⁹Ibid.

tract with an air taxi operator to carry the mail is by an air star route as prescribed in Public Law 81-277.

The Postmaster General may contract for the transportation of any class mail by aircraft upon star routes--

(1) whenever he finds it to be in the public interest because of the nature of the terrain or the impracticability or inadequacy of surface transportation; and

(2) where the cost is reasonably compatible with the service to be performed.²⁰

These routes are allowed only when they do not conflict with the development of air transportation. At the moment, Alaskan mail is carried on air star routes.

The second method used by the Post Office Department is the issuance of specifications requesting bids on a route through the Post Office's 15 regional offices. These offices know the names of the operators in their area by the Federal Aviation Agency's listing of operators and notifies them by a "Request to Air Taxi Operators for Proposals to Transport Mail."

After the bids are received, the Post Office sends an inspector to check the lowest bidder's financial condition, number of aircraft and pilots. If the check proves satisfactory, the proposed rate is submitted to the Civil Aero-

²⁰Chapter 97 of Title 39; United States Code, 74 Statute 693, as amended by Act of September 7, 1962, 76 Statute 442.

nautics Board which formally establishes it as "fair and reasonable." At present the Civil Aeronautics Board accepts and establishes the rate recommended by the Post Office.

The third method is an emergency procedure authorized by Part 405h of the Federal Aviation Act. This procedure enables the Post Office to contract an operator in the area needing emergency service, negotiate a fee, and put him in the mail business in one day. Such contracts are limited to the duration of the emergency. Of the 107 air taxi mail routes now in existence, almost 50 percent have been started by this emergency procedure.

Post Office and Civil Aeronautics Board officials agree that the present method of selecting and contracting air mail route operators is inadequate. These procedures have a detrimental effect on all concerned. For example, at the present time the Post Office is accepting the operator with the lowest bid for the route, following an investigation of his financial and operating conditions. This selection should not be made by the Post Office, but rather by the Civil Aeronautics Board. The Civil Aeronautics Board is the governmental agency established to handle these questions of operating capabilities. But with the present number of cases before the Board and the pressure to reduce government employment and expenses and the time needed to

hear a case, the Board is unable to handle this function. Rate requests are expensive for the operator, the Post Office Department, the Civil Aeronautics Board and the tax-payer.

Other problems which an air taxi operator may face after he has successfully identified his costs, obtained a reasonable rate, and struggled through the red tape to start his operations are the possibility of losing the mail route on 24 hours' notice by the Post Office and the possibility of losing his route to a first- or second-level air carrier. These "after the fact" consequences of accepting a mail route must also be taken into consideration by the operators and their financiers when bidding for a route.

But with all these drawbacks, the future of air taxi mail business looks bright due to the increased service commitments of the Post Office Department.

CHAPTER III

FORECAST OF FIRST-CLASS AIR MAIL VOLUME

In fiscal 1967, almost 335 million ton-miles of mail were flown by domestic air carriers of which 272 million ton-miles were priority mail (8 cents airmail) and 63 million ton-miles were non-priority mail (5 cents first-class mail expedited by air delivery). Table IV traces the growth in the volume of airmail carried by the certificated carriers from 1953 to 1967. The Post Office Department estimated that, if the present system of both priority and non-priority airmail service is retained, there will be a steady increase in priority mail ton-miles and a rapid escalation in non-priority mail as more mail is shifted from surface to air transportation. In combination, this growth will result in mail ton-miles almost doubling in five years from the 335 million of 1967 to 642 million in 1972. The Post Office forecast of domestic mail ton-miles is shown in Table V.

Forecasting international mail-ton miles is difficult due to our involvement in Vietnam. But the Post Office expects a 40 to 50 percent increase by 1972 over the already large volume of international and territorial mail as re-

TABLE IV
U.S. CERTIFICATED AIR CARRIER MAIL TON-MILES 1953-1967^a
(In Millions)

Year	Total Domestic Operations			Total International and Territorial Operations				Total Certificated Route Carriers			
	Priority	Non-Priority	Total	Priority	Non-Priority	Foreign	Total	Priority	Non-Priority	Foreign	Total
1953	72.3	1.8	74.1	25.3	—	6.4	31.7	97.6	1.8	6.4	105.8
1954	71.4	11.3	82.7	36.2	—	7.3	43.5	107.6	11.3	7.3	126.2
1955	74.5	14.5	89.0	53.4	*	7.8	61.2	127.9	14.5	7.8	150.2
1956	80.5	15.1	95.6	56.4	.3	8.1	64.8	136.9	15.4	8.1	160.4
1957	85.2	16.8	102.0	58.6	*	8.2	66.8	143.8	16.8	8.2	168.8
1958	90.8	17.2	108.0	69.4	*	7.9	77.3	160.2	17.2	7.9	185.3
1959	102.4	18.6	121.0	79.2	*	8.4	87.6	181.6	18.6	8.4	208.6
1960	112.8	23.7	136.5	89.2	14.9	8.7	112.8	202.0	38.6	8.7	249.3
1961	123.5	27.6	151.1	99.6	48.5	9.2	157.3	223.1	76.1	9.2	308.4
1962	137.9	29.2	167.1	113.4	59.4	10.4	183.2	251.3	88.6	10.4	350.3
1963	145.9	29.5	175.4	120.5	60.7	11.2	192.4	266.4	90.2	11.2	367.8
1964	160.3	31.3	191.6	129.6	50.1	11.0	190.7	289.9	81.4	11.0	382.3
1965	193.3	35.0	228.3	179.0	75.7	10.5	265.2	372.3	110.7	10.5	493.5
1966	249.7	44.3	294.0	293.1	163.5	10.3	466.9	542.8	207.8	10.3	760.9
1967 ¹	275.9	83.1	359.0	284.7	236.3	9.7	530.7	560.6	319.4	9.7	889.7

*Less than .05

¹Year ending September 30, 1967

^aSource: Civil Aeronautics Board

TABLE V**FORECAST OF DOMESTIC MAIL TON-MILES, EXCLUDING AIR TAXI
(In Millions)**

Fiscal	Priority	Non-Priority	Total
1968	309.9	178.7	488.6
1969	343.9	214.9	558.8
1970	358.3	252.7	611.0
1971	364.4	262.4	626.8
1972	369.6	272.6	642.2

Source: United States Post Office Department.

flected in Table IV. A peaceful settlement in Vietnam and a relaxation of world tensions would substantially reduce the international airmail forecasts, and traffic may even drop below present levels.

Air Taxi Mail Routes

In the fall of 1965, air taxi operators were authorized by the Civil Aeronautics Board to carry mail on a subsidy-free basis and additionally were allowed to service points already serviced by certificated airlines upon obtaining specific authorization from the Board. By June, 1967, there were 11 air taxis carrying mail under this authority (Table VI). At the end of March, 1968, air taxi operators were serving 90 routes, and today they are handling 107 routes worth \$4 million in revenues. Sixty additional routes are scheduled to be initiated on September 1 and October 1, 1968 to bring us close to the 1967 Post Office prediction of 225 routes for 1968. Appendix C lists the present air taxi routes in operation (as of May 23, 1968) and 147 routes which the Post Office is studying for possible implementation in the air taxi mail network. These proposed routes may yet be modified before final adoption. This information shows the extent of the expected geographic distribution, the kinds of communities served, and those to be served in the short term future.

TABLE VI

GROWTH OF AIR TAXI MAIL ROUTES AND REVENUES^a

Date	Air Taxi Mail Routes	Revenues (dollars)
June 1967	11	187,000
March 1968	90	3,500,000
June 1968	107	4,000,000
September 1968*	167	6,250,000
October 1968*	227	8,500,000

^aSource: United States Post Office Department.

*Forecast

The basic function of air taxis in the postal transportation service is to establish connections between smaller outlying communities and the trunk-line air service available at the large air terminals throughout the country. There are three categories of air taxi service utilized by the Post Office Department: (1) air star routes serving isolated communities, (2) routes served by air taxi operators on a pound rate, a multi-element rate or a mile rate between points where no certificated air carrier service is available, and (3) air taxi service performed under exemption authority granted by CAB between points also served by a certificated route air carrier.¹

The air taxi mail program, during 1967, enhanced the mail service to 9,600 communities. This figure represents service to 137 sectional centers at which the Post Office consolidates the mail from approximately 70 smaller post offices for shipment to a major air terminal.

Ultimately, air taxi service will be furnished to approximately 245 more sectional centers. With each sectional center consolidating mail for about 70 smaller post offices, an additional 17,150 communities will be receiving speedier mail deliveries as a result of the air taxi mail program.²

Air taxi operators earned \$180,000 for handling 300,000 ton-miles of mail in 1967. These figures are expected to rise to \$8 million and 25.5 million ton-miles in fiscal

¹ Federal Aviation Administration, FAA and the Expanding Airmail Traffic (Washington, February 1968), p. 7.

² Ibid., p. 9.

1968, and to climb further in fiscal 1969 to about \$12,000,000 or \$14,000,000 and 31.3 million ton-miles. The 1972 forecast is for 35.3 million ton-miles to be handled by air taxis. Table VII shows postal traffic and earnings for air taxis for fiscal 1968 through 1972 and Table VIII illustrates a typical air taxi mail route.

We can gain some perspective on the magnitude of the proposed air taxi mail program by a comparison with the local service airlines' mail volume which in 1966 earned them \$5.6 million for flying 8.8 million ton-miles. Air taxi operators in their first full year of the expedited mail program (fiscal 1968) are expected to earn \$2.4 million for handling almost triple the mail volume. This ratio of total revenues earned to total mail ton-miles handled could have important subsidy implications for the local service airlines.

One can foresee mail routes scheduled to link the National Transportation Centers together.

These routes will generally have higher volume and higher speed requirements than the intra-regional routes now being implemented. These could well require 5,000 lb. or capacity and speeds of 300 or more miles per hour. While it is a guessing game to estimate the number of these routes that will be operated by the airlines and how many by air

TABLE VII

**AIR TAXI MAIL TON-MILES AND REVENUES
FORECAST 1968-1972**

Fiscal Year	Revenue Ton-Miles (000)	Mail Revenue (\$000)
1967	300	\$ 180
1968*	25,500	8,500
1969*	31,300	12,000 to 14,000
1970*	32,600	12,500 to 14,600
1971*	33,900	13,000 to 15,200
1972*	35,300	13,400 to 15,700

*Forecast

Source: United States Post Office Department.

TABLE VIII

TYPICAL AIR TAXI MAIL SERVICE
FLOW CHART^a

F	1700	Depart	Small Office	*
	1900	Arrive	Sectional Center	*
R	2100	Depart	Sectional Center	x
O	2230	Arrive	Transportation Center	x
M	2300	Depart	Transportation Center	-
T	0100	Arrive	Transportation Center	-
	0200	Depart	Transportation Center	x
O	0330	Arrive	Sectional Center	x
	0530	Depart	Sectional Center	*
	0730	Arrive	Small Office	*

LEGEND: * Possible air taxi service point
 x Air taxi service point
 - Possible air taxi or local service carrier service point

^aSource: United States Post Office Department, Distribution and Routing Division.

taxi, it has been estimated that the air taxi portion could exceed 100 routes³

³"Air Taxi Mail Program- Past- Future," Remarks of Willis B. Henderson, National Air Taxi Conference Transportation Consultant, before the Second Annual Air Taxi Seminar, Thunderbird Motel, Minneapolis, Minnesota, June 20, 1968, p. 6.

CHAPTER IV

FORECAST OF THE TWIN-ENGINE AIR TAXI FLEET

In order to forecast the capacity of the air taxi fleet in terms of twin-engine aircraft available for mail service, two methods were employed. Federal Aviation Agency data through 1965 and a questionnaire survey were used to forecast both the number and types of twin-engine aircraft.

General aviation forecasting, specifically air taxi operations, is difficult due to the limited amount of historical data. This problem is further complicated to the extent that the Federal Aviation Agency is at least two years behind in reporting their historical data. The accuracy of the counts and the validity of trends for units available are subject to question due to partial estimates from historical data and must be considered a limitation on the value of this forecast. However, they are the only data available and were therefore used as the numerical base for the study.

In addition to published statistics, certain new data for the years 1954, 1957, 1961, 1963, 1964 were developed for this study from information compiled by the FAA. These data show number of aircraft and hours flown in general aviation by type of use and by type of aircraft. This is the first time that time series data have been

available which link aircraft and hours statistics for eight use categories and eleven aircraft type categories.¹

Air taxi operations, between 1954 and 1964, have experienced the sharpest rise of any general aviation use category. Hours flown more than tripled, rising from 509,000 to 1,701,000 hours while the number of aircraft increased from 2,060 to 5,267. Expressed as a percentage of the total general aviation fleet, these statistics increased from 3 to 6 percent and from 6 to 11 percent respectively. Average aircraft utilization for the air taxi fleet rose from 247 to 323 hours per year per aircraft (Table IX).

The forecast of the multi-engine air taxi fleet is shown in Table X. Federal Aviation estimates of the air taxi fleet were combined with the ten year trend of multi-engine aircraft as a percentage of the air taxi fleet to arrive at the forecasted numbers of multi-engine aircraft. These figures are believed to be understated as shown in private surveys by members of the general aviation industry.² The degree of this error is now being examined by the Agency with the cooperation of the industry. In light

¹Federal Aviation Agency, General Aviation, A Study of the Fleet and Its Uses in 1975 (Washington: Government Printing Office, 1966), p. 21.

²Ibid., p. 129.

TABLE IX
AIR TAXI USE 1954-1964^a

Category	1954	1964	Percent Increase (decrease)
Number of Aircraft	2,060	5,267	155.7
Percent of General Aviation Fleet	3	6	
Hours flown (millions)	0.509	1.701	234.2
Percent of General Aviation Fleet	6	11	5
Average annual utili- zation (hours)	247	323	30.8
Number of Single-engine aircraft	1,900	3,499	84
Percent of air taxi fleet	92	65	(27)
Number of Multi-engine aircraft	140	1,368	977
Percent of air taxi fleet	8	25	17

^aSource: Federal Aviation Agency. General Aviation, A Study and Forecast of the Fleet and Its Use in 1975 (Washington: Government Printing Office, 1966), pp. 40-41.

TABLE X

**FORECAST OF MULTI-ENGINE AIRCRAFT IN THE
AIR TAXI FLEET 1968-1971**

Year	Total Number of Air Taxi Aircraft ¹	Multi-engine Aircraft in Air Taxi Fleet	Multi-engine Aircraft as a Percent of Total Air Taxi Fleet ²
1968	7,100	2,258	31.8
1969	7,750	2,596	33.5
1970	8,500	3,000	35.3
1971	9,000	3,330	37.0

¹Federal Aviation Agency. General Aviation, A Study and Forecast of the Fleet and Its Use in 1975 (Washington: Government Printing Office, 1966), p. 12.

²Assuming a 1.70 percent linear increase per year as indicated in the years 1954-1964.

of any upward revision of the historical data used in these forecasts, the 1968-1971 forecasts would have to be reviewed and adjusted accordingly.

Survey of Multi-engine Air Taxi Operators

The second method used in forecasting the air taxi fleet was a mail questionnaire, the purpose of which was to survey the multi-engine air taxi operators as to the makes and models of their present equipment. This information has a direct effect on the capacity to carry the volume mail tendered by the Post Office. Typically these routes have been contracted for 1,000 and 2,000 pounds of mail (peak loads).³

The sample was selected from the Federal Aviation Agency's listing of air taxi operators as of November, 1966. Since the list contained both single- and multi-engine operators, it was necessary to exclude the single-engine operators. After this elimination we had approximately 1500 air taxi operators with multi-engine equipment. This listing is alphabetical by state within each region. Every third operator was then selected for the sample. It is quite obvious that this sample was not random because each operator did not have an equal chance to be selected as the

³Henderson, loc. cit., p. 3.

sample was drawn by region. This was done in order to geographically sample a proportionate number of operators in each state. Alaska and Hawaii were excluded from the sample.

Appendix E lists, by state, the total number of multi-engine operators, the number sampled and the number of replies received. Of the 1489 listed operators, 500 were sampled, and 145 replied. This was a 29 percent response of those sampled and almost a 10 percent response of the total multi-engine air taxi operators.

Results of the Mail Questionnaire

The results of the questionnaire represent the most current sampling of the air taxi fleet. Its purpose was to survey the multi-engine equipment now in air taxi use. A copy of the questionnaire is in Appendix D. For this survey only the first question was used.

Table XI lists the aircraft in order of popularity among the air taxi operators sampled. The Beech 18 and Piper Aztec are the two most widely used twin-engine planes in the air taxi fleet. At this time, there are 12 different kinds of aircraft in air taxi mail use with the D18s and Piper Aztec ranked number one and two respectively in the number of routes they operate over. The predominance of these aircraft is determined to some extent by the

TABLE XI

**RESULTS OF MULTI-ENGINE AIR TAXI SURVEY RANKED
BY NUMBER OF PLANES REPORTED IN SAMPLE**

Model	Useful Load* (Pounds)	Planes in Sample
Beech 18s	4,220	55
Piper Aztec (PA23)	2,065	48
Beech Barron (55)	2,075	28
Cessna 310	2,090	27
Beech Twin Bonanza (50)	2,840	19
Piper PA30	1,390	11
Aero Commander 680	3,300	10

*Source: National Air Taxi Conference, Aircraft Profile (Washington: 1967), p. 14.

volume and weight requirements set by the Post Office Department. These two aircraft fit the 1,000 and 2,000 pound load requirements very nicely.

The Beech 18s with a useful load of 4,220 pounds will probably be used extensively in the high capacity runs (2,000 - 4,000 pounds). Willis Henderson noted in his speech before the Second Air Taxi Seminar that the inter-National Transportation Center runs could require 5,000 pounds or more capacity and speeds of 300 or more miles per hour. It has been estimated that the air taxis would receive about 100 of these routes. For aircraft of this size the industry could probably employ the aircraft exempt from the 12,500 pound weight requirement.⁴

The peculiarities of the demand (postal) side of the air mail situation create an interesting situation in the supply (air taxi) sector. The rates allowed by the Post Office were thought to cover only the operators' direct costs plus some profit margin. However, a July 31, 1968, interview with Mr. John E. McGrath, a Post Office Department Rate Analyst brought to light additional expenses which had heretofore not been made common knowledge. The variables allowed are pilot's salary, landing and hangar fees, fuel, oil, maintenance and overhaul allowance, depre-

⁴See Appendix A, p. 68.

ciation, overhead, and a 10.5 percent profit margin on these rate components. This system increases the effective profit margin because depreciation, hangar fees, and overhead had been previously written off to daylight operations.

At the moment the mail routes are divided among approximately 36 different operators with Sedalia, Marshall, Boonville Stage Lines, and Boker and Ross Aviation holding about one half of the route authorizations. Sedalia, Marshall, Boonville Stage Lines is operating almost full time in the mail business and has secured a large portion of the mail routes. How can they operate only on mail revenues?

The answer seems to lie in part with the components of the rate structure. Through interviews with responsible Post Office officials the author has been led to believe that the Stage Line is charging off depreciation, hangar fees, and overhead to mail operations whereas, it appears that other air taxi operators have been charging these expenses to their daylight operations. This lack of knowledge about the rate components may have put some operators at a competitive disadvantage. Perhaps another answer is that the Stage Line is not as worried about the 24 hour cancellation clause in the mail contracts as some operators are. This management attitude would enable them to bid on routes and add new aircraft to their fleet when other oper-

ators would not take the chance. As it is turning out, the Stage Line seems quite successful and is thereby enhancing its position as responsible bidder on future routes.

The author feels that the fleet can supply the Post Office with sufficient aircraft on the merits of its projected rate of growth. This opinion is also qualified by the fact that present postal procedures require that routes be first offered to the certificated carriers. And it is the author's opinion that these carriers will not let a substantial mail operation develop below them when they have the means to conduct similar operations. The addition of quick-change aircraft will also help to keep the night air taxi capacity far above that required for postal operations.

CHAPTER V

SUMMARY AND CONCLUSIONS

Rapid changes in the United States Postal Service have been necessitated by our tremendous population growth and evolution of faster transportation systems. In 1960, the results of a long-range, comprehensive Post Office study of the nature and extent of services, volumes of mail to be handled, and the means by which mail can best be processed, transported and delivered were published. The service objectives that were formulated, and the distribution and transportation schemes which evolved from this study became the basis for our ZIP Code System.

Like most businesses, the Post Office's major problem was the time element. The time involved in handling, sorting, and transporting the mail had to be reduced. Since first-class mail is the most important segment of our mail, priorities of handling and movement were established for this class. The ZIP Code concept became the most expeditious method of sorting and handling the mail and air transportation the quickest way of moving it.

Although air transportation can be seen to be the fastest mode of transportation, a compatible transportation

scheme conforming to postal economic and time requirements had to be designed. The objective of this system was to move the mail among the cities in the best possible time. Economically speaking, an integrated logistical system of air, rail, and highway transportation seemed to best fit the Post Office's requirements.

The next step was to find an optimal solution utilizing these modes of transportation and conforming to the economic and time constraints of the postal system. Air transportation was used to supplement surface carriers when the costs were similar and where the incremental costs of air service were justified by the improvement in mail service.

The first additions of air mail service came with the movement of first-class mail on a space available basis utilizing the existing certificated carriers' schedules. This method provided the Post Office with an economically justifiable means of high speed mail transportation. At the same time, the air carriers received added revenues by utilizing their excess capacity.

Further expansion of air mail service required the creation of routes during the critical postal hours from 9 P.M. to 3 A.M. These routes are typically short and uneconomical for the larger aircraft of the first two levels of the aviation industry. But air taxi equipment fits the

postal requirements adequately. Multi-engine air taxi equipment have the flexibility and capability to operate over these short late evening runs. Realizing this capability, the Post Office Department has launched a sizeable air taxi mail program.

The author feels the twofold objective of this thesis has been satisfied--the investigation of the probable volume of first-class mail (in terms of air taxi routes) that the Post Office will expedite by airlifts and the investigation of the future fleet of multi-engine air taxi aircraft available for these operations.

Air taxi mail operations have grown tremendously since 1967.¹ At the moment the proposed routes listed in Appendix C are as far as the Post Office has analyzed the air taxi mail program. These routes and revenues will be further increased as additional commitments are made to the ZIP Code System. After the sectional center--National Transportation Center air network is completed, an inter-National Transportation Center network will be planned. These routes will be typically longer and will require heavier aircraft than the sectional center network. The air taxi portion of the expected 300 routes has been estimated at 100 routes. The air taxi equipment utilized in

¹See Table VI, p. 39.

these runs will more than likely be those exempted by the Civil Aeronautics Board from the 12,500 pound weight requirement.

The multi-engine air taxi fleet was forecasted through 1971.² The accuracy of this forecast is limited by the lack of historical data on air taxis and the fact that the Federal Aviation Agency is two years late in publishing historical data pertinent to this study. This forecast is probably understated due to the Federal Aviation Agency's inadequate classification of aircraft as either active or inactive.

As noted earlier, the questionnaire survey of the multi-engine air taxi fleet is the most up-to-date survey of air taxi equipment. The author will not make any inferences as to the multi-engine fleet from this survey due to the nature of the responses. But the author feels that the results are fair indicators of the most popular types of multi-engine equipment.³ Obviously, the results are more uncertain as the interval in the observed number of aircraft becomes smaller.

On the basis of the available data, the author makes the following conclusions. First, the air taxi mail busi-

²See Table X, p. 48.

³See Table XI, p. 51.

ness will continue to grow at a rapid rate. After the implementation of the new routes scheduled for September 1 and October 1, 1968, the addition of new routes may slow down for a short period of time in order for the Post Office Department and the Civil Aeronautics Board to appraise this new mail system. Time is also needed for these two agencies to delineate their own duties and responsibilities in this program. At the moment, the Post Office is carrying most of the burden, although it is not qualified to make certain technical judgements on aircraft operations. Additional routes will be added as railroad service declines and as other postal modernization methods increase the volume of mail handled and tendered for delivery.

Second, the multi-engine air taxi fleet will be able to handle all the mail tendered to it by the Post Office. This conclusion is based on several facts. The present Post Office procedure of seeking out the first two levels of the air industry before going to the air taxis has perhaps the greatest effect on this conclusion. From all indications, it seems that the first two levels of the air industry will not allow a large, profitable operation develop below them when they have the financial means to conduct the same type of operation. The forecast of the multi-engine fleet and the addition of quick-change aircraft illustrates that the fleet will remain far ahead of

the air mail program. Another basis for this judgement is that the air taxi mail program estimates are only in hundreds of routes while the fleet estimates are in thousands of aircraft.

The author feels that it is significant to note that certain discrepancies exist in the way the Post Office is handling air taxi mail rates and routes. There seems to exist a lack of adequate communication between the Post Office officials and the air taxi operators on the matter of allowable cost factors within the rate structure. This is evident because some operators seem to be including depreciation, hangar fees, and overhead allowances in their bids whereas, other operators are charging these off to their daylight operations. Assuming this to be true of some operators, it seems that even though their rates may be higher than they still are securing a considerable number of mail routes. The Post Office's Air Transportation Department should clarify its position with respect to these rate components and bidding procedures.

The air taxi fleet with its unusual flexibility has made the ZIP Code System and overnight first-class mail delivery a reality in only five years.

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APPENDIX A

APPENDIX A

AIRCRAFT HAVING GROSS WEIGHT EXEMPTIONS TO PART 298
OF THE CIVIL AERONAUTICS BOARD ECONOMIC
REGULATIONS AS OF MAY 1968^a

DeHavilland Heron 2A, four engine transport, 13,500 lbs.
Lockheed L-049, four engine transport, 90,000 lbs.
Sikorsky VS-44A, four engine flying boat, 50,534 lbs.
Convair PBY-5, twin-engine amphibian, 34,000 lbs.
Douglas DC-3, twin-engine transport, 26,900 lbs.
Fokker F-27, twin-engine turbo-prop, 42,000 lbs.
Grumman Mallard G-73, twin-engine amphibian, 12,750 lbs.
Sikorsky S-58B, helicopter, 13,000 lbs.
Lockheed Jetstar, four-engine jet, 40,921 lbs.
Aero Commander Model 1121, twinjet, 16,800 lbs.
Dassault Fan Jet Falcon, twin-jet, 25,578 lbs.
Hawker Siddeley DH-125, twinjet, 21,700 lbs.
Lear Jet Model 24, twinjet, 13,000 lbs.
Lear Jet Model 25, twinjet, 15,000 lbs.

^aSource: Civil Aeronautics Board.

APPENDIX B

POST OFFICE DEPARTMENT

REQUEST TO AIR TAXI OPERATORS FOR PROPOSALS TO TRANSPORT MAIL

TO: _____

The Post Office Department is hereby requesting proposals for transportation of mail by air taxi operators under Part 298 of the Economic Regulations of the Civil Aeronautics Board. Proposals should be submitted only by operators holding air taxi certificates who have a period of six months' successful operation unless other acceptable evidence of capability can be provided. Proposals may cover any segment or any combination of segments described in Part B.

Part A provides information regarding Civil Aeronautics Board regulations under which the service is procured, aircraft requirements, pilot qualifications and other general operating requirements. We are also enclosing a copy of Part 535, Postal Manual, which is applicable to air taxi operations. Each prospective operator should review carefully this information before submitting a proposal.

Part B gives required schedules, minimum cubic capacity available for mail, minimum load requirements, service required at airports and other items related to handling of mail.

Proposals must be received prior to 2:00 p.m. _____ 19 _____. If, after reading the information contained in this request you believe that you can qualify, but desire further information, you may appear at _____ o'clock on _____ 19 _____, in Room _____

where a conference will be held for complete explanation of this request. Proposals should be submitted by registered or certified mail. The operator should be in a position to begin service in not less than ten days from the date of filing of a Notice of Intent.

Director, Transportation Division

Enclosure

PART A

General Information

- a. This form constitutes a solicitation package requesting interested air taxi operators to submit proposals for the transportation of mail by aircraft. The package includes the details of the specific service required, a form on which the proposal will be submitted, and copies of the applicable regulations of the Post Office Department and the Civil Aeronautics Board.
- b. This is not an invitation to bid for a contract. Proposals are used to enable the Department to select an air taxi operator to be authorized by the Civil Aeronautics Board to transport mail by aircraft at a rate or rates to be prescribed by the Board. The Department is under no legal obligation to select any particular proposal and may reject any or all proposals received in response to a particular solicitation. The Department may select the operator submitting the lowest proposed rate or may, in its discretion, accept any other proposal responsive to the solicitation which will be most advantageous to the Government, cost and other factors considered. The Department reserves the right to reject all proposals and either (1) issue a new solicitation, or (2) open negotiations with any qualified air-taxi operator. Each taxi operator submitting a proposal should be prepared, if called upon, to submit a detailed justification for the rate or rates proposed.
- c. If a proposal fails to respond to the details of the specific service solicited, it will be returned with an explanation "Notice of Rejection". No notice will be furnished to an air taxi operator whose proposal is not accepted, but inquiries to that effect may be made to the official to whom the proposal was mailed.
- d. Representatives of the Post Office Department may contact an operator who has submitted a proposal for the purpose of determining his technical and financial ability to perform the service. The operator may be required to furnish evidence of his ability to assure that the types or quantities of aircraft required to perform in accordance with the proposal will be available and properly maintained. The adequacy of the arrangements to provide the required service will be considered by the Department in the selection of an operator. In addition, the operator must provide evidence that he is authorized by the Federal Aviation Administration to operate the type of aircraft required.
- e. In addition to requirements of the Post Office Department, aircraft and pilots must meet all applicable requirements of Part 135 Federal Aviation Regulations, including those sections applicable to transportation of passengers under Instrument Flight Rules.
- f. Operators must meet all provisions outlined in this form, as well as those contained in Part 535, Postal Manual.

2. Aircraft Requirements

All aircraft used for transportation of mail must meet the following requirements.

- a. Be multi-engine, capable of maintaining engine-out minimum en route altitudes as specified by the Federal Aviation Regulations, 135.145, between the points served.
- b. Complete de-icing equipment, as specified in Federal Aviation Regulations 135.85 (b) (2).
- c. Equipment for operation under Instrument Flight Rules to enable the use of the lowest published minimums for approach and landing at airports served (except category II operations).
- d. All Federal Aviation Administration requirements for inspection and airworthiness as prescribed under FAA Part 91, General Operating and Flight Rules, including section 91.169 entitled Inspections, subparagraphs (a) and (b). Subparagraph (c) (2) of this section shall not be applicable.
- e. Unless a copilot qualified for passenger-carrying operations is to be assigned at all times, the aircraft must have an automatic pilot which meets Federal Aviation Administration specifications for transportation of passengers in accordance with FAA Regulations Part 135.77 (a) (1).

Pilot Qualifications

3. All pilots assigned to air taxi aircraft used for transportation of mail must meet the following qualifications:
 - a. Current license, or certificate, required by State and Federal agencies for Instrument Flight Rules operation under Part 135.
 - b. Have a minimum of 1,000 hours of flight time as a pilot, including at least 50 hours night operation, 50 hours of Instrument Flight time under actual weather conditions.
 - c. Pass such proficiency checks as may be prescribed by the FAA.
 - d. Have good record, in the judgment of the Post Office Department, regarding observance of FAA regulations.
 - e. Since pilots will have access to United States mail, they must have no record of arrests and convictions for other than minor traffic violations, etc.

PART B

SEGMENT

BETWEEN

and

terminal points.

1. SERVICE REQUIREMENTS

A. SCHEDULE AND FREQUENCY OF SERVICE REQUIRED

B. GREAT CIRCLE MILEAGE

2. SIZE AIRCRAFT

A. CUBIC CAPACITY

B. PAYLOAD

3. SERVICE REQUIRED AT AIRPORTS

A. EXCHANGE OF MAIL, TRANSFERS, ETC.

POST OFFICE DEPARTMENT
PROPOSAL FOR TRANSPORTATION OF MAIL BY AIR TAXI OPERATOR

To: Director, Transportation Division
Post Office Department

I hereby submit my proposal to transport mail under Part 298 of the Economics Regulations of the Civil Aeronautics Board over the segments and at the rate shown on the reverse.

I have read carefully all information contained in the Form 2750, Request to Air Taxi Operators for Proposals to Transport Mail, and certify I will be able to provide the service and comply with the provisions thereof. I understand that failure to comply may result in immediate termination of any authority to transport mail.

I am attaching the following to this proposal:

1. A statement of the history of my air taxi operation, including extent of present operation.
2. List of aircraft that will regularly be assigned to routes including their Federal Aviation Administration registration numbers, together with information as to arrangements for back-up equipment to assure continuous operation during maintenance periods, etc.
3. List of pilots that will be available with experience, qualifications and license numbers.
4. A current financial statement showing assets, liabilities and net worth.
5. Banking and credit references.

(Company Name)

Subscribed and sworn to before me

(Company Address)

this _____ day of _____ A.D., 19 _____

(Signature of Operator)

at _____

(Title)

(Notary Public)

73

(Date)

(OFFICIAL SEAL)

SEGMENT	BETWEEN TERMINAL POINTS and
---------	--------------------------------

I propose to use twin engine aircraft described as follows:

MAKE	MODEL	CUBIC CAPACITY	PAYLOAD
PROPOSED RATE PER GREAT CIRCLE MILE ON THIS SEGMENT ONLY			\$
PROPOSED RATE PER GREAT CIRCLE MILE IF INCLUDED IN COMBINATION WITH SEGMENT NOS.			\$
SEGMENT	BETWEEN TERMINAL POINTS and		

I propose to use twin engine aircraft described as follows:

MAKE	MODEL*	CUBIC CAPACITY	PAYLOAD
PROPOSED RATE PER GREAT CIRCLE MILE ON THIS SEGMENT ONLY			\$
PROPOSED RATE PER GREAT CIRCLE MILE IF INCLUDED IN COMBINATION WITH SEGMENT NOS.			\$
SEGMENT	BETWEEN TERMINAL POINTS and		

I propose to use twin engine aircraft described as follows:

MAKE	MODEL*	CUBIC CAPACITY	PAYLOAD
PROPOSED RATE PER GREAT CIRCLE MILE ON THIS SEGMENT ONLY			\$
PROPOSED RATE PER GREAT CIRCLE MILE IF INCLUDED IN COMBINATION WITH SEGMENT NOS.			\$

*List any modification that has been made that changes the manufacturer's original specifications.

APPENDIX C

APPENDIX C

AIR TAXI MAIL ROUTES AUTHORIZED AS OF MAY 23, 1968^a

1. Pittsfield, MA-New York, NY
2. Boston, Ma-New York, NY-Pittsburgh, PA-Cincinnati, OH
3. Springfield, VT-Boston, MA
4. New Haven, CT-Albany, NY
5. New London, CT-New Haven, CT-New York, NY
6. Portland, ME-Albany, NY
7. Lebanon, NH-Manchester, NH-Albany, NY
8. Providence, RI-Springfield, Ma-Albany, NY-Newark, NJ
9. Plattsburg, NY-Burlington, VT-Albany, NY-New York, NY
10. Utica, NY-Syracuse, NY-Newark, NJ
11. Utica, NY-Syracuse, NY-New York, NY
12. Binghamton, NY-Syracuse, NY
13. Binghamton, NY-Scranton, PA-Newark, NJ
14. Binghamton, NY-Elmira, NY-New York, NY
15. Jamestown, NY-Buffalo, NY
16. Red Bank, NY-Newark, NJ-New York, NY
17. Erie, Pa-Oil City, PA-Pittsburgh, PA
18. Bradford, PA-Du Bois, PA-Indiana, PA-Pittsburgh, PA
19. Pittsburgh, PA-Harrisburg, PA
20. Harrisburg, PA-Williamsport, PA-Syracuse, NY
21. Harrisburg, PA-State College, PA-Williamsport, PA
22. Harrisburg, PA-Newark, NJ
23. Detroit, MI-Lansing, MI-Iron Mountain, MI
24. Ironwood, MI-Iron Mountain, MI-Houghton, MI
25. Owensboro, KY-Evansville, IN-Chicago, IL
26. Louisville, KY-Chicago, IL
27. Cleveland, OH-Indianapolis, IN
28. Cincinnati, OH-Columbus, OH
29. Indianapolis, IN-Columbus, OH
30. Cleveland, OH-Columbus, OH
31. Indianapolis, IN-Cincinnati, OH-Charleston, WV
32. Dallas, TX-Killeen, TX
33. San Angelo, TX-Brownwood, TX-Dallas, TX
34. Wichita Falls, TX-Dallas, TX
35. Longview, TX-Tyler, TX-Dallas, TX
36. Lufkin, TX-Palestine, TX-Dallas, TX
37. Victoria, TX-Houston, TX

^aSource: United States Post Office Department, Bureau of Transportation.

38. Bryan, TX-Houston, TX
39. Uvalde, TX-San Antonio, TX
40. Joplin, MO-Springfield, MO-Kansas City, MO
41. Douglas, AZ-Tucson, AZ-Phoenix, AZ
42. Pueblo, CO-Dodge City, KS
43. Rock Springs, WY-Rawlins, WY-Cheyenne, WY
44. Cheyenne, WY-Wheatland, WY-Newcastle, WY
45. Sheridan, WY-Casper, WY-Cheyenne, WY-Denver, CO
46. Riverton, WY-Worland, WY-Casper, WY
47. Salt Lake City, UT-Provo, UT-Cedar City, UT
48. Minneapolis, MN-Wilmar, MN-Windom, MN
49. Iron Mountain, MI-Green Bay, WI-Milwaukee, WI
50. Minneapolis, MN-La Crosse, WI-Dubuque, IA
51. Minneapolis, MN-Eau Claire, WI-Wausau, WI-Green Bay, WI
52. International Falls, MN-Bemidji, MN-Brainerd, MN-Minneapolis, MN
53. Thief River Falls, MN-Detroit Lakes, MN-Minneapolis, MN
54. Los Angeles, CA-Bakersfield, CA-Fresno, CA
55. Palm Springs, CA-Los Angeles, CA
56. San Luis Obispo, CA-Los Angeles, CA
57. Mojave, CA-Los Angeles, CA
58. San Diego, CA-Los Angeles, CA
59. San Francisco, CA-Salinas, CA-San Luis Obispo, CA
60. San Francisco, CA-Sacramento, CA-Reno, NV
61. Bakersfield, CA-Fresno, CA-San Francisco, CA
62. Eureka, CA-San Francisco, CA
63. Reno, NV-Elko, NV-Ely, NV
64. Reno, NV-Las Vegas, NV
65. Reno, NV-Lovelock, NV-Winnemucca, NV
66. Sacramento, CA-Redding, CA
67. Boise, ID-Salt Lake City, UT
68. Twin Falls, ID-Pocatello, ID-Boise, ID
69. Klamath Falls, OR-Bend, OR-Portland, OR
70. Medford, OR-Eugene, OR-Portland, OR
71. Boise, ID-Pendleton, OR-Portland, OR
72. Spokane, WA-Lewiston, ID-Boise, ID
73. Idaho Falls, ID-Pocatello, ID-Salt Lake City, UT
74. Kalispell, MT-Missoula, MT-Helena, MT
75. Great Falls, MT-Lewistown, MT
76. Helena, MT-Billings, MT
77. Wolf Point, MT-Miles City, MT-Billings, MT
78. Helena, MT-Spokane, WA
79. Havre, MT-Great Falls, MT-Helena, MT
80. Anacortes, WA-San Juan Islands, WA
81. Ponca City, OK-Enid, OK-Oklahoma City, OK
82. Poteau, OK-McAlester, OK-Oklahoma City, OK
83. Woodward, OK-Clinton, OK-Oklahoma City, OK
84. Liberal, KS-Oklahoma City, OK

85. Altus, OK-Lawton, OK-Oklahoma City, OK
86. Muskogee, OK-Tulsa, OK-Oklahoma City, OK
87. Durant, OK-Ardmore, OK-Oklahoma City, OK
88. Sidney, NB-North Platte, NB-Grand Island, NB
89. Valentine, NB-North Platte, NB
90. McCook, NB-North Platte, NB
91. Chadron, NB-Alliance, NB-North Platte, NB
92. Lincoln, NB-Grand Island, NB
93. Omaha, NB-Grand Island, NB
94. O'Neill, NB-Norfolk, NB-Grand Island, NB
95. Concordia, KS-Salina, KS-Wichita, KS
96. Emporia, KS-Topeka, KS-Wichita, KS
97. Independence, KS-Fort Scott, KS-Wichita, KS
98. Scott City, KS-Dodge City, KS-Wichita, KS
99. Colby, KS-Hays, KS-Wichita, KS
100. Wichita, KS-Oklahoma City, OK
101. Wichita, KS-Kansas City, MO
102. Norfolk, NB-Columbus, NB-Omaha, NB
103. Pensacola, FL-Tallahassee, FL-Jacksonville, FL
104. Panama City, FL-Tallahassee, FL-Orlando, FL
105. Key West, FL-Miami, FL
106. Gainesville, FL-Tampa, FL
107. Fort Myers, FL-Tampa, FL

AIR TAXI MAIL ROUTES UNDER CONSIDERATION^a

1. Midland-Abilene-Dallas
2. Texarkana-Dallas
3. Temple-Waco-Dallas
4. Erie-Jamestown-Buffalo
5. Little Rock-Fort Worth-Fayetteville
6. Scranton/Wilkes Barre-Philadelphia
7. Newark-Albany
8. St. Louis-Memphis
9. Dallas-Little Rock
10. Kansas City-Chillicothe-Kirksville
11. St. Louis-Hannibal-Kirksville
12. Des Moines-Mason City-Decorah
13. Des Moines-Council Bluffs-Sheanadoah
14. St. Louis-Cape Girardeau-Poplar Bluff
15. Little Rock-Batesville-Jonesboro
16. St. Louis-Little Rock
17. Cincinnati-Louisville-Nashville
18. Kansas City-Sedalia-Columbia
19. St. Louis-Columbia-Jefferson City
20. Salt Lake City-Helena-Billings
21. St. Louis-Rolla-Springfield
22. McAllen-Corpus Christi-San Antonio
23. Grand Island-Wichita-Oklahoma City
24. Baltimore-Richmond-Charlotte
25. Baltimore-Pittsburgh
26. Atlanta-Charlotte
27. Pittsburgh-Columbus
28. Springfield-Peoria-Chicago
29. Springfield, IL-St. Louis
30. Little Rock-Camden-Hope
31. Little Rock-New Orleans
32. Little Rock-Oklahoma City
33. Des Moines-Carroll-Souix City
34. Des Moines-Fort Dodge-Spencer-Sheldon
35. Omaha-Kansas City
36. Little Rock-Russellville-Harrison
37. Des Moines-Kansas City
38. Baltimore-Richmond
39. Pittsburgh-Charleston
40. Charleston-Clarksburg-Martinsburg

^aSource: United States Post Office Department, Bureau of Transportation.

41. Charleston-Bluefield-Bristol
42. Norfolk-Richmond-Charleston
43. Baltimore-Martinsburg-Cumberland
44. Richmond-Lynchburg-Roanoke
45. Charlotte-Columbia-Charleston
46. Charlotte-Fayetteville-Kinston
47. Charlotte-Florence-Wilmington
48. Charlotte-Raleigh-Rocky Mount-Elizabeth City
49. Charlotte-Hickory-Asheville
50. Charlotte-Greenville/Spartanburg
51. Charlotte-Greensboro
52. Philadelphia-Pittsburgh
53. Memphis-Little Rock
54. Columbia-Charleston
55. North Bend-Eugene
56. Cleveland-Charleston
57. Kansas City-Little Rock
58. Moab-Price-Provo-Salt Lake City
59. Montrose-Grand Junction-Glenwood Springs-Denver
60. Alamosa-Pueblo-Denver
61. Durango-Salida-Denver
62. Tucson-Phoenix-Salt Lake City
63. Show Low-Globe-Phoenix
64. Kingman-Prescott-Flagstaff-Phoenix
65. Yuma-Phoenix
66. Denver-Albuquerque-Roswell
67. Las Cruces-Alamogordo-Albuquerque
68. Clovis-Tucumcari-Albuquerque
69. Farmington-Las Vegas-Albuquerque
70. Altoona-Johnstown-Pittsburgh
71. Ashland-Lexington-Louisville
72. Louisville-Charleston
73. Columbus-Chicago
74. Mansfield-Marion-Columbus
75. Athens-Zanesville-Columbus
76. Lima-Columbus
77. Columbus-Toledo-Detroit
78. Youngstown-Canton-Cleveland
79. Nashville-Birmingham-Montgomery-Mobile
80. Louisville-Bowling Green
81. Ft. Wayne-Indianapolis-Louisville
82. Watertown-Syracuse-New York
83. Evansville-Washington-Indianapolis
84. Indianapolis-Chicago
85. Terre Haute-Lafayette-Indianapolis
86. Gary-Indianapolis
87. Kokomo-Muncie-Indianapolis
88. Louisville-Paducah

89. Louisville-Corbin-Somerset
90. Johnson City-Knoxville-Nashville-Memphis-Jackson, MS
91. Memphis-Tupelo-Columbus
92. Jackson-Laurel-Gulfport
93. Birmingham-Decatur/Huntsville
94. Montgomery-Dothan
95. Louisville-Evansville-Owensboro
96. Nashville-Chattanooga
97. Memphis-Birmingham
98. Memphis-Jackson, TN
99. Atlanta-Albany-Valdosta
100. Atlanta-Swainsboro-Savannah
101. Atlanta-Macon-Waycross
102. Atlanta-Augusta-Columbia-Florence
103. Atlanta-Chattanooga
104. Baltimore-Charleston
105. Richmond-Charlottesville-Staunton
106. Hibbing-Duluth-Minneapolis
107. Lubbock-Amarillo
108. Childress-Amarillo
109. Dallas-Amarillo
110. South Bend-Indianapolis
111. Rochester-Albany
112. Rochester-New York (LGA)
113. Des Moines-Waterloo-Dubuque
114. Des Moines-Cedar Rapids-Rock Island/Moline
115. Des Moines-Ottumwa-Burlington
116. Des Moines-St. Louis
117. Albany-New York (LGA) (Additional Trip)
118. Syracuse-Albany
119. Buffalo-Rochester-Syracuse
120. Chicago-St. Louis
121. Galesburg-Quincy-St. Louis
122. Effingham-Centralia-St. Louis
123. Carbondale-Centralia-Springfield
124. Champaign-Kankakee-Chicago
125. Bloomington-LaSalle-Chicago
126. Quincy-Galesburg-Chicago
127. Rock Island-Rockford-Chicago
128. Detroit-Chicago
129. Grayling-Saginaw-Chicago
130. Lansing-Kalamazoo-Chicago
131. Flint-Jackson-Chicago
132. Traverse City-Grand Rapids-Chicago
133. Kalamazoo-Jackson-Detroit
134. Grand Rapids-Lansing-Detroit
135. Saginaw-Flint-Detroit
136. Traverse City-Grayling-Detroit
137. Sault Ste Marie-Pellston-Traverse City

- 138. Des Moines-Kansas City
- 139. Monroe-Shreveport
- 140. Alexandria-Shreveport
- 141. Lake Charles-Lafayette-New Orleans
- 142. Presque Isle-Bangor
- 143. Lebanon-Springfield/Hartford-Albany
- 144. Bangor-Waterville-Augusta-Boston
- 145. Riverhead-New York (LGA)-New Haven
- 146. New York (LGA)-Poughkeepsie-Utica
- 147. Newark-Buffalo

*Some changes to this list may be necessary before implementation of these routes.

Source: United States Post Office Department, Bureau of Transportation.

APPENDIX D

APPENDIX D

VIRGINIA POLYTECHNIC INSTITUTE

College of Business

Blacksburg, Virginia 24061

Department of Business Administration

April 18, 1968

Dear Sir:

I have two students in the graduate program of the College of Business at Virginia Polytechnic Institute who are currently conducting a study of the Air Taxi industry. The purpose of this questionnaire is to determine whether the existing capacity of the Air Taxi industry is sufficient to handle the proposed volume of mail contracts to be awarded by the Federal Post Office, and secondly, to formulate a model to determine the rate to be charged for the transporting by air of this mail.

If you deem the information requested by this questionnaire to be of a confidential nature, please complete the questionnaire but do not sign it.

Your cooperation will be deeply appreciated.

Most sincerely,

Dr. Ogden H. Hall

1. Please list the number of twin engine aircraft that you own or lease, not exceeding 12,500 pounds, which are or could be used to carry the U.S. mail at night.

(A) Beech _____ (number of aircraft and model)

1. _____ (Number having complete de-icing equipment as prescribed by the FAA for your locality, IFR equipment, and meet FAA inspection requirements Part 91; Part 91.169-A, B, only.)

2. _____ (Number having auto-pilot.)

(B) Cessna _____ (C) Piper _____

1. _____

2. _____

(D) Aero Commander _____ (E) Dehavilland _____

1. _____

2. _____

(F) Miscellaneous _____ (please state make and model)

1. _____

2. How many pilots do you have that meet the following requirements?
- (A) _____ Have current license required by state and federal for IFR opns.
 - (B) _____ Have a minimum of 500 total flight hours; 50 hrs. night opns. and 50 hrs. IFR under actual weather conditions.
 - (C) _____ Can pass such proficiency checks as may be prescribed by the FAA.
 - (D) _____ Have a good record regarding observance of FAA regulations.
 - (E) _____ Have no record of arrests and convictions for other than minor traffic violations, etc.
3. _____ How many pilots meeting the above could you hire?
4. _____ How many of your pilots have 1,000 total flight hours?
5. _____ How much would it cost you to have a pilot fly the mail at night between the hours of 8 P.M. and 4 A.M. seven days per week?
_____ per week.
6. _____ How many IFR qualified co-pilots do you have? _____
Could hire? _____
7. _____ How much for a co-pilot? _____ per week.
8. Can you think of any additional costs you would incur by accepting a contract to carry the U.S. mail?
-
-

NAME

COMPANY

APPENDIX E

APPENDIX E

MULTI-ENGINE AIR TAXI OPERATORS LISTED BY THE FEDERAL
AVIATION AGENCY, NOVEMBER 1966 USED IN A
QUESTIONNAIRE SURVEY OF THE
MULTI-ENGINE FLEET

	Total Multi-Engine Air Taxi Operators	Sample	Replies
<u>Central Region</u>			
Illinois	72	21	5
Indiana	45	13	3
Iowa	32	10	1
Kansas	23	7	1
Michigan	80	27	6
Minnesota	23	8	4
Missouri	33	12	3
Montana	17	6	2
Nebraska	18	6	1
North Dakota	9	3	1
South Dakota	10	3	1
Wisconsin	38	12	2
	400	128	30
<u>Southwest</u>			
Arkansas	30	10	1
Louisiana	23	7	3
New Mexico	22	7	1
Oklahoma	25	8	3
Texas	114	39	11
	214	71	19

	Total Multi-Engine Air Taxi Operators	Sample	Replies
<u>Western*</u>			
Arizona	26	9	5
California	146	49	12
Colorado	25	9	5
Idaho	11	3	1
Nevada	11	4	0
Oregon	24	9	2
Utah	5	2	0
Washington	23	8	3
Wyoming	10	4	3
	281	97	31
<u>Eastern</u>			
Connecticut	29	10	3
Delaware	3	1	1
District of Columbia	7	3	0
Kentucky	20	7	0
Maine	11	4	2
Maryland	14	4	4
Massachusetts	24	11	3
New Hampshire	6	2	2
New Jersey	30	11	3
New York	75	24	7
Ohio	63	21	9
Pennsylvania	68	23	6
Rhode Island	4	1	0
Vermont	4	1	1
Virginia	18	6	3
West Virginia	11	4	0
	387	133	44

*Hawaii and Alaska were excluded.

Total Multi-Engine
Air Taxi Operators Sample Replies

Southern

Alabama	21	7	1
Florida	88	26	8
Georgia	16	5	3
Mississippi	14	5	1
North Carolina	24	8	2
South Carolina	17	10	2
Tennessee	25	8	2
Puerto Rico & Virgin Is.	<u>2</u>	<u>2</u>	<u>2</u>
	207	71	21
TOTAL	1489	500	145

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the scanned document**

A STUDY OF THE AIR TAXI FLEET IN AIR MAIL OPERATIONS

by

Anthony Victor Kulis

ABSTRACT

Rapid changes in the United States Postal Service have been necessitated by our tremendous population growth and the evolution of faster transportation systems. In its aim to provide next day delivery of first-class mail, the Post Office Department had to determine the quantities and distances that mail could be moved between the critical postal hours of 9 PM and 3 AM. It became evident that airlifts were the only answer to the rapid delivery of this mail in many places.

The purpose of this thesis is to show the possibility of transporting all first-class mail by air taxis. This study traces the development of the new postal objectives which became the basis for the ZIP Code System and its supporting transportation requirements. Air transportation in the form of the air taxi multi-engine fleet is discussed in detail. A forecast of this fleet and the amount of mail to be diverted to these operations is also presented. Results of a questionnaire survey are used as indicators of

the most popular models of multi-engine air taxi equipment.

The author notes apparent discrepancies in the Post Office's handling of mail contracts. Namely, the lack of communication to all air taxi operators of the allowable cost factors in determining the rate structure. This lack of knowledge on the part of the air taxi operators becomes a factor in bidding and seems to contribute to confusion between the air taxi operators and the Post Office.